



University of
**Southern
Queensland**

COLLABORATIVE SYNCHRONOUS COACHING TO SUPPORT TRIADIC COLLABORATION AND BRIDGE THE THEORY-PRACTICE DIVIDE IN INITIAL TEACHER EDUCATION

A Thesis submitted by

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ABSTRACT

Advancements in technology have enabled a range of approaches to support preservice teacher development. This research highlights the effectiveness of using collaborative synchronous coaching (CSC) through Bug-in-Ear (BIE) technology to reduce the theory-practice divide by enhancing collaboration between the visiting lecturer, the mentor teacher and the preservice teacher. Three research stages tested the (1) concept of CSC in supporting the provision of feedback, (2) protocol and best practice for the use of CSC, including user-defined requirements and (3) the tool as a method to support the establishment of a third space that nurtures collaboration and flattens the power-structure in ITE. The findings from field notes, semi-structured interviews and video observations suggest that CSC is a new andragogical technique that can provide an alternative way to support collaborative pedagogical development for preservice teachers while strengthening relationships and opportunities for reciprocal learning. Educators using CSC can navigate their identities within the space more transparently, collaboratively, and constructively. The power of synchronous feedback from more than one person reframes the triadic conversation into a new paradigm.

CERTIFICATION OF THESIS

I, Tim Gander declare that the PhD Thesis entitled *Collaborative Synchronous Coaching to support triadic collaboration and bridge the theory-practice divide in initial teacher education* is not more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references, and footnotes. The thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

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STATEMENT OF CONTRIBUTION

This section details the contributions of the various authors for each paper presented in this thesis by publication.

Chapter three: Paper 1 - Collaborative Synchronous Coaching to Bridge the Theory-Practice Divide in Initial Teacher Education: A Pilot Study

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Educational Technology Research and Development

The student contributed 90% to this paper. Collectively, Chris Dann and Shirley O'Neill contributed the remainder.

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<https://publications.ascilite.org/index.php/APUB/article/view/685/548>

The student contributed 100% to this presentation and paper.

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DEDICATION

To Mum and Dad, both passionate educators, thank you for instilling in me the value of education and for showing me the profound impact teachers can have. Your dedication to teaching has been my inspiration. Your belief in the transformative power of education has guided my academic and professional journey. Thank you for being my role models and for showing me that education is a calling that can change lives and build a better society.

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ABBREVIATIONS

BIE: Bug-in-ear

CSC: Collaborative synchronous coaching

ITE: Initial Teacher Education

ISM: In School Mentor

MB: Multiple baseline

PLD: Professional learning and development

PST: Preservice Teacher

VL: Visiting Lecturer

DEFINITION OF TERMS

Throughout the thesis and the published documents there are several terms that would be helpful for the reader to understand, particularly in the context of Aoteroa, New Zealand. The following section provides a definition of these terms used throughout the study.

- Ako: This is a Māori concept that describes a teaching and learning relationship, where the educator is also learning from the student and where educators' practices are informed by the latest research and are both deliberate and reflective. Ako is grounded in the principle of reciprocity and also recognises that the learner and whānau cannot be separated¹. In te ao Māori, the concept of ako means both to teach and to learn. It recognises the knowledge that both teachers and learners bring to learning interactions, and it acknowledges the way that new knowledge and understandings can grow out of shared learning experiences.

- Aotearoa: This is the Māori-language name for New Zealand. The name was originally used by Māori in reference only to the North Island, with the whole country being referred to as Aotearoa me Te Waipounamu (North Island (Te Ika-a-Maui) and South Island (Te Waipounamu)). The most popular translation usually given is "land of the long white cloud", or variations thereof. This refers to the cloud formations which helped early Polynesian navigators find the country.

- Bug-in-ear (BIE): This is a technology that enables a direct and discreet link to the preservice teacher. The visiting lecturer or in-school mentor can communicate in real-time, giving remote virtual feedback via video observation with a bug-in-ear device without disrupting the lesson.

- Collaborative synchronous coaching (CSC): This is a concept that augments bug-in-ear coaching by enabling the in-school mentor and visiting lecturer to simultaneously interact with the preservice teacher remotely while maintaining a private backchannel, hence the collaborative element.

- In school mentor (ISM): This is a teacher who works in the school where the preservice teacher is placed and provides guidance, support, and feedback to the preservice teacher during the practicum.

- Multiple baseline (MB): This is a research design that involves collecting data on multiple participants, behaviors, or settings over time to establish a causal relationship between an intervention and an outcome.

- Paired t-test: A paired t-test is a statistical method used to compare two related groups to understand if there is a significant difference between their means. This test is often applied in before-and-after studies or when subjects are measured twice under different conditions. It helps in assessing the impact of an intervention or treatment by comparing the outcomes at two different times.

- Professional learning and development (PLD): This is a process of ongoing learning and improvement for educators that aims to enhance their knowledge, skills, and practices to support student learning outcomes.

- Practicum partnership: Refers to the collaborative relationships established between preservice teachers, professional teachers, and university faculty members during the practicum experience. This partnership aims to bridge the gap between theory and practice, enhance the quality of teacher preparation, and improve education outcomes.

- Preservice teacher (PST): This is a student who is enrolled in an initial teacher education program and is undergoing practicum experience in a school setting to develop their teaching competencies.

- Te reo Māori: This is one of the three official languages of New Zealand. Where appropriate the published article provides a glossary of Māori terms and vocabulary in te reo Māori.

- Treaty of Waitangi: The research recognises the Treaty of Waitangi as New Zealand's founding document and the basis for the relationship between the Crown and Māori. It also integrates the principles of the Treaty, such as partnership, participation, and protection, into its guidelines for research ethics and working with Māori participants.

- Visiting lecturer (VL): This is a faculty member from the initial teacher education provider who visits the preservice teacher during the practicum and provides feedback, assessment, and support to the preservice teacher.

CHAPTER ONE: INTRODUCTION

1.1. Introduction

This chapter sets the context from a personal and evidence-based perspective and establishes the need for the study by describing the challenges of triadic collaboration and the theory-practice divide in initial teacher education. It provides an introductory overview of the research's aims and objectives, followed by an outline of the research questions and methodology. The theoretical frameworks guiding the development of the research are discussed, and finally, an overview of how the resultant publications reflect the research outputs is provided, as required for a thesis by publication.

1.2. Researcher context

This study stems from my professional evolution as an educator and researcher, with a sustained focus on coaching and mentoring. I began my journey in this domain while studying for my initial teacher education qualification in 1999. During my initial teacher training, I often struggled to see the links between the theory covered on campus and the practical element of the classroom experience. Long periods between the two created further disassociation, and I looked to the coaching guidance of my school mentors to create clarity from my confusion during the extended school placement blocks. In the final year of my Bachelor of Education, I was a preservice teacher (PST) participant in a pioneering study exploring the potential of bug-in-ear coaching. I found that as a participant, I could link the theory of the campus experience with the lively environment of my year nine PE class through the support of prompts from my in-school mentor (ISM) through the Bug-in-Ear (BIE) device. Following my involvement in the study, I focused my final dissertation on the tool's effectiveness in training physical educators (Gander, 2003).

In the following years, I pursued a career as a physical education teacher and as an ISM. I also saw the challenges preservice and beginning teachers faced in connecting the theory to practice and how any meaningful connection to theory was thrown out of the window with any change to the lesson plan. It was also interesting to experience the transactional relationship between the school and the University; there needed to be more room for co-construction or collaboration. Through my experiences I felt as if there was no investment from either party and no opportunities for long-term relationships to be formed. In more recent times, I moved into higher education and initial teacher education (ITE) program

leadership. I held a dual role in coordinating practicum partnerships and serving as a visiting lecturer (VL) in a practice-based ITE program. This was challenging because PSTs, schools, and subject specialists were situated across a country with remote communities and limited infrastructure, making travel time-consuming and expensive. Through the culmination of these experiences in coaching and mentoring from the perspective of a PST, a teacher, an ISM and finally, a VL, it was clear to me that there was value in the differing viewpoints within the triadic relationships and each had an important role to play. However, from a co-coordinator role, it was challenging to find an effective or timely way to share the critical knowledge that I knew existed within the network between the triad of VL, PST and ISM. It was also clear that some voices were less valued or powerful than others within the relationship. In addition, the ITE programme I ran was nationally focused with the aim of placing students in schools that were often geographically challenged but had an urgent need for a subject specialist. This added another layer of complexity as it was challenging to align curriculum-specific support with the physical location of the teacher; there often needed to be the teaching expertise to support the PST in understanding subject-specific teaching practice. Faced with this challenge, I sought the means to provide expert curriculum and pedagogical advice to trainee teachers in a geographically challenged country. This requirement was also amplified by COVID-19 and the New Zealand government's requirement to restrict physical school access. Therefore, a remote tool was required to unite all triad members in challenging times.

1.3. Aims, objectives and overview of the research

This research addresses the multidimensional and widespread challenge of the theory-practice divide in ITE. Prevalent not only in the literature from leading ITE researchers (Cochran-smith, 1999; Krichevsky, 2023; Zeichner, 2010) but also evident from my range of personal experience from being a PST to an ITE programme leader. In this research the theory-practice dichotomy is explored through two critical elements of ITE, (1) the provision of equitable access to consistently high-quality feedback and timely professional coaching to support PST development, and (2) the facilitation of the third space (Green et al., 2020) enabling intentional collaboration and alignment between the ITE provider and the school which the PST is placed. The ITE-specific challenges of equitable access to high-quality coaching feedback and collaborative partnerships present an opportunity to integrate technology to provide the coaching required via remote video observation tools where an expert practitioner may not be physically available.

From experiencing a lack of collaboration as an ISM, it was important to develop this research using a collaborative methodology. Therefore, this research was developed using participatory action research (PAR) in stages adapted from the 3-Level Evaluation Framework (Vavoula & Sharples, 2009). It was necessary to combine these two methodological approaches to involve all research participants and to provide a structure to the PAR process by incorporating a relevant framework. The 3-Level Evaluation Framework (M3) has been proven as a valid evaluation tool for mobile technology, such as mobile devices and bug-in-ear technology. Stage one was a pilot study that explored the premise that CSC will enable intentionally aligned and consistent VL and ISM feedback that could support triadic collaboration and bridge the theory-practice divide. Stage two incorporates findings from the literature and a wider scoping review to highlight best practices in the application of CSC and, through social constructivism, explores if user-defined requirements could be met. Stage 3 explores the ability of CSC to enact concepts described in the ITE third space literature in a wider group of triads in a range of schools in New Zealand. In this study the third space refers to the theoretical concept that represents a transformative space to enable different perspectives, epistemologies and identities to interact (Bhabha, 1994).

CSC can be contextualised as an andragogic approach to supporting PSTs in their professional development. Andragogy, as defined by Knowles (1980), emphasises the self-directed nature of adult learners and their readiness to apply learning to practical contexts. This aligns with the principles underlying CSC, which encourages PSTs to take an active role in reflecting on and modifying their teaching practice in real time. Moreover, Mezirow's (1991) transformative learning theory posits that adult learners develop through reflective discourse and critical thinking, which are vital components of the CSC model. By providing immediate feedback and encouraging reflective practice, CSC supports transformational learning that helps PSTs critically analyse their assumptions and adapt their teaching strategies accordingly. Thus, framing CSC within an andragogic context highlights its alignment with adult learning principles, emphasising the importance of practical, self-directed, and reflective learning.

CSC is built on the concept of the BIE coaching that I experienced in my initial teacher training. BIE enables a direct and discreet link to the PST through an earpiece. The VL or ISM can use a microphone to communicate in real-time, giving remote virtual feedback via

video observation with a BIE device without disrupting the lesson (Horn et al., 2020; Randolph et al., 2020). Scheeler (2012) explores how BIE technology has been used to provide high-quality synchronous feedback in classrooms to enhance teaching efficacy. Research spanning the last two decades has demonstrated that BIE coaching is an effective evidence-based practice (Sinclair et al., 2020). CSC augments BIE coaching by enabling the ISM and VL to simultaneously interact with the PST remotely through a mobile device, such as a phone or tablet (figure 1), while maintaining a private backchannel, hence the collaborative element. More detail on BIE coaching, including the advantages and disadvantages of this approach is included in section 2.7 of the literature review.

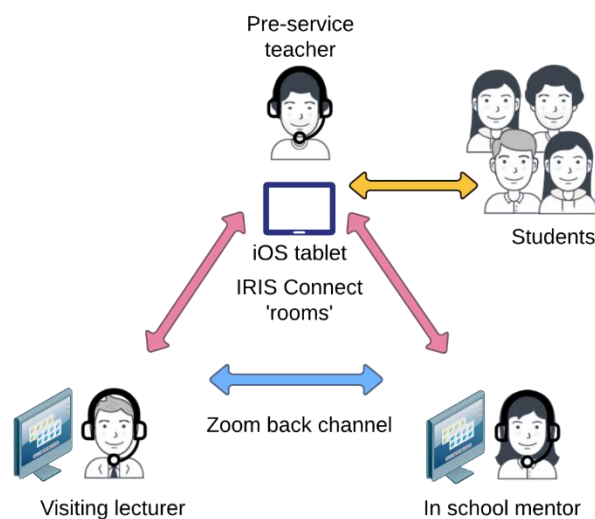


Figure 1. Collaborative Synchronous Coaching

1.4. Research context

This research was conducted within the context of ITE in New Zealand. The New Zealand government recently aimed to meet teacher shortages by providing opportunities to train through practice-based environments while receiving an unqualified teacher salary. The specific programme in this research was a two-year practice-based master's programme focusing on education leadership and equity. This type of programme is distinctive in its approach to teacher education, prioritising hands-on teaching experience and real-world classroom practice. After an eight-week summer intensive preservice, teachers in this programme spend two years in schools, immersing themselves in the day-to-day realities of teaching. This practical focus is complemented by online synchronous and asynchronous learning with assessments that provide theoretical grounding and critical reflection. However,

an overall lack of academic rigour and understanding of theoretical approaches have been a criticism of this approach (Ramsey et al., 2022), and other practice-based ITE programmes (Zeichner, 2023).

Beyond practice based ITE, significant challenges exist in New Zealand education, particularly educational inequality, access to education and low socioeconomic status. Therefore, integrating theory and practice is a critical priority for New Zealand's ITE programmes to support the training of teachers who can initiate systemic change. The country's geographical challenges and the government's requirement to restrict physical access to schools due to situations like the COVID-19 pandemic have further underscored the need for innovative solutions like the CSC explored in this research. This research, therefore, holds significant implications for the future of teacher education in New Zealand and potentially beyond.

1.5. Research questions

The research questions presented in this thesis emerged organically through iterative exploration and refinement. It was initially important to discover if the concept of CSC could support triadic collaboration, bridging the theory-practice divide. Once established, it was important to understand how the concept met the users' needs and if there were any examples of effective implementation. In the following iteration, exploration focused on the third-space theory (Bhabha, 1994) and how this could enhance the collaborative experience and flatten the power structure often experienced within the triad. Each research question was formulated based on the insights and knowledge gained from the preceding research stage. This approach ensured that the research questions were not only grounded in the realities of the field but also progressively built upon each other to provide a comprehensive understanding of the issues at hand. This iterative approach was informed by the PAR methodology and the 3-level evaluation framework (Vavoula & Sharples, 2009)

Stage 1

RQ1: How might CSC support triadic collaboration to bridge the theory practice divide while providing feedback in initial teacher education?

Stage 2

RQ2: How might CSC assist in delivering user defined goals: Sharing tacit knowledge?

RQ2a: How might CSC assist in delivering user defined goals: Providing questioning feedback?

RQ2b: What are the best practices when using CSC?

Stage 3

RQ3: How might CSC enable concepts in ITE literature relating to the third space?

1.6. Methodology

Grounded in the Vygotskian paradigm that knowledge is constructed socially (DeVries, 2000), this research employed a mixed methods framework through participatory action research (De Oliveira, 2023; Kemmis et al., 2014). In education, researchers often seek to explore the complex interplay between learning, cognitive development, and the social environment. With this in mind, the theoretical underpinnings of this study draw from Lev Vygotsky's seminal work, which highlights the significance of social interactions, cultural settings, and the collaborative use of tools and artefacts in shaping learning and cognitive growth (Vygotsky, 1978). Vygotsky's sociocultural theory stresses the importance of cultural mediation, language, and cooperative learning in cognitive development. As education increasingly acknowledges the intricate nature of learning environments and the diverse needs of learners, Vygotsky's framework offers a robust basis for investigating how educational practices can leverage social interactions and tools to foster optimal development (Rogoff, 1998). In ITE, the Vygotskian approach is particularly insightful, shedding light on the complex learning dynamics within the social interactions of the teaching triad, the varied cultural contexts of different educational settings, and the necessity for collaborative methods across diverse educational landscapes (van Huizen et al., 2005).

This research employed a mixed methods approach through a participatory action research lens (Kemmis et al., 2014). Participatory action research (PAR) is “enquiry with people, rather than research on people” (Altrichter et al., 2002, p. 130). This perspective is echoed by Hodges (2014), emphasising the focus on participating in the change rather than analysing the change. De Oliveira (2018) adds that PAR is a methodology enabling problem-solving and practical outcomes with positive change. By participating in the change, it is possible to transform the participants' practice and develop the social and educational practices of the broader communities involved through thought and action (Kemmis, 2006). This approach is based on the belief that those directly affected by a particular issue have unique insights and experiential knowledge that can enrich the research process and lead to more meaningful and

contextual results (Ospina, 2022). The diverse individual experiences and interactions of each triad member during the practicum feedback process necessitated unifying perspectives in both intervention and methodology. McTaggart (1997) claims that the original conceptions of action research, as proposed by social psychologist Kurt Lewin (1946, 1952), missed the fundamentals of group dynamics, and therefore participation was a key addition to the process. However, the term participation must extend beyond the surface assumption of involvement and maintain an approach grounded in ownership, responsible agency, the production of knowledge and the improvement of practice (McTaggart, 1997). PAR is dynamic and can empower participants by demonstrating that their input makes a difference to the action in practice (Howard & Burns, 2022). Engaging research participants in PAR authorises them to contribute their views and voice their perspectives to influence the research direction at each stage. PAR promotes a sense of ownership, agency, and social change by engaging participants as co-creators (Burns et al., 2022). The importance of exploring the dynamic contextual landscape of the practicum, as experienced by all triad members, can be effectively achieved through PAR. Consequently, the research outcomes are academically rigorous and enable practical implications for real-life situations, making PAR a practical method where transformational cultural and community empowerment are paramount (Esteva, 2022). This approach can disrupt the traditional imbalance in the power structure of the triad (figure 2). In each research cycle, participants were asked to help identify challenges, formulate research questions, and define requirements for effective feedback. This participatory approach was outlined in the participant information sheet (appendix A2) and helped ensure that participants were at the center of the collaborative process. Participants were also invited to participate in data analysis and discuss the results (appendix C1). In describing the foundations of PAR, McTaggart (1997) challenges researchers to consider “what contribution has this example made to the improvement of the understanding, practice, and social situation of participants and others in the context described” (p. 26). In this research the collective understanding of the varying perspectives of each triad member was paramount.

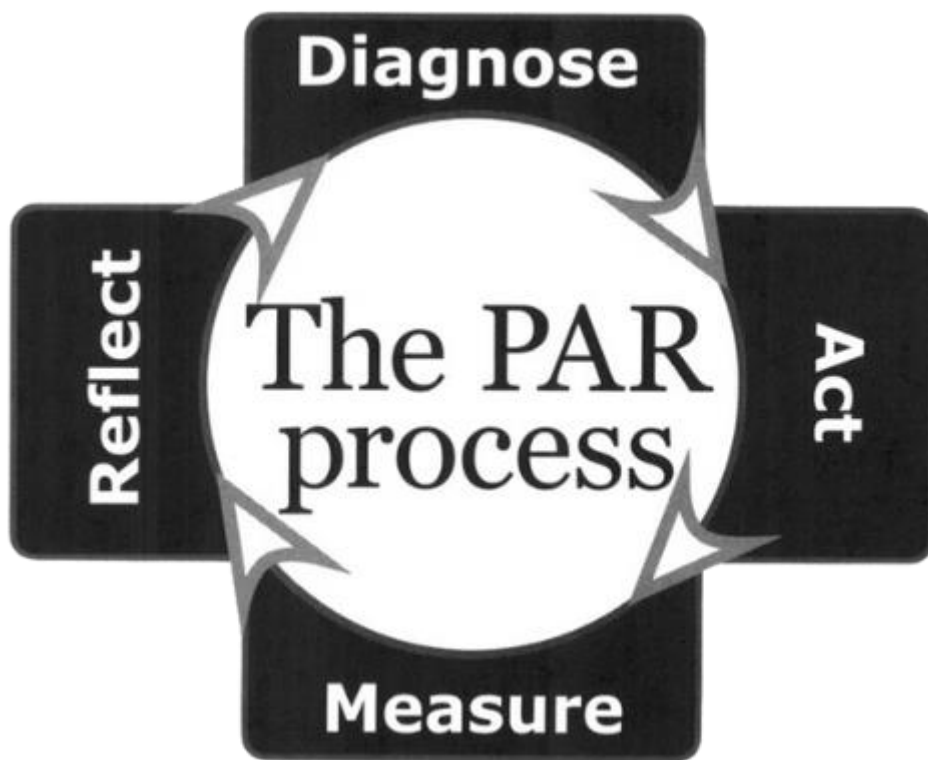


Figure 2. The PAR Process (McTaggart, 1997).

1.7. Methods

The research adopted a mixed methods approach, integrating qualitative and quantitative methodologies to provide a well-rounded understanding of the impact of CSC on the triad. This combination of methods was particularly suited to the multifaceted nature of the research questions, which required a nuanced exploration of individual experiences and the ability to generalise findings across a broader population.

The quantitative component of the study involved surveys, as described in Chapters 3 and 5. These methods were selected based on their suitability for capturing measurable changes in PSTs' perceptions and behaviours over time. The surveys were administered using a pre-post design, which was crucial for examining the development of key indicators such as sharing tacit knowledge and providing feedback on questioning approaches before and after the implementation of CSC. This approach allowed for statistical comparisons that could demonstrate the impact of CSC in a quantifiable way. Quantitative analysis of this coded data provided empirical evidence that corroborated PSTs' self-reported improvements, adding reliability and validity to the findings by reducing potential bias that may arise from self-assessment alone.

The qualitative aspect of the research involved semi-structured interviews, reflective journals, and participant field notes, as outlined in Chapters 3 and 5. Semi-structured interviews were chosen to allow flexibility in probing deeper into PSTs' personal experiences with CSC, capturing rich, descriptive data highlighting how immediate feedback influenced their teaching practice and relationships within the triad. The qualitative data were thematically analysed using Braun and Clarke's (2006) six-phase approach. This approach was chosen for its systematic yet flexible nature, enabling identifying, analysing, and reporting patterns within the data while allowing the researcher to interpret deeper meanings behind the PSTs' responses. Chapters 3 and 5 demonstrate how these themes were essential for understanding the subjective experiences of PSTs and how they internalised and applied feedback in their teaching practice. Reflective journals and field notes further enriched the qualitative dataset by providing an ongoing record of participants' learning processes over time.

The mixed methods approach facilitated the triangulation of quantitative and qualitative data, which strengthened the validity of the findings by providing multiple lines of evidence. For instance, survey results indicating increased confidence in specific teaching skills were supported by qualitative themes that captured PSTs' reflections on how real-time feedback allowed them to refine their instructional methods (Chapters 5 and 6). This triangulation was crucial for ensuring that the findings were not only statistically significant but also grounded in the lived experiences of the participants, aligning with the participatory nature of the research.

The rationale for employing a mixed methods approach lies in its ability to capture the complexity of teacher learning and development. While quantitative data provided the breadth required to identify general trends and measure efficacy across the participants, qualitative data offered depth, allowing for an exploration of the nuances of how CSC impacted participants. The mixed methods approach thus allowed the research to address not only "what" changes occurred in participants' practice, as evidenced by quantitative metrics, but also "how" and "why" these changes took place, as revealed through the participants' reflections and narratives. The integration of these elements allowed for a comprehensive understanding of the effectiveness of CSC, bridging the theory-practice divide by capturing both the observable impacts and the personal experiences that defined participants' professional growth.

1.8. Theoretical frameworks

Data was collected in three stages based on the 3-Level Evaluation Framework by Vavoula & Sharples, (2009) described below. The data was analysed through a participatory lens with the focus on a self-reflective collective study of practice and transformational action to improve practicum pedagogy (Kemmis et al., 2014).

This participatory action research methodology was applied across the Micro, Meso and Macro (M3) 3-Level Evaluation Framework by Vavoula & Sharples, (2009) which has been successfully used to assess mobile tools in a range of educational contexts (Fabian & Topping, 2019; Kabassi, 2017; Koole et al., 2018). The M3 framework was originally designed to overcome identified challenges in evaluating mobile learning; including capturing learning in different contexts, measuring mobile learning processes and outcomes, and considering the wider organisational and socio-cultural context of learning. This led Vavoula and Sharples (2009) to develop a set of basic precepts for mobile learning evaluation:

- P1. Capture and analyse learning in context, with consideration of learner privacy
- P2. Assess the usability of the technology and how it affects the learning experience
- P3. Look beyond measurable cognitive gains into changes in the learning process and practice
- P4. Consider organisational issues in the adoption of mobile learning practice and its integration with existing practices and understand how this integration affects attributes of in/formality
- P5.Span the lifecycle of the mobile learning innovation that is evaluated, from conception to full deployment and beyond (p.63)

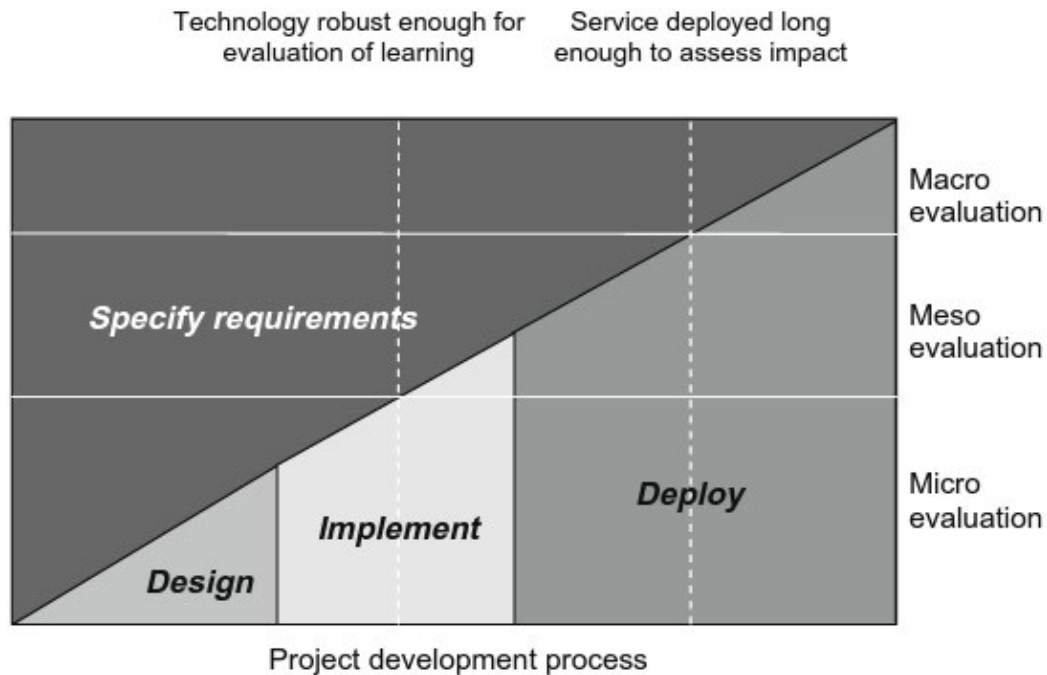


Figure 3. The M3 framework

With these precepts in mind the 3M Framework was proposed. Initially as part of an art project to analyze the potential role of mobile devices in bridging the gap between formal classroom learning and learning occurring in less formal settings, such as a visit to the local museum (Vavoula et al., 2009). The 3M framework evolved from the unpublished PhD thesis of one of the research team, Julia Meek. Meek proposed an iterative lifecycle approach which was designed to place the evaluation of the tool and the learning at the center of the development process (2006). To understand the learning taking place in a range of contexts, the 3M framework is structured to operate at three different levels: micro, medium and macro. The micro level examines the interaction, activity, and behavior of individual learners or actors in a learning context. A clear focus is on usability and utility. Bernacki et al. (2020) recommend in their analysis of how frameworks can support effective learning and metacognitive process that the micro level events should inform the broader design of a particular tool used in the classroom. The meso level focuses on the learning experience as a whole to identify learning breakthroughs and breakdowns. This stage allows examination of critical incidents to explore patterns of interpersonal learning experiences and new learning. According to Kearney et al., (2020) the meso level has the most impact on understanding how an intervention may inform teaching and learning. The macro level investigates the impact of the new technology on established educational and learning practices and

institutions. At each level, evaluation activities attempt to understand any gaps between how users expectations match the reality of the intervention. This also could uncover unforeseen processes and outcomes (Vavoula & Sharples, 2009). A strength of the model is the ability to emphasise the social aspects of the learning and associated interactions (Kearney et al., 2020). Overall the 3M framework has been applied extensively to examine the impact of mobile tools in the classroom focusing on usability, educational and organisational impact, and their inter-relationships (Bernacki et al., 2020).

There have been criticisms of the M3 framework, mainly due to the lack of evaluation criteria (Harpur & De Villiers, 2015). However when combined with a PAR approach it is possible to collaboratively establish criteria to critically evaluate technology tools. The M3 Framework also aligns with McTaggart's (1997) description of the iterative nature of participatory action research. According to McTaggart, it "starts small, by working through changes that even a single person can try, and moves toward extensive changes, including critiques of ideas or institutions, which in turn might lead to more general reforms of projects, programs, or system-wide policies and practices" (p. 39).

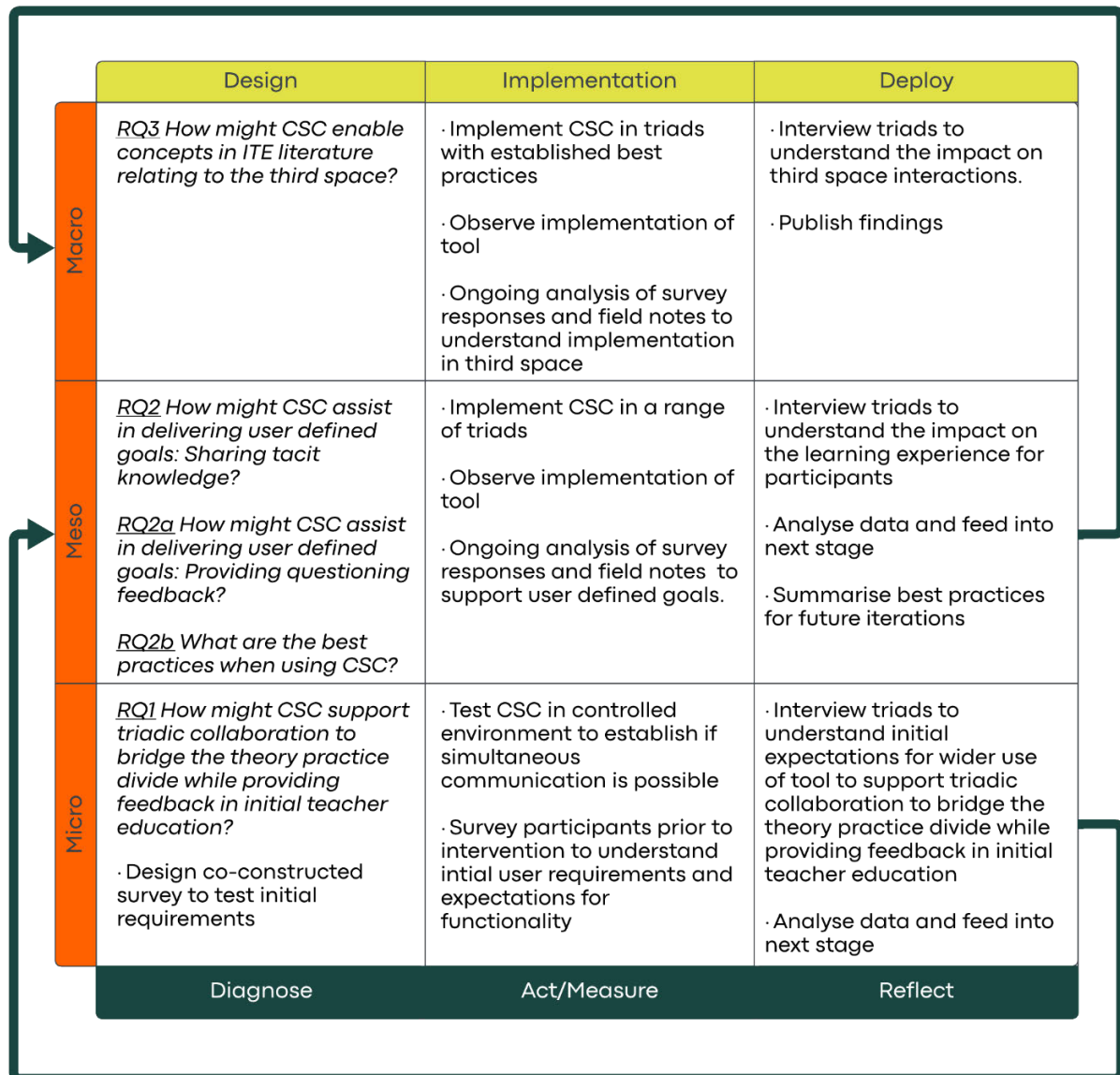


Figure 4. The PAR process and M3 framework highlight the stages of research and research questions.

Figure 4. presents an overlay of the PAR process against the M3 framework. Beginning in the bottom left corner with the micro stage and progressing from left to right the cycles of diagnose / act / measure / reflect supported the development of the concept and informed the following stage. This expands through the meso stage into the macro stage.

1.8.1. Stage one – micro scale (RQ1)

The micro scale focusses on the technology, determining whether it works as intended and meets the requirements of the task. This stage consisted of a pilot study to test the concept of CSC and the most effective set up for the technology so it can support triadic collaboration. The aim was to establish if it was possible to simultaneously communicate within the triad

while providing practice feedback to live teaching. In line with social constructivism and participatory action research qualitative and quantitative data was collected through a co-constructed survey which assessed the effectiveness of the tool for each member of the triad.

1.8.2. Stage two – meso scale (RQ2,2a,2b)

Once the technology has been tested and is robust enough to enable triadic collaboration and used in classroom teaching, the meso scale assesses how CSC could impact traditional practicum feedback methods in ITE. Social constructivism enabled user defined requirements with regards to pedagogical outcomes which were then tested requirements as defined by the PSTs, VLs and ISMs. Again, semi-structured interview was also held with each triad following the trial.

The findings were aligned with an in-depth scoping review to refine best practice in using the tool.

These results influenced the specific protocols involved in the timing of the feedback during the teaching episode, how the feedback is delivered, and application of key phrases or language applied by the VL and ISM to support the PST in modifying practice.

1.8.3. Stage three – macro scale (RQ3)

The macro scale examines the organisational impact and wider implications of the tool. Findings from stages 1 and 2 informed the implementation of this stage. The overarching goal of reducing the theory practice gap through engaging the third space was the focus and the success of implementation was measured against the findings from a scoping review of how the third space had been applied in ITE.

Evaluation Activities	Framework level	Project phase
Stage 1 How might CSC support triadic collaboration to bridge the theory practice divide while providing feedback in initial teacher education? Stage 2	All	All

Evaluation Activities		Framework level	Project phase
How might CSC assist in delivering user defined goals: Sharing tacit knowledge? How might CSC assist in delivering user defined goals: Providing questioning feedback? What are the best practices when using CSC? Stage 3 How might CSC enable concepts in ITE literature relating to the third space?			
Stage 1 - Micro <i>How might CSC support triadic collaboration to bridge the theory practice divide while providing feedback in initial teacher education?</i> Pilot study (publication #1)			
	• Test CSC in controlled environment to establish if simultaneous communication is possible • Design training sessions • Survey participants prior to intervention to understand initial user requirements and expectations for functionality • Design co-constructed survey to test initial requirements • Design one page guide on CSC use	Micro	Design (Diagnose)
	• Implement CSC in triads • Observe implementation of tool • Ongoing analysis of survey responses and field notes to modify implementation	Micro	Implement/deploy (Act/Measure)
	• Interview triads to understand initial expectations for wider use of tool to support triadic collaboration to bridge the	Micro	Deploy (Reflect)

Evaluation Activities		Framework level	Project phase
	theory practice divide while providing feedback in initial teacher education Analyse data and feed into next stage		
Stage 2 – Micro/Meso <i>How might CSC assist in delivering user defined goals: Sharing tacit knowledge?</i> <i>How might CSC assist in delivering user defined goals: Providing questioning feedback?</i> <i>What are the best practices when using CSC?</i> Scoping review (Publication #2)			
	- Extensive scoping review on best practice for bug-in-ear coaching - Defining participant goals for feedback - Redesign one page implementation guide	Micro	Design (Diagnose)
	- Implement CSC in triads - Observe implementation of tool - Ongoing analysis of survey responses and field notes to modify implementation	Micro	Implement/deploy (Act/Measure)
	- Interview triads to understand the impact on the learning experience for participants - Analyse data and feed into next stage - Summarise best practices	Meso	Deploy (Reflect)
Stage 3 – Meso/Macro <i>How might CSC enable concepts in ITE literature relating to the third space?</i> Article 3 (Publication #3)			
	Understand how the third space had been applied in ITE	Meso	Design (Diagnose)
	Testing	Macro	Implement/deploy (Act/Measure)
	Interview triads to understand the impact	Macro	Deploy (Reflect)

Evaluation Activities		Framework level	Project phase
	on the learning experience for participants - Analyse data and feed into next stage - Summarise best practices		

Table 1. Research Overview

The third space is critical at this stage to disrupt the institutionalised hegemonic underpinnings of the relationship. The strengths and weaknesses of all parties must be acknowledged for the tool to be successful, for example the school mentor could know more about the individual attributes of the class that is being taught, and the VL may have more of an understanding of the pedagogical methods to support teaching of a particular topic.

Qualitative data was collected through small group interviews with the triad, as well as quantitative data through co-constructed surveys. Data was also collected through analysing lesson video recordings on IRIS Connect, the delivery platform for the BIE coaching, which has the functionality of tagging and timestamping teacher actions.

1.9. Ethical considerations

Innovative approaches like CSC present new ethical challenges that must be carefully considered to ensure the well-being and efficacy of all participants. This section outlines the ethical issues discussed during the initial ethics approval process (appendices A & A1) and explores additional ethical considerations arising from the use of CSC technology in practice-based educational contexts.

Before the research commenced, all potential participants, including PSTs, ISMs, and VLs, were fully briefed on the purpose, procedures, and potential risks associated with the use of BIE technology and CSC. All members of the triad had to initially indicate an interest in using BIE as a tool to enable feedback through CSC and then, following uptake of the tool, an interest in being involved in the research as a participant. This was done by making the BIE feedback tool optional for the programme of study and then inviting expressions of interest as a research participant (appendix A6). Participation in the research was entirely voluntary, and all participants retained the right to withdraw at any point without

repercussions. While the complexity of having all three members sign up for the research individually reduced the total number of potential participants, this voluntary nature of participation helped mitigate any potential coercion or undue pressure, particularly given the power dynamics that could exist between PSTs and their ISM or VL. Informed consent was fundamental to this study; participants were provided with detailed information sheets and had opportunities to ask questions before consenting to participate (appendices A2, A3, A4, & A5). This ensured transparency and a shared understanding of the research aims and methodologies. Given the use of video technology in classroom settings, strict measures were implemented to maintain confidentiality and protect participants' data. The video footage, which was used to provide real-time feedback, was stored on a secure server accessible only by authorised personnel. Additionally, all data was anonymised to prevent the identification of participants, and privacy considerations were a priority throughout the study. To ensure that the technology itself did not become a barrier to learning, mitigation strategies were established to address any technical issues that could arise during the study. These included training sessions on using the BIE technology, protocols for troubleshooting technical difficulties, and support to ensure a seamless experience for participants (appendices B1 & B2).

BIE technology raises duty of care concerns for both the ISM and VL. Direct feedback delivered through BIE technology must be constructive and non-threatening to avoid causing stress or anxiety for the PST. ISMs and VLs must be mindful of their duty of care, ensuring that feedback is supportive and contributes positively to the PST's professional growth. This duty of care is particularly relevant when considering the potential power imbalances discussed earlier, as the misuse of BIE technology could lead to negative experiences that hinder rather than support learning. As highlighted by Horn et al. (2020), the immediacy of BIE feedback can be beneficial for reinforcing effective teaching practices; however, it must be delivered with sensitivity to the PST's emotional and cognitive state to prevent it from becoming counterproductive.

Scheeler et al. (2012) emphasise the importance of ensuring that feedback is specific, actionable, and provided in manageable doses. For neurodiverse PSTs or those who may struggle with processing speed, breaking down feedback into smaller, more actionable steps could be a necessary adaptation to prevent cognitive overload (Kehrwald et al., 2019). Cognitive overload could lead to negative experiences with the coaching process,

discouraging participation and potentially hindering learning outcomes. Following the guidance in the literature (Conix, 2014), participants worked together to establish how they would communicate to reduce the cognitive load for the PST, offering keywords or prompts and establishing specific points in the lesson when they would broadcast messages to the PST.

While BIE technology offers a valuable tool for enhancing the feedback process in ITE, it is essential to balance this innovation with ethical responsibility. The technology should be used in a manner that respects the individual needs and circumstances of each PST, providing differentiated support that acknowledges their strengths and addresses their challenges. As Vygotsky's sociocultural theory suggests, learning is constructed through social interactions, and these interactions must be conducted in ways that foster positive growth (DeVries, 2000). By considering the ethical implications of technology use, teacher educators can ensure that all PSTs benefit from the feedback process in a positive and constructive manner.

1.10. Reasons for the research

ITE is crucial in preparing pre-service teachers to become effective educators. However, the persistent and widening theory-practice demands urgent attention and reform. The significant gap between the theories and methods taught in teacher education programs and teachers' actual classroom practices has long been recognised as a critical challenge in ITE (Cochran-Smith & Zeichner, 2009; Korthagen et al., 2006). The repercussions are far reaching: trainee teachers often experience feelings of inadequacy or frustration, perceiving themselves as ill-equipped to navigate the complexities of real-world classrooms. These challenges are further exacerbated by the misalignment of expectations between teacher education programs and the realities of placement schools (Bernay et al., 2020). For instance, while teacher education programs may emphasise certain teaching methods or theoretical frameworks, placement schools may prioritise different strategies based on their unique student and community needs (Cochran-Smith et al., 2014; Haigh & Ward, 2004). Addressing this disconnect is imperative to ensure that pre-service teachers are adequately prepared and confident in their professional roles, ultimately leading to more effective teaching and improved student outcomes.

1.11. Significance

The aim of this research is to inform and contribute to ITE reform and policy through leveraging a deeper understanding of best practice using BIE technology. Findings could

advocate for alternative approaches in employment-based courses that would enable improved outcomes. A positive relationship in the third space could be facilitated through the co-construction, timing and type of feedback that is potentially delivered through CSC. The research also aims to enhance the provision of equitable access to consistent high-quality feedback in ITE. CSC has the potential to act as a support for the PST who may be placed in locations where there is not adequate support in place, enabling greater equity in the support and provision of high-quality teachers. This approach also aims to instigate the most impact on teacher efficacy through research informed feedback processes. The opportunity to deliver feedback remotely is also an exercise in reducing the financial impact of the observation process, namely through time and travel to remote locations. CSC could also be transferred to other practice based preservice fields, such as medicine or paraprofessional training programmes, where individuals require support to develop their skills.

1.11.1. Participants

The participants are at the center of this project. The primary participants in this study were PSTs in a practice based Master of Teaching and Leadership program in New Zealand. The course was two years long and the participants were beginning their second year when the study commenced. All PSTs in the study had been using IRIS Connect for over a year and their schools and students have already provided informed consent to permit the use of the tool to improve teaching practice. Once ethics had been approved (appendices A & A1), an invitation was sent to all 64 second year PSTs on the program to gauge the level of interest regarding participation in the study (appendix A6). In addition an invitation to participate was also sent to all ISMs (n=52) as well as all VLs (n=15) via email. From the potential participants it was complex to line up triadic groups who had all opted into the research, finding a PST participant, ISM participant and VL participant who were in the same triad and also agreed to taking part in the research reduced in the potential for participant numbers. After several rounds of seeking consent with the various groups for the various stages of the research (appendices A2 to A4) four triads agreed to take part in the research. The schools and the students in the classroom had already agreed to use the IRIS connect video tool for teaching and learning and since data was not being collected from either of these groups consent was not sought. Guidelines were produced to initially demonstrate how to use the CSC tool in stage one (appendix B1) and then as improvements were made a revised guide was shared with participants (appendix B2).

1.12. Overview of exegesis structure

1.12.1. Chapter two: Literature review

In Chapter two of the thesis, an exploration of the literature unfolds into three pivotal areas crucial to the study: the theory-practice gap in ITE, the innovative use of BIE technology for feedback and coaching, and the intriguing notion of the third space in education. The theory-practice divide, a long-standing challenge in ITE is examined, as illuminated by Korthagen (2001) and Whatman & Macdonald (2017). This gap underscores the disparity between the theoretical concepts taught in teacher education programs and the real-world challenges faced in classrooms. The analysis underscores the crucial role of collaboration among PSTs, VLs and ISMs in bridging this divide.

The review also examines the literature on coaching, feedback, and the novel realm of BIE coaching. This technology, leveraging wireless earpieces for remote, synchronous feedback, emerges as a potent tool for nurturing PST development and refining teaching practices. However, a gap in the delivery of BIE coaching is uncovered, advocating for a more collaborative approach that facilitates seamless communication and collaboration among all involved parties.

Lastly, the review explores the concept of the third space in education. This theoretical concept represents a transformative space where different perspectives, epistemologies, and identities intersect and interact. The review concludes how the third space can be applied to ITE and how CSC can foster the creation of a digital third space. This digital third space is envisioned as a platform that promotes reciprocal learning and power-sharing within the triad. In summary, the literature review in Chapter 2 provides a deeper understanding of the challenges and opportunities in ITE, setting the stage for the subsequent inquiry.

1.12.2. Chapter three: Paper 1 - Collaborative Synchronous Coaching to Bridge the Theory-Practice Divide in Initial Teacher Education: A Pilot Study

Chapter Three embarks on the first stage of the research, a pilot study designed to test the concept and feasibility of CSC as a tool to support triadic collaboration and bridge the theory-practice divide in ITE. The pilot study was relevant at a micro-scale of the M3 framework because it focused on testing the concept and functionality of CSC as a tool for providing feedback and supporting triadic collaboration in ITE. The micro-scale examines the interaction, activity, and behaviour of individual triad members in a learning context and

evaluates the usability and utility of the technology. The pilot study did not address the meso or macro scales, which are concerned with the learning experience as a whole and the impact of the technology on established educational and learning practices and institutions, respectively. The pilot study was a preliminary stage to establish the feasibility and requirements of CSC before moving on to the meso and macro scales in the subsequent stages of the research.

This chapter contributes to answering research question 1: How might CSC support triadic collaboration to bridge the theory-practice divide while providing feedback in initial teacher education? The publication also tests and discusses the findings for stage 2. The participants established the user-defined focus areas; to share tacit knowledge and provide questioning feedback. The pilot study adhered to a Participatory Action Research (PAR) approach of diagnose, act and reflect as well as encompassing the three stages from the M3 framework: design, implement, and deploy. Data sources included surveys, field notes, observations, and focus group interviews, which were analysed using thematic analysis and descriptive statistics.

The findings from the pilot study serve as a foundation for exploring broader applications in subsequent stages of the research, in particular, developing guidelines for best practices (RQ2b). The results indicate that CSC effectively facilitates triadic collaboration and immediate sharing of tacit knowledge, directly enhancing PST practice. Despite some challenges, such as cognitive overload and technical issues, the study highlights CSC's potential as an innovative tool for practicum feedback and collaboration. Paper 1 sets the stage for further exploration in the following research phases by establishing the effectiveness of the tool.

1.12.3. Chapter four: Paper 2 - Using bug-in-ear technology as a coaching technique: a scoping review

Chapter four of the thesis presents the scoping review consolidating literature on BIE coaching. Although the scoping review follows the pilot study in the thesis structure, elements of this co-occurred, and its findings contributed to the pilot study's processes. The thesis's final chapters discuss the combined findings to meet the research questions' requirements.

A scoping review is valuable at the meso level of the M3 framework, often involving organisational or community contexts. It provides a comprehensive understanding of existing literature, practices, and policies, which is crucial for decision-making, designing interventions, and improving outcomes. The meso level bridges the micro (individual) and macro (societal) levels, allowing a scoping review to identify how individual-level factors interact with more prominent societal factors, which is a logical step when developing an evolving concept. The findings from a scoping review at the meso level can directly inform policy and practice, leading to more effective and contextually appropriate interventions. In addition, the scoping review can identify policy, practice, and research gaps and suggest ways to address them. In contrast, reviews at the micro level might focus more on individual-level factors. They may not fully capture the complexity of more prominent contextual factors. At the same time, those at the macro level might provide a broad overview of societal-level factors but may miss the nuances of specific organisational or community contexts.

The scoping review in stage two aims to establish best practices for using BIE coaching in this document. To guide the structure and reporting of the review, the PRISMA-ScR framework (Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews) was used. The PRISMA-ScR framework comprises 22 items that cover the title, abstract, introduction, methods, results, and discussion. The review followed a systematic approach to examine the extent, nature, and range of research activity on using BIE coaching with teachers, paraprofessionals, and PSTs in various educational contexts. The review identified 20 relevant studies that met the inclusion criteria and charted the data according to author, year, country, context, participants, intervention, outcomes, and quality. The review found that:

- BIE coaching is a cost-effective approach that supports the development of teachers and PSTs and has the potential to improve learner outcomes.

- Delivering BIE coaching remotely yields the widest range of benefits for professional learning and development (PLD) providers, such as access to expertise, reduction in cost, and flexibility in timing and location.

- Technology issues persist, such as connectivity, audio quality, and device compatibility. Therefore, simple and reliable approaches work most effectively, such as using earphones and smartphones.

- There are opportunities to explore the coaching attributes required for BIE coaching, such as rapport, trust, and feedback skills, and how BIE feedback can differ from in-person feedback, such as frequency, timing, and content.
- There are gaps in the literature, especially regarding collaborative synchronous BIE coaching, where more than one coach can provide feedback to the teacher or PST. This is an area for further research and innovation.

When aligned with the 3M framework, the user-defined requirements for CSC, based on the feedback from the pilot study and the literature review, are evaluated in the conclusion chapter. This process helps ensure that the CSC tool is applied effectively and beneficial for all triad members, and that it successfully bridges the theory-practice divide in ITE. Therefore, the scoping review plays a crucial role in the research and development of CSC as a novel andragogical technique.

1.12.4. Chapter five: Paper 3 - Collaborative synchronous coaching to enable the third space in initial teacher education

Chapter five begins by outlining the challenges of triadic collaboration and the theory-practice divide in ITE. Through an in-depth analysis of prior research cycles, it becomes apparent that the notion of the third space, characterised as a hybrid realm where the lines between university and school settings blur (Cuenca et al., 2011), emerges as a relevant area for exploration.

The M3 framework's macro-level analysis proves particularly fitting for the discourse on the third space in Chapter 5. This level investigates the impact of new technologies, such as CSC, on established educational and learning practices and institutions. The paper explores how CSC can enable concepts in ITE literature relating to the third space. These concepts include boundary crossing, identity negotiation, hybrid roles, and epistemological alignment, all of which are best examined at a macro level that focuses on the wider organisational and socio-cultural context of learning.

The chapter's principal objective is to scrutinise how CSC can foster a digital third space conducive to egalitarian and dialogic exchanges, effectively bridging the epistemological chasms experienced within triadic relationships. It also discusses the potential challenges and implications of CSC for the future of ITE. These aspects align with the macro level's focus on

the broader context of learning. Furthermore, the paper draws on the findings from the previous stages of the research, which tested the concept, protocols, and best practices of CSC at the micro and meso levels. The macro level allows the paper to synthesise and extend these insights, providing a comprehensive understanding of. It also enables the paper to critically reflect on the limitations and significance of the research so far, and to suggest directions for future research. Therefore, the macro level is a fitting final lens for this research, allowing for a holistic view of the potential of CSC in ITE.

The primary research question for this stage is: "How might CSC enable concepts in ITE literature relating to the third space?" This question explores how CSC can facilitate enacting the third space in ITE. The methodology employed in this stage is a mixed methods approach through participatory action research (PAR), following a Vygotskian paradigm. This paradigm emphasises the role of social interaction and tools in learning and development. The mixed methods approach allows for collecting and analysing quantitative and qualitative data, providing a more comprehensive understanding of the research problem.

The rationale for the study is discussed, focusing on balancing the triadic relationship. The literature on the third space in education and ITE is reviewed in depth, highlighting how it can foster non-hierarchical and collaborative relationships among the triad members. The potential of CSC to enable the third space in ITE is also examined, particularly its ability to facilitate dialogic interactions and bridge the epistemological gaps. An essential reference point for the third space study is drawn from a scoping review by Daza et al. (2021), who identified the required concepts to enable the third space in ITE. The concepts guided the data collection and analysis.

The findings and discussion section presents the themes deducted from the data analysis. These themes include negotiating identities, crossing boundaries, performing hybrid roles, intersecting epistemologies, and interconnecting knowledge sources. The benefits and challenges of using CSC to enable the enactment of the third space in ITE are also discussed in this section.

1.12.5. Chapters six: Paper 4 - Collaborative Synchronous Coaching to support triadic collaboration and bridge the theory-practice divide in initial teacher education

Sharing the research has been an integral part of the learning. The Australasian Society for Computers in Learning in Tertiary Education (ASCILITE) conference held in Christchurch, New Zealand (2023), provided a platform for sharing the new knowledge. A full research paper, a research poster (appendix D) and a summary video (Appendix D1) were shared for feedback and critique. A presentation at the doctoral symposium also enabled further connections to be made with researchers from Australia and New Zealand.

1.12.6. Chapter seven: general discussion and conclusions

Chapter seven, the concluding segment of this thesis, encapsulates the key discussions and conclusions drawn from the extensive exploration of CSC as a transformative tool in ITE. The synthesis of findings from the three distinct research stages contributes to understanding the concept, protocols, and best practices of CSC and its potential to foster a third space conducive to reciprocal learning and power-sharing in ITE. A critical analysis and interpretation of these findings as a collective body of work are undertaken, contrasting against the existing literature on coaching, feedback, and partnerships in ITE, situating the research within the broader academic discourse. The research's limitations are acknowledged while its significance is highlighted, providing a balanced evaluation. The conclusion drawn is that CSC emerges as a novel and efficacious coaching technique, with the potential to strengthen collaborative pedagogical development for PSTs while simultaneously invigorating relationships and creating opportunities for reciprocal learning. Furthermore, CSC facilitates the creation of a digital third space, a realm that nurtures non-hierarchical and dialogic interactions and bridges the epistemological gaps between the triad members.

This research significantly contributes to the literature on coaching, feedback, and partnerships in ITE, offering practical implications for applying CSC in diverse educational contexts, extending its relevance beyond the confines of this study. Suggestions for future research directions are provided, thereby paving the way for further exploration and understanding of this promising area of study.

CHAPTER TWO – LITERATURE REVIEW

The literature review examines the theoretical and empirical foundations ITE, focusing on themes crucial to understanding CSC. It opens with an analysis of New Zealand's ITE structure and the persistent challenge of bridging the theory-practice divide. The review then explores the importance of university-school partnerships, emphasising the triadic relationship between preservice teachers, in-school mentors, and visiting lecturers.

The discussion progresses to the role of coaching in education and the impact of high-quality feedback on teaching practices, highlighting BIE technology's potential for immediate, constructive feedback. Lastly, the chapter introduces the concept of the third space as a transformative framework for fostering non-hierarchical, collaborative relationships within the triad. This approach aims to bridge the theory-practice gap through shared knowledge and collaborative inquiry. By examining these interconnected themes, the literature review establishes a comprehensive foundation for understanding CSC's potential in addressing key ITE challenges.

2.1. Initial teacher education in New Zealand

The ITE landscape in New Zealand is dominated by traditional theory-based taught courses with practicum elements to support theoretical and pedagogical understanding and development (McPhillips et al., 2023). While Grudnoff et al. (2016) discuss how these courses are moving away from the 'apprentice model' approach and more towards reciprocal and reflective learning to support social justice, the critique remains of these programmes being theory-heavy (Whatman & Macdonald, 2017). This move to prioritising practice experience and the tacit knowledge associated with teaching has initiated the Teaching Council of Aotearoa to increase the required practicum time on all ITE courses (Kane, 2017). This move has opened the door for more employment-based training (EBT) courses in New Zealand and, therefore, greater importance on ensuring enriching experiences on practicum.

Developing employment-based training (EBT) courses for shortage subjects in the secondary sector is a priority for the New Zealand Government (Ministry of Education, 2020). The 2019 budget highlighted that there will be funding for 2480 additional trainee teacher places through EBT courses (Hipkins, 2019). This has continued to evolve with recent government tenders being released to provide mentor training programmes to support beginning teachers

(Ministry of Education, 2023). While there is an ongoing desire and financial incentive to reform teacher education, there are very few EBT courses internationally, and only two are currently in New Zealand. Linda Darling-Hammond (2010) writes, “one thing that is clear from current studies of strong programs is that learning to practice in practice, with expert guidance, is essential to becoming a great teacher of students with a wide range of needs” (p. 40). This statement is consistent with the literature on reforming ITE, emphasising the requirement for a robust, practical learning experience (Zeichner, 2023).

2.2. Collaborative partnerships in ITE

The strength of collaboration between schools and ITE institutions is a critical element supporting trainee teachers to enable change and improvement in their practice and in their schools (Bernay et al., 2020; Cohen et al., 2013; Whatman & Macdonald, 2017).

Collaboration is applicable at all levels with strong relationships required between school leaders and faculty staff, as well as individual teachers. The Teaching Council of New Zealand (2019) established this partnership as a requirement for all ITE programs “with mutual benefits that are explicit and interdependent, structured, and with a shared responsibility for success” (p. 10). In Australia, the Quality Initial Teacher Education Review (Department of Education Skills and Employment, 2022) recommended that collaboration between the school and the ITE provider must be a high priority, and reciprocal relationships should be developed to bridge the gap between theory and practice. Grudnoff and Williams (2010) assert that with this collective approach it is possible to “devise practicum models that would align with a school’s professional culture, meet university credentialing requirements, and contribute to more effective preparation of beginning teachers” (p. 35). However the good intentions to support collaboration are not always met with the lived experience which can be less than ideal for all members in the relationship (Cohen et al., 2013; Haigh & Ward, 2004). Bernay et al. (2020) found through reviewing the literature that there should be trust, mutuality and reciprocity for the relationship to be successful.

2.3. The importance of the triadic relationship

A central element of triadic collaboration is when feedback is provided to the PST from the VL and PST. Traditionally, the ITE institution has led the approach, which involves three main parties, the PST, ISM, and the VL, working together as a triad to integrate theory and practice (Figure 2). The main opportunity for this dialogue is during a triadic conference

(Cohen et al., 2013). The common practice involves the VL observing the PST teaching a lesson, after which the VL, PST and ISM meet to assess the PSTs performance (Jons, 2019). This process has a crucial role in ITE and is intended to support the PST in bridging the gap between theory and practice. Another aim of the conference is to enable a collaborative assessment based on the performance of the PST during practicum (Jons, 2019), however, the summative assessment requirements of the VL and the formative teaching practice focus of the ISM often contradict each other (Zhang et al., 2015). The traditional triadic relationship enables an imbalance, with an overwhelming influence from the school and mentor teacher (Cochran-Smith et al., 2014). A study based in New Zealand by Zhang et al. (2015) found that all members of the triad believed that the triadic conference was threatening, dishonest and distressing, with a weighted focus on summative assessment. While some studies indicate formative benefits to the triadic observation model (Jons, 2019) if the priorities held by the ITE institution and the mentor do not align, the PST receives mixed messages. Cohen, Hoz and Kaplan (2013) established that, ultimately, there are “conflicts and gaps between goals and actions, between the practicum triad, and between the two systems involved in the practicum: supervisors and mentors acting in different directions at the same time” (p. 29).

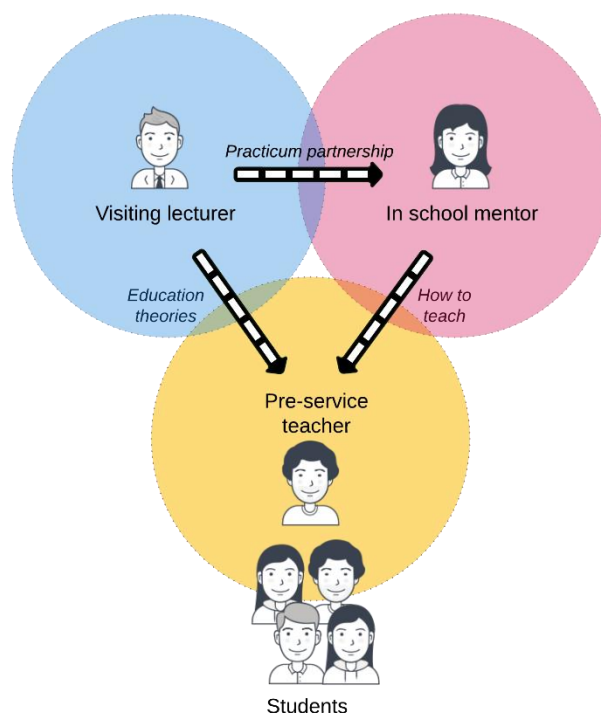


Figure 2. Traditional teacher training triad. Adapted from Bernay et al. (2020).

Note: Adapted from “Three models of effective school-university partnerships,” by R. Bernay, P. Stringer, J. Milne, & J. Jhagroo. 2020, *New Zealand Journal of Educational Studies*, 55(1), p. 138. <https://doi.org/10.1007/s40841-020-00171-3> Copyright 2020 by Springer. It was adapted with permission.

2.4. The theory-practice divide in initial teacher education

Sewell et al. (2018) confirm that the “divide between the *ivory tower* and the *chalkface* of the classroom” (p. 322) is at the center of the debate regarding the school-university partnership. Complexity exists within the interactions; the roles and responsibilities must be understood by each party for the practicum to be of value.

The historical legacy of the university driving the learning (Davis & Roper, 1982) has continued to exacerbate the perceived gap between the theory and the practice of teaching (Anwer & Reiss, 2023). This can have a negative impact on the development of the PST in numerous ways. PSTs regard practical advice from the ISM to be the key element of ITE (Hobson, 2002), however Waghorn and Stevens (1996) explain that PSTs also recognise the theory practice divide and feel powerless to change it, instead PSTs compartmentalise the separate components to mitigate any dissonance between how they teach, and how they would like to teach.

The divide between theory and practice is not only a belief held by the PST but also the ISMs and VLs due to poor communication and collaboration, further hindering the progress of the PST (Krichevsky, 2023). Some scholars suggest that as an antidote to the traditional dichotomous perspective, the theory practice divide should be seen as more of a nexus between educational theory and practice, with practice informed by theory and theory informed by practice (la Velle, 2019). Fred A. J. Korthagen has extensively researched and published findings based on the theory practice divide for the past three decades. While advocating the importance of moving beyond the simplistic views of theory and practice he confirms that there is not a single approach that can enable a theory-practice nexus (Korthagen, 2010), however there are a range of approaches that can support gap being reduced. The basis of this is a ‘realistic approach’ to education, with a focus on the knowledge skills and attitudes that are really being used in education (Korthagen & Kessels, 1999). He has discussed promoting reflective practice and continuous critical reflection on teaching practice to support the connection between theory and practice (Korthagen et al., 2006), this approach aims to dig deeper into the core values of the educator by questioning assumptions that can impact interactions with other educators and learners (Korthagen, 2014). This deeper reflection also emphasises a holistic approach to teacher education that needs to understand the real world context of the teaching environment, acknowledging that it may be different to the theoretical approach of the academic world (Korthagen, 2004). To

enable a holistic view a collaborative approach is required to reflect on experiences and learn from others experiences (Korthagen, 2009). Underpinning these approaches, Korthagen calls for an investment in the professional development of staff members involved in teacher training (Korthagen et al., 2006).

To better understand the theory-practice divide in ITE in New Zealand, the specific types of theories that form the foundation of teacher education courses and the extent to which these are embraced or contested by different stakeholders must be examined. Theories such as Vygotsky's *zone of proximal development* (ZPD) and culturally responsive pedagogy (Bishop, 2019) are commonly studied in ITE programs, providing PSTs with a theoretical framework for understanding student-centred and culturally adaptive teaching. Additionally, cognitive learning theories, such as constructivism and retrieval-based approaches (Brown et al., 2014), are introduced to help PSTs understand the processes of effective learning and memory retention. However, Ord and Nuttall (2016) reveal that PSTs in New Zealand often feel disconnected from this theoretical knowledge, viewing it as overly abstract and lacking in practical applicability. For instance, PSTs equated being prepared with "being knowledgeable," but they saw this knowledge as something that needed to be embodied through experience rather than simply held "in the head" (Ord & Nuttall, 2016, p. 359).

This divide is further exacerbated by differing perspectives held by ISMs and VLs. ISMs, who operate in the practical realm of everyday classroom management, often prioritise practical, craft-based knowledge, such as behaviourist strategies that can be immediately applied. In contrast, VLs tend to emphasise the importance of formal, research-based knowledge, advocating for reflective practices and constructivist approaches (Schön, 1983) that focus on a deeper understanding of teaching and learning processes. This divergence often leaves PSTs feeling caught between two competing expectations.

As Ord and Nuttall (2016) illustrate, PSTs in New Zealand expressed a need to connect theory with practice in a more meaningful way, highlighting the importance of embodied learning—where theoretical concepts are enacted and experienced in natural classroom settings. Such embodied experiences help PSTs internalise theoretical knowledge, making it more relevant to their professional practice (Ord & Nuttall, 2016). This ongoing tension between theoretical ideals and practical demands reflects the broader struggle to merge theory and practice in ITE, ultimately affecting the preparedness and confidence of PSTs as they

transition into their teaching roles. This gap is influenced by epistemological and ontological beliefs that shape the perspectives of all parties involved. By scrutinising these beliefs and viewpoints, we can strive for a more effective and practical alignment between theory and practice.

The gap between theory and practice is better construed as a mismatch between the observer's theory and the practitioner's own theory. Or to put it another way, what we still tend to label as 'theory' and 'practice' are more accurately seen as 'public' and 'personal' theories (Griffiths & Tann, 1992, pp. 70–71).

Therefore, another lens to examine the relationship between theory and practice in ITE is by exploring concepts of knowledge associated with the theory and practice of teaching. This can assist in enabling a granular view of the relationship between the two. Cochran-Smith and Lytle (1999) articulate a detailed framework through three conceptions of knowledge for teacher learning: 'knowledge-for-practice', 'knowledge-in-practice' and 'knowledge-of-practice'. Knowledge for practice is the conventional theory driven conceptual knowledge created in universities and in the traditional model transmitted to students to highlight pedagogical theories, subject content and general teaching principles. This knowledge can often perpetuate hegemonic academic perspectives which may not align with the context of the classroom and are far from the 'realistic approach' that Korthagen and Kessels (1999) advocate for. Knowledge of practice emerges from teachers experience in the classroom, encompassing practice insights gained from teaching, reflecting and interacting with learners and other educators. Knowledge of practice is closely connected to the approaches involving collaboration, critical deep reflection and professional development highlighted by Kothagen and colleagues as a way to reduce the theory practice gap (Korthagen, 2009, 2014; Korthagen et al., 2006). Knowledge in practice aims to capture the dynamic interplay between the theory and the practice. This involves teachers continuously developing their practice and adapting knowledge based on classroom realities and experiences, this knowledge domain is where the tacit knowledge of teaching is developed. The knowledge in practice supports the idea of a culminating theory practice nexus that bridges the gap between theory and practice. It suggests that understanding the knowledge needs of teaching means surpassing the idea that the formal-practical distinction captures all knowledge types in a way that each member of the triad can assimilate with. Knowledge-of-practice acknowledges that "practice is more than practical, that inquiry is more than an artful rendering of teachers' practical knowledge, and that understanding the knowledge needs of teaching means transcending the idea that the

formal-practical distinction captures the universe of knowledge types” (Cochran-Smith & Lytle, 1999, p. 274). This suggests that learning occurs across the professional life span and between the cultures and communities involved in teacher education. Theory and practice thus move from being consciously planned events to a way of being and thinking as a professional. Sewell et al. (2018) suggest a more maleleable *boundary crossing* approach as an effective way to integrate and understand the differing perspectives within practice-based contexts. Boundary crossing in this sense refers to the ability of individuals to move between and blend different cultural, institutional, and disciplinary boundaries, creating opportunities for meaningful dialogue and exchange. This approach allows for greater adaptability and responsiveness in navigating the complexities inherent in ITE, particularly when integrating theoretical and practical components. A key element of the challenge is finding productive and collaborative ways to work together in the ITE space (Sewell et al., 2018, p. 324).

2.5. Coaching in education

An opportunity to cross booundaries and provide aligned feedback to reduce the theory-practice divide is through the coaching process (Henning et al., 2015; Lofthouse & Thomas, 2015; Whatman & Macdonald, 2017). The requirement to consistently receive high quality practice related feedback and coaching shapes and develops the careers of all educators, and at the trainee stage it provides the means to understand what is working well, and what needs to be improved (Marshall, 2009).

It is important to clarify the distinction between coaching and mentoring, as both play distinct roles in supporting teacher development. Mentoring is often characterised as a long-term, relationship-based support mechanism in which an experienced mentor provides guidance to a less experienced mentee (Fletcher & Mullen, 2012). Mentoring typically focuses on overall professional development and may include emotional support, sharing of experiences, and providing career advice. In contrast, coaching, particularly in the context of CSC, is more goal-oriented and focuses on improving specific skills or competencies through structured feedback, which is a key feature of CSC. Coaching tends to be shorter-term and performance-focused, with an emphasis on reflective dialogue and actionable feedback that helps the coachee make immediate changes in practice. By drawing on these distinctions, CSC is positioned more as a coaching intervention, aimed at enhancing specific aspects of the PSTs' teaching practice through structured, real-time feedback, rather than as a broader mentoring relationship.

Joyce and Showers (1980) first proposed coaching in education as an approach to improve in-service training and the implementation of evidence based practices in classrooms, discovering the most effective training had cycles of professional learning, implementation of a specific teaching approach and peer feedback in small coaching groups. Developing from the supervisory conceptions of coaching (Joyce & Showers, 2002) are a range of coaching approaches which support more of a side-by-side approach (Blakely, 2001) which is similar to the distinction made by Ippolito (2010) stating that elements of coaching can focus on either responsive or directive styles. This is complementary of the agentic feedback and collaboration cycles described in the study by Bernay et al. (2020) above.

In the ongoing work on coaching by Knight (Knight, 2017, 2019; Knight et al., 2015) he finds evidence that coaching is an effective method to support the development of teaching practice, and should be included wherever professional learning takes place. This is echoed in a review of the literature by Kretlow and Bartholomew (2010) who state “preservice and in-service teacher training should include a coaching component whenever possible, to intentionally train teachers to use evidence-based practices in the classroom” (p. 293).

2.6. High quality feedback

Coaching is established as a powerful process and an essential element of coaching is the feedback provided in this process (Jones et al., 2018). While Sadler (2010) suggests that the relationship between the form, timing and effectiveness of feedback is “complex and variable with no magic formulas” (p. 536), he also advises that in any feedback model the shift must be away from “telling the students about the quality of their work (disclosure) and towards having them see and understand the reasons for quality (visibility), and in the process develop personal capability in making complex judgements” (p. 546). These key elements are also evident in research which advocates for a noticing approach to teacher improvement (Sherin & Van Es, 2009; Stoetzel & Shedrow, 2020; van Es & Sherin, 2002). Research has demonstrated that the timing of the feedback is often dependant on the task being performed (Hattie & Timperley, 2007). Conventionally a PST would receive feedback once a lesson had finished due to the constraints of a traditional classroom observation environment (Scheeler et al., 2006), this is known as deferred feedback. However, Kulik and Kulik (1988) found that deferred feedback is not as desirable as immediate feedback for improving process level teaching performance. It is possible, although cumbersome and less common, to provide

immediate feedback. With immediate feedback the lesson is interrupted by the ISM or VL to provide the feedback, disrupting the PST, and the learners (Scheeler et al., 2006). While there are disadvantages with this approach immediate feedback can scaffold the concept of ‘reflection-in action’ by Donald Schön (1987), and has the further potential to build the efficacy of PSTs in developing another of Schön’s concepts ‘knowing-in action’ which is associated with the tacit knowledge that is often unobtainable to PSTs (Cochran-Smith, 2010). The provision of feedback has been a focus of Boud (2015) who insists that “learners must develop their capacity to calibrate their own judgements and appreciate the qualities of their work and how it might otherwise be improved” (2015, p. 4), this builds on concepts related to Schon’s work on ‘reflection in action’ and ‘knowing in action’ (1987). These concepts relate directly to the provision of feedback to teacher trainees who require a range of feedback both immediately and over time to support growth and development. The links between immediate feedback, development of ‘reflection in action’ and instantaneous access to tacit knowledge holds the potential to augment the feedback process with technology to support and develop PST efficacy in the classroom.

2.7. Bug in ear technology

With the affordance of new technologies there are further opportunities regarding the provision of feedback for it to be effective and potentially collaborative. The work of Scheeler (Scheeler & Lee, 2002; Scheeler, McAfee, Ruhl, & Lee, 2006; Scheeler, Congdon, & Stansbery, 2010; Scheeler, McKinnon, & Stout, 2012; Randolph et al., 2020) provides a foundation to explore how BIE technology has been used to provide synchronous high quality feedback in classrooms to enhance teaching efficacy.

A key characteristic of BIE technology is the ability to modify the way that feedback is provided and acted upon, closely associated with single loop feedback processes (Carless, 2019). Single loop feedback refers to immediate corrective actions that focus on achieving predefined goals without questioning underlying assumptions. It emphasises making adjustments within existing practices rather than challenging or altering the broader framework. For example, if a preservice teacher (PST) incorrectly implements a teaching strategy, a visiting lecturer (VL) can use BIE technology to provide immediate feedback, such as, "remember to maintain eye contact with all students when asking questions." By having a direct and discreet link to the PST the VL or ISM can communicate in real time using remote virtual feedback via video observation and a BIE device without disrupting the

flow of the teaching episode (Horn et al., 2020; Scheeler et al., 2010). This approach is particularly relevant for PSTs who often require scaffolding to perform evidence-based practices with fidelity (Rodgers et al., 2019). On the other hand, double-loop learning (Argyris, 2007) involves a deeper level of reflection where learners question and modify the beliefs or assumptions that underlie their actions. In the context of BIE, double-loop learning can be facilitated through reflective discussions that encourage PSTs to examine their pedagogical beliefs and consider broader changes to their teaching approach. By integrating both types of learning, CSC has the potential to not only support immediate improvements in practice but also foster deeper, more meaningful professional growth.

Within the research from Scheeler (2012) there are further compelling arguments to justify the use of immediate feedback via BIE technology. One key argument is that immediate feedback reduces the likelihood of trainee teachers perpetuating negative habits and ineffective practice, which can permanently embed in their teaching. Immediate feedback interrupts these habits by alerting PSTs to modify their teaching techniques during the same lesson, allowing them to correct their mistakes in real time. An interesting element in Scheeler's (2010) research is the method used to develop the protocols associated with the feedback provided during the synchronous sessions, the teaching teams agreed on keywords and instructions that would not distract from the teaching and flow of lesson, but would prompt a change or development in behaviour. This falls within the theme of co-construction and agency within the triad to support a third space as emphasised in much of the reviewed literature in the previous section (Green et al., 2020; Grudnoff & Williams, 2010; Sewell et al., 2017). Scheeler has continued to investigate *iCoaching* and in her most recent work continues to find benefits in the use of BIE technology and has linked this with an improvement in student academic performance (Randolph et al., 2020). This continued work moves towards addressing a gap in the research regarding learner outcomes with regards to the impacts of BIE feedback on teaching performance (Sinclair et al., 2020).

Although studies by Randolph (2020), Rock (2009; 2014) and Scheeler (2002; 2006; 2010) demonstrate that using BIE technology to receive immediate, corrective feedback improved teaching performance in a convenient and unobtrusive method there were limitations. In all instances the feedback was provided to teachers working in one on one scenarios which does not involve the cognitive load and complexity of receiving feedback while in whole class instruction (Benedict et al., 2016), this would be a consideration if the BIE tool was used in a

more general classroom setting. Sinclair et al. (2020) reviewed 32 studies where synchronous performance feedback was delivered via technology to impact teaching. Many of the studies were of high methodological quality and qualified synchronous feedback via technology as a valid evidence-based practice. However there were limitations in that many of the studies examined discrete interventionist behaviours and were executed in isolated environments indicating doubts around the benefits on general teacher skills or students outcomes (Sinclair et al., 2020). In addition, the authors claim that the use of technology tools to provide synchronous feedback is intensive and not “feasible or desirable” (2020, p. 97) for use with all teachers. Owens et al. (2020) explain that the BIE device used in their study only worked in certain parts of the classroom, restricting movement of the teacher. It is problematic that in the twenty years of developing BIE for classroom use there continue to be challenges in the effectiveness of the technology. None of the studies in the reviewed literature described experiences regarding the provision of CSC from the VL and ISM simultaneously, indicating a gap in current research.

2.8. Collaborative partnerships in the third space in education

The evolution of collaborative partnerships in educational settings has witnessed significant transformations beyond traditional approaches. Contemporary scholarship emphasises the importance of reconceptualising these relationships, particularly within ITE. Zeichner (2010) introduces the concept of "third spaces" in teacher education, arguing for the creation of hybrid spaces that bring together practitioner and academic knowledge in new ways to enhance the learning of prospective teachers.

Recent research by Bernay et al. (2020) proposes advanced frameworks for collaboration that transcend conventional models. Their work emphasises the necessity of evolving triadic relationships to prioritise professional learning that enhances classroom practice, benefiting both the professional learning community and the broader school ecosystem (p. 140). A crucial aspect of this evolution is the recognition of PSTs as equal partners within these relationships, challenging traditional hierarchical structures.

The concept of a hybrid or "third" space emerges as a central theme in progressive approaches to educational collaboration (Green et al., 2020; Zeichner, 2010). However, as Martin et al. (2011) note, establishing and maintaining these spaces presents significant challenges, including personnel turnover and inadequate sustained funding to support

relationship building. Despite these obstacles, the potential benefits of dismantling historical hierarchies in favour of shared visions remain compelling, particularly for PSTs and their students. These collaborative spaces should foster what Darling-Hammond (2017) describes as "learning-centred" environments that encourage innovative practices and experimentation tailored to diverse learner needs.

The theoretical underpinning of the third space concept draws from socio-cultural theory, originally conceptualised by Bhabha (1994) to explain the complexity of identity formation through overlapping cultural characteristics. In educational contexts, Moje et al. (2004) expanded this framework to encompass three key functions:

1. Bridging marginalised discourses
2. Facilitating navigation across different discourse communities
3. Creating dialogic spaces for competing discourses

Gutiérrez's (2008) extensive work further expands this concept within educational settings, emphasising what they characterise as transformative spaces where expanded forms of learning and knowledge development are heightened. The notion of crossing physical, emotional, social, or cultural boundaries to create shared understanding remains a central theme throughout the literature.

Ellis et al. (2020) argue that these spaces transform conventional roles and responsibilities, creating new learning opportunities that align with recommendations from multiple scholars (Bernay et al., 2020; Grudnoff & Williams, 2010). Cochran-Smith and Lytle's (1999) assertion that theory and practice cannot be fully separated underscores the significance of these intermediate spaces. The third space effectively bridges the often-dichotomous physical separation between university campuses—where PSTs engage with educational theory—and actual classrooms where this theory is enacted (Cuenca et al., 2011).

While various studies have demonstrated success in creating hybrid third spaces to support triadic collaboration (Howell et al., 2017; Wetzel et al., 2018), a significant limitation remains in their ability to provide immediate feedback. Recent research emphasises the importance of rapid feedback mechanisms in practice-based environments for accelerating professional development (O'Brien et al., 2021; Rock et al., 2014). As Kennedy (2016)

argues, this gap between theory and practice-based feedback represents a critical area for future development in teacher education programmes.

In summarising the literature there is a need to nurture collaborative relationships within the triadic relationship to reduce the theory practice divide. It is well established that teachers require feedback to improve their practice in both short- and long-term cycles. For feedback to be effective in short single loop feedback processes it must be systematic, corrective, positive and immediate. Coaching is a useful technique to support the double loop feedback process and the development of teacher efficacy in longer cycles of feedback (Carless, 2019). For PSTs to be effective the third space must be utilised to support successful partnerships. However there does not seem to be a wide range of evidence based on the combination of remote and synchronous coaching to support these concepts for classroom teaching. There is also minimal evidence describing a collaborative synchronous approach which could provide strengthening of the third space as well as opportunities to use short- and long-term feedback cycles for coaching. It is clear within the studies discussed that technology is simply the tool to provide feedback. Many studies have attempted to emulate the existing experience by substituting the coach with the tool, rather than augmenting the whole experience with a new approach.

CHAPTER THREE: PAPER 1 - COLLABORATIVE SYNCHRONOUS COACHING TO BRIDGE THE THEORY- PRACTICE DIVIDE IN INITIAL TEACHER EDUCATION: A PILOT STUDY

3.1. Chapter introduction

Chapter Three initiates the research journey with a pilot study to test the concept and feasibility of CSC as a tool to support triadic collaboration and bridge the theory-practice divide in ITE. The chapter contributes to answering research question one: how might CSC support triadic collaboration to bridge the theory-practice divide while providing feedback in initial teacher education? The pilot also explored the user-defined focus areas; sharing tacit knowledge (RQ2) and providing questioning feedback (RQ2a). The pilot study, framed within a PAR approach, involves diagnosing issues, taking action, and reflecting on outcomes. It evaluates the usability and utility of CSC for providing feedback and fostering triadic collaboration among PSTs, ISMs, and VLs. Data were collected through surveys, field notes, observations, and focus group interviews, and analysed using thematic analysis and descriptive statistics. This study operates at the micro-scale of the M3 framework, focusing on the classroom activity, and behaviour of the triad within the teaching context.

In review with Educational Technology Research and Development
[Gander, T.](#) and [Dann, C.](#) (2023), Collaborative Synchronous Coaching to Bridge the Theory-Practice Divide in Initial Teacher Education: A Pilot Study, *Educational Technology Research and Development*

3.2. Abstract

This pilot study investigates how collaborative synchronous coaching (CSC) facilitates triadic collaboration during the practicum feedback process. CSC aims to bridge the gap between theory and practice and provide immediate teaching feedback to preservice teachers. CSC is a live Bug-in-ear (BIE) feedback technique that enables all triad members to see and hear classroom practice and feedback in real time. Participants established the pilot's aims and additional user-defined focus areas to establish best practices for using the tool.

The study found that CSC enabled triadic collaboration and provided a mechanism to bridge the theory-practice divide. Tacit knowledge could be shared immediately between the triad, directly impacting PST practice. It was essential to familiarise the classroom students with the observers and establish who provided the real-time feedback, when feedback was provided and the content of the feedback. Preservice teachers struggled to process questioning feedback; however, they agreed it was a beneficial practice to improve. Overall, the real-time triadic dialogue between the PST, VL and ISM strengthened their connection, providing more significant support for collaboration and pedagogical progression. Further studies should investigate the capability of CSC in strengthening hybrid spaces in ITE and its impact on teaching practice.

Keywords: Collaborative Synchronous Coaching, Triadic Collaboration, Practicum Feedback, Preservice Teachers, Bug-in-ear Feedback, Theory-Practice Divide

3.3. Introduction

Initial teacher education (ITE) is crucial in preparing pre-service teachers to become effective educators. However, the theory-practice divide has long been identified as a challenge in ITE. There is a gap between the theories and methods taught in teacher education programs and teachers' actual classroom practices (Cochran-Smith & Zeichner, 2009). This can lead to feelings of inadequacy or frustration among pre-service teachers (PSTs), who may feel unprepared to deal with the realities of the classroom. Differences in expectations between teacher education programs and placement schools can compound the issue (Bernay et al., 2020). For example, a teacher education program may prioritise specific teaching methods or theories, while a placement school may have different priorities based on the needs of its students and community (Cochran-Smith et al., 2014; Haigh & Ward, 2004). One way to address this divide is through triadic collaboration, which involves the PST, the in-school mentor (ISM), and the visiting lecturer (VL) working together to integrate theory and practice

(Hart, 2020). In Australia, the Quality Initial Teacher Education Review (Department of Education Skills and Employment, 2022) recommended that collaboration between the school and the ITE provider must be a high priority and reciprocal relationships should be developed to bridge the gap between theory and practice. A central element of triadic collaboration is when triadic teaching practicum feedback is provided to the PST during a triadic conference (Cohen et al., 2013). While the conference aims to enable a collaborative assessment based on the performance of the PST during practicum, the summative assessment requirements of the VL and the formative teaching practice focus of the ISM often contradict each other (Zhang et al., 2015). The triadic conference can exacerbate the theory-practice divide without a more open and inclusive approach.

3.3.1. Aims

This pilot study explores a new coaching technique, Collaborative Synchronous Coaching (CSC), to enable triadic collaboration, bridging the theory-practice divide while providing teaching feedback.

3.3.2. Rationale for the pilot study

This study stems from the researcher's dual role in co-ordinating practicum partnerships and as a VL. Experiencing the value of the differing perspectives within the triadic relationships but unable to find an effective or timely way to share knowledge with the triad. The need to provide expert curriculum and pedagogical advice to trainee teachers in a geographically challenged country was also amplified by COVID-19 and the government's requirement to restrict physical access to schools. A remote tool was required to bring together all triad members in challenging times.

3.3.3. CSC

CSC is built on the concept of Bug-in-ear (BIE) coaching. BIE enables a direct and discreet link to the PST. The VL or ISM can communicate in real-time, giving remote virtual feedback via video observation with a BIE device without disrupting the lesson (Horn et al., 2020). Scheeler (Scheeler et al., 2006, 2012) explores how BIE technology has been used to provide high-quality synchronous feedback in classrooms to enhance teaching efficacy. Research spanning the last two decades has demonstrated that BIE coaching is an effective evidence-based practice (Sinclair et al., 2020). CSC augments BIE coaching by enabling the

ISM and VL to simultaneously interact with the PST remotely (figure 1) while maintaining a private backchannel, hence the collaborative element.

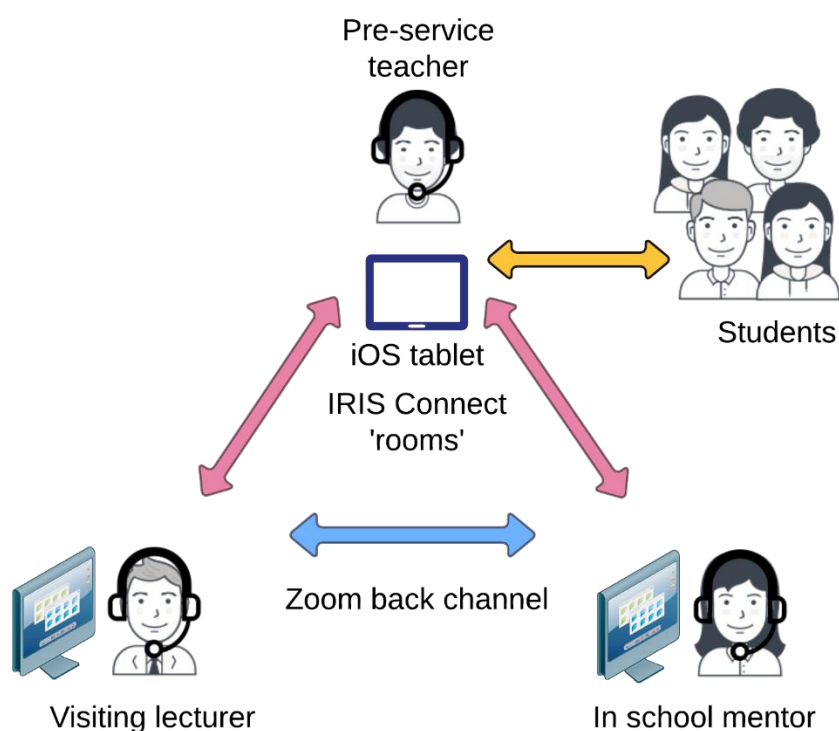


Figure 1. Collaborative Synchronous Coaching

Although no dedicated tool currently supports CSC, IRIS Connect was the central platform used in this pilot study. A coaching tool that primarily allows teachers to record, review and share their video reflections on teaching practice on a secure server. The technology also supports ‘live coaching’ or BIE coaching, where a coach can remotely observe, listen, and speak directly to a teacher in the classroom. In live coaching, the PST wears a Bluetooth earpiece connected to an iOS device with a camera. The iOS device transfers the video and audio footage from the classroom to the coaches over an encrypted wireless connection, who can respond verbally by clicking a ‘speak’ button in the web application. While the VL and ISM could communicate with the PST through IRIS, Zoom was also used as a back channel between the VL and ISM. This enabled dialogue without disturbing the PST. This process evolved during the pilot. The ‘Rooms’ function in IRIS Connect was used to communicate with the PST. It provided easy connectivity while maintaining an encrypted connection necessary for the school and the ethical conduct approved in this study.

3.3.4. Provision of teaching feedback with CSC

Boud and Dawson (2021) developed a teacher feedback literacy competency framework for use in higher education, recommending that on a macro scale, elements of feedback should be consistent between individuals and situated in authentic environments. CSC enables these conditions to be met through both ISM and VL being able to provide transparent (as in it is audible to the other party) teaching feedback to the PST during the authentic environment of the classroom. While research can suggest favourable conditions for delivering feedback, Sadler (2010) suggests that the relationship between the form, timing and effectiveness of feedback is “complex and variable with no magic formulas” (p. 536), and feedback timing often depends on the task performed (Hattie & Timperley, 2007). Therefore, no clear guidelines were established at the beginning of the pilot on how, when, and who would provide the feedback due to the unknown complexity of real-time triadic feedback.

3.3.5. Data sources and analysis

The 3-Level Evaluation Framework (Vavoula & Sharples, 2009) guided the design of the first iteration of data collection in the pilot (Appendix I), as it has been successful in assessing mobile tools in an educational context (Koole et al., 2018). The first level of the 3-Level Evaluation Framework tests the proof of concept and whether the tool can meet the user’s needs. Participants were asked open-ended questions in a pre-intervention survey regarding their requirements for triadic collaboration and rated a range of evidence-based BIE teaching feedback practices. The evidence-based practices were included to guide the use of the tool based on previous BIE research, which established that teaching feedback should be encouraging, questioning, corrective, or instructive (Horn et al., 2020) and systematic, corrective, positive and immediate (Scheeler et al., 2010). In addition, sharing tacit knowledge (Schon, 1987) and supporting teachers to notice (van Es & Sherin, 2002) were included in the preliminary requirements rating scale due to their importance in the established VL teaching feedback model. From these results, a post-use survey was designed collaboratively over several focus group sessions. The research questions were co-constructed based on a discussion of the survey results.

In the second stage, each triad used CSC three to four times over six weeks. The CSC sessions lasted from 10 minutes to an hour, depending on the type of lesson and, at times, technical limitations. Within each implementation cycle, field notes were recorded on any technical modifications required to improve the use of CSC; improvements were shared with all triads to apply in their practice.

Stage	Action	Participants
1: Establishing user needs	Pre-intervention scoping survey was completed, a post-use survey developed collaboratively, triadic groups discussed implementation of CSC, pre-implementation technology setup.	4x Triads
2: Implementation cycles	Each triad used CSC 3-4 times over six weeks. Completion of post-use survey and ongoing reflection on field notes. Ongoing refinement of CSC implementation	4x Triads
3: Reflection and evaluation	60-minute semi-structured interview with each triad	4x Triads

Table 2. Research Steps

At the end of the pilot, qualitative semi-structured group interviews were used based on shared data from the field notes and the research questions. Participants were interviewed once for 40-60 minutes; the interviews were transcribed using OtterAI and analysed using deductive thematic analysis (Clarke & Braun, 2017) based on the co-constructed research questions. Participants were then shared the transcripts of all interviews and were invited to take part in the analysis and add to further discussion of the findings.

3.3.6. *Participants and Place*

An invitation to participate in the pilot was sent to 64 teachers on a two-year postgraduate master's level practice-based ITE course; four PSTs could participate with their ISM and VL. Working relationships had been established in each triad before the study. All preservice teachers in this study had been using IRIS Connect as a reflective video tool for over a year, and their schools and students have already provided informed consent to permit the tool to improve teaching practice.

There were twelve participants in the study, including the author. Institutional ethics processes were followed, and consent was obtained. Pseudonyms were given to all participants in this study.

Coaching triad	Position in program	Years of teaching/coaching	Number of sessions using CSC
<i>Triad 1</i>			
Alex (VL1)	Visiting lecturer (Researcher)	20	4
Ryan (PST1)	Pre-service teacher	2	
Peter (ISM1)	School Mentor	25	
<i>Triad 2</i>			
Samantha (VL 2)	Visiting lecturer	17	3
David (PST 2)	Pre-service teacher	2	
Grace (ISM 2)	School Mentor	23	
<i>Triad 3</i>			

Coaching triad	Position in program	Years of teaching/coaching	Number of sessions using CSC
Heather (VL 3)	Visiting lecturer	20	4
Ethan (PST 3)	Pre-service teacher	2	
Brandon (ISM 3)	School Mentor	35	
<i>Triad 4</i>			
Hine (VL 4)	Visiting lecturer	14	3
Kevin (PST 4)	Pre-service teacher	2	
Olivia (ISM 4)	School Mentor	20	

Table 3. Pilot study participants

3.4. Findings

3.4.1. Stage 1: Initial requirements from participants

The open-ended and Likert scale pre-intervention requirement questions were analysed and summarised based on each user group (VL, ISM, PST). Findings were shared with the participants, and it was collectively decided that in addition to triadic collaboration, CSC should also support the sharing of tacit knowledge and provide feedback using a questioning approach. These aligned with the coaching approach that the VLs had already established through programme guidelines.

Based on the initial requirements and group discussions, the following research questions were developed to establish if CSC met the requirements of the pilot study and the participants:

1) How might CSC support triadic collaboration to bridge the theory-practice divide while providing feedback?

- 2a) How might CSC assist in delivering user-defined goals: Sharing tacit knowledge?
- 2b) How might CSC assist in delivering user-defined goals: Providing questioning feedback?
- 3) What are the best practices when using CSC?

3.4.2. Stage 2: Implementation

Throughout the pilot, regular check-ins via email, phone or text message were used to gather field data, along with the post-use survey. An initial challenge was the overall noise generated through CSC; isolating audio from each source (PST, ISM and VL) was a priority. This required a third-party Google Chrome plugin to reduce the volume on the individual IRIS Rooms Chrome browser but maintain volume on the Zoom backchannel to keep the discussion going between the ISM and the VL without it being overpowered. The PSTs mentioned that it was sometimes hard to concentrate on the physical classroom and the virtual prompts from the two separate voices. It was decided through discussion that only one pre-arranged person (ISM or VL) would provide the feedback via BIE. Feedback timing was also a challenge, and the ISMs commented on how it felt rude to interrupt the PSTs. To mitigate this, discussions in each triad established when feedback was provided, either during a pause in the lesson or when the PST stood in a particular location in the room. The PSTs preferred to use either keywords, instructive coaching or the questioning style previously established. The VLs found that the ability to talk with the ISMs had huge advantages, from setting goals and targets for improvement, to understanding more about the context of the class that was being observed. The collaborative dialogue was essential, and VLs and ISMs agreed that the microphone should be muted on the back channel so the PSTs did not have to listen to the discussion unless a specific instruction required a response. As the pilot progressed, the participants began to feel more comfortable with the technology and allowed adequate time to set it up and test it before a coaching session.

3.4.3. Stage 3: Focus group data

At the end of the pilot, the focus group enabled each triad to reflect on the research questions, what worked well, what needed improving, and recommendations for future iterations.

RQ1 How might CSC support triadic collaboration to bridge the theory-practice divide while providing feedback?

CSC's unique feature was the value of having two knowledge sources crossing over and being made available to the PST in real-time. Therefore, PSTs indicated collaboration as one of the main benefits of CSC. "Two different backgrounds merging, one person from the school and one person not, or one person from your curriculum area and one person, like, your behaviour management specialist ... trying to mesh, the curriculum and the pedagogy together" (David PST). Discussions highlighted that often the VL does not have the curriculum knowledge of the ISM and may not be able to comment on this practice effectively without a conversation with the ISM.

Another PST also saw the collaborative benefit of how shared goals could be established quickly and transparently with a consistent and unified voice. Varying viewpoints benefited PST Kevin, who wanted to "just get as much advice from different people as I possibly could ... it's really useful to hear different perspectives and different opinions and learn that there are different ways of doing it." Kevin (PST) also appreciated the collaboration to support an understanding of the varying demands of each member of the triad: "Having something which really strengthens the relationship between ... all of the parties involved in the work that I'm doing has been really powerful ... it's kind of helped to strip back those hierarchies."

Collaboration also seemed to benefit the VL and ISM. By having two observers, the VLs and ISMs commented that they felt more relaxed with less pressure on them to notice everything that was happening in the classroom. "I didn't have to look at everything ... we could rely on each other, Olivia and I ... because there were two pairs of eyes" (Hine VL). In addition, collaborative feedback had benefits in upskilling members of the triad. The VL would have the opportunity to learn more about the school's context and culture, which was tacit to the ISM. The ISM appreciated listening to the VLs experienced feedback; this was reciprocal as it was beneficial for the VL to hear through the collaborative dialogue that the ISM had been providing similar feedback to the PST. Overall, the collaborative element seemed to shift the focus of the feedback from an assessment activity to a learning activity for all triad members. "In the past, lesson observations have felt more like an assessment from both ends. You know, the student teacher needs to go through that process of getting a lesson observation to tick the box kind of thing ... this seemed to me to be more of a learning exercise in all of us" (Peter ISM).

RQ2a User-defined requirements: Sharing tacit knowledge

CSC supported the two observers in discussing what they noticed in the classroom; they sometimes agreed but also challenged each other on how they perceived practical teaching and learning. This was echoed by Peter (ISM), who noted the different lenses that each observer looked through. For example, Peter would look at the classroom culture and beyond, which the VL might not be able to see. This, in turn, would inform the feedback that the VL could provide, reinforcing the collaborative benefits of CSC. “What does that [the observed teaching practice] tell me about not just the culture in the classroom, but the culture of the school and the boy’s attitudes towards their learning? So it’s very big, a big picture aspect to it. Which I thought was really valuable and I was impressed with.” There was an overt understanding of the strengths of each observer and how they could be combined to provide the most valuable feedback. “I had the tacit knowledge that I had about the boys, about the setting, about the dynamics within the group. There’s a whole lot of stuff there that I guess was valuable to you [VL], or was interesting to you, or, as you said earlier, contextualised what you were seeing.” Heather (VL) noted that she would always be an outsider in the school, however, to have the conversation with the ISM while using CSC enabled her to frame her feedback in a way that took “the unseen” into account, “you usually would not be able to have that [conversation] at the back of the class because it would be too noisy.” PSTs commented on being made aware of elements of the classroom that they may not have usually noticed. “Just having Olivia (ISM) and Hine (VL) be able to see things that I couldn’t, and in a practical environment ... more physical, spatial awareness ... just noticing, noticing things where kids might go off task ... so I’m noticing the whole room” (Kevin PST).

RQ2b User-defined requirements: Provision of questioning feedback to PSTs

Questioning feedback was a focus of CSC sessions when requested by the PST. During these sessions, the observers aimed to provide more questions than instructions. However, this was disruptive for PST Ryan “because I have to change my thoughts and planning for the lesson on the spot to think about new questions and tasks and to think about the questions themselves.” While some PSTs struggled to cope with the demands of receiving questioning feedback that required thinking or a response, some saw how it could be beneficial, and they felt that it had worked; “the most challenging, I think, is being asked a question but that’s really useful ... it’s kind of engaging you to think critically about what you’ve done.”

Understanding that this was a challenge, some PSTs suggested it would be valuable to persevere with supporting the PSTs in being comfortable responding to a question about their practice rather than just being told what to do. “The one-sentence prompts are really useful. I think that if we were to do it, it is a longer process, having a session after the first mentoring session where you agree to a series of prompts and questions, and what's working for us as a group, will be really effective” (Kevin PST).

RQ3 What are the best practices when using CSC?

The conclusion of focus group discussions focussed on what steps would have to be taken to support the effective use of CSC to enable triadic collaboration. The following points were prominent in the discussions.

Establishing roles, responsibilities, and outcomes

This recommendation was prominent through data obtained in field notes and the focus group. CSC worked effectively if it was initially made clear who would set up the technology, who scheduled the online meeting, what the focus of the feedback would be, who would provide feedback, and when.

Seamless technology solution

Participants recommended that an all-in-one system hosting the classroom connection and the backchannel would be ideal. The ability to mute any or all channels was a requirement, and Brandon (ISM) suggested using ‘Discord’ as an alternative, as this could process a range of audio channels. The observers also noted that it would be helpful if you had multiple monitors available so there could be a screen for the classroom observation and a screen for the backchannel.

Transparency

Participants mentioned it was important that classroom students were introduced to the observers so they knew who they were and what they were observing. This could happen either face-to-face or virtually if this was not possible. This demonstrated a level of respect for the students.

3.5. Discussion

The pilot study aimed to test a new coaching technique, CSC, to enable triadic collaboration, bridging the theory-practice divide while providing practicum teaching feedback. Key requirements based on user needs (Vavoula & Sharples, 2009) indicated that sharing tacit knowledge and questioning feedback was also important. Best practices for using the tool emerged with improvements in each implementation cycle.

The findings suggest that CSC can enable triadic collaboration, bridging the theory-practice divide while providing immediate feedback. The connection between curriculum and pedagogy, as well as the school culture and requirements of the ITE institution, can be shared to inform PST teaching practice immediately. Elements of this were discussed by the participants, who said that the discussions were far less compartmentalised and were more transparent, which could lead to enacting the beliefs of Cochran-Smith and Lytle (1999), who state “practice is more than practical, inquiry is more than an artful rendering of teachers’ practical knowledge, and understanding the knowledge needs of teaching means transcending the idea that the formal-practical distinction captures the universe of knowledge types” (p. 274). CSC could potentially create what Zeichner (2010) describes as an opportunity to move away from the divide between theory and practice, utilising a hybrid approach to develop a ‘third space’. While there have been successful studies that aim to create hybrid ‘third spaces’ to support triadic collaboration (Howell et al., 2017; Wetzel et al., 2018), they have not been able to provide immediate feedback, which can support more rapid development in practice-based environments (O’Brien et al., 2021; Sinclair et al., 2020). Studies have highlighted a preference for PSTs to receive immediate feedback to improve instructional performance (Gürkan, 2018; Wilcoxon & Lemke, 2021). Immediate feedback can enable the PST to react ‘in the moment’ and scaffold the concept of ‘reflection-in action’ by Donald Schön (1987) and has the further potential to build the efficacy of PST in developing another of Schön’s concepts, ‘knowing-in action’, which is associated with the tacit knowledge that is often unobtainable to preservice teachers (Cochran-Smith, 2010).

CSC also met the participant requirements to receive immediate feedback that could share tacit knowledge. Understanding the ‘unseen’ culture of the school was an example of tacit knowledge held by the ISM, but through CSC, the VL and PST also had access to that knowledge. They could respond accordingly ‘in the moment’, for example, understand pupil behaviour based on previous events. Boud (2015) states, “learners must develop their capacity to calibrate their judgements and appreciate the qualities of their work and how it

might otherwise be improved” (2015, p. 4); Tacit knowledge enables a calibration to the environment, and being able to adapt in the moment will result in a learning experience. Further building on concepts related to Schon’s work on ‘reflection in action’ and ‘knowing in action’ (1987). The links between immediate feedback, development of ‘reflection in action’ and instantaneous access to tacit knowledge holds the potential of CSC to augment the feedback process to support and develop preservice teacher efficacy in the classroom – this is amplified when applied to all members of the triad; VLs can provide contextualised feedback to PSTs when combined with the tacit knowledge of the ISM. Regarding teaching practice, it was perceived that real-time feedback had an immediate impact and, in some instances, was more helpful than delayed feedback. “It’s kind of like having an extra pair of eyes to like spy on stuff” (PST David).

Immediate questioning feedback could be delivered through CSC. However, some participants struggled with responding. This could be through being reluctant to change the lesson’s course, as PST Ryan suggested, or through an increase in cognitive load. Kehrwald et al. (2019) found that PSTs receiving BIE feedback while also under the pressure of the training environment may reach their cognitive capacity and suggest that training familiarity with the tool could alleviate this. Coninx (2014) suggested that members of the coaching triad meet to discuss prompts so the PST can be prepared; however, when applying questioning feedback, this may be difficult due to the organic nature of using questions in feedback. Overall the feedback provided during CSC aligns with research from Jensen et al. (2022), who support the notion that a new paradigm of feedback is required, supporting a ‘making meaning’ process through feedback encounters, which are sustained and often collaborative.

Field notes and focus group data reinforced that the practical use of the tool should be guided by negotiation between the triad. Discussions in each triad should be initiated to establish when feedback was provided, either during a pause in the lesson or when the PST went and stood in a particular location in the room. This is in line with suggestions from Scheeler’s (2010) BIE method, where teaching teams agreed on keywords and instructions that would not distract from the teaching and flow of the lesson but would prompt a change or development in behaviour. This approach falls within the theme of co-construction and agency within the triad to support a third space, as emphasised by Zeichner (2010). New understanding established from this pilot indicates it is vital to recognise how the students in the classroom would meet the observers, either face-to-face or online. Isolating the audio so

that the backchannel conversation could continue without disrupting the PST was essential, as was selecting one pre-arranged person to provide the feedback via BIE. As the pilot progressed, the participants began to feel more comfortable with the technology and were allowed adequate time to set it up and test it before a coaching session. Ideally, an all-in-one solution with a reliable Bluetooth connection would alleviate technological challenges and adequate training and support.

3.5.1. *Lingering tensions*

For some PSTs, the pressure of being coached and sometimes, in their minds, being observed or assessed, combined with the sporadic difficulties of troubleshooting the technology, caused stress and discouragement when using CSC. Brandon (ISM) commented that it could be used as a “kind of Big Brother [observation] tool ... student teachers can be quite stressed out by the fact that they've got somebody in the ear, kind of almost telling them off every five seconds ... so it does depend on the relationship.” Safe relationships were a common theme in discussions; since all participants volunteered to participate, it was assumed that they felt safe.

Another tension arose when discussing the most suitable time to apply CSC in the practicum. The PSTs were unsure when it could be integrated; David (PST) said it would be too overwhelming in the first year. However, Kevin (PST) thought, “it would be incredibly helpful, particularly a teacher coming in with little to zero teaching experience.” Ryan (PST) suggested a middle ground with “traditional observations to start with for at least the first three or four and then moving on to earpiece and two people could be an option.” However, the VL and PST saw the benefits of introducing CSC at the outset; “I think this tool will be great at the beginning of the teacher training because there'll be lots more to communicate on an instant basis ... you've got more opportunities at the beginning to have that development” (ISM Olivia). All participants felt that the learning curve would progress much faster due to simple mistakes being corrected immediately, and Peter (ISM) noted it could depend on the type of feedback that you provide, “perhaps more instructive towards the beginning, and more questioning towards the end [so they] don't develop negative habits, but then also enable critical reflection when more comfortable with the culture of the school.” Peter also noted that it was essential to understand the school's culture and the pedagogical goals of the training programme as early as possible in the practicum.

The VL said they were uncomfortable with the more direct style of feedback they provided through the remote CSC approach. “I find it quite difficult in the moment to be very direct ... I wouldn't go into a mentoring conversation, giving that direct feedback straightaway; it would be more organic, natural, asking some reflective questions” (Heather VL). This reiterates the importance of preliminary and ongoing conversations based on how all triad members interact with CSC.

3.5.2. *Limitations*

The technology was not designed to support this approach, and every triad experienced technical difficulties ranging from Bluetooth headphone connection failure to login errors. Most of the challenges were user based. However, this is a consideration due to the teacher's busy role; any technology used in the classroom must work seamlessly.

With the lead researcher as a participant, there is potential bias to acknowledge. PST participants in the study had been on the ITE programme for a year before the pilot. VLs had worked with the ITE organisation for two to four years; the researcher had a professional relationship with all PST and VL participants. This could have influenced discussions and outcomes on establishing the needs of the pilot as well as reflecting on and evaluating CSC.

3.5.3. *Conclusion and Future Directions*

The theory-practice divide has been a well-documented challenge within ITE. CSC is a technique that can improve collaboration between all triad members to reduce the theory-practice divide. CSC augments traditional BIE coaching by enabling rich dialogue and transparent communication between all parties so common goals can be established, bringing together the knowledge sources of the theory-based assessment and practicum requirements of the VL and the formative contextual teaching practice-based requirements of the ISM. CSC enables a shift from an assessment dialogue to a more formative coaching dialogue. CSC enables all members to provide diverse insights and apply tacit knowledge in the moment, either informing the feedback provided, or the actions of the PST directly. The technique supports collaboration at all stages of implementation and, therefore, more opportunities to come together as a triad, build capacity and explore effective ways of working together. The study identified several best practices for using CSC effectively. These include negotiating and establishing clear roles, responsibilities, and outcomes for each participant, ensuring a seamless technology solution that integrates all necessary

functionalities, and promoting transparency by introducing the observers to the classroom students. Participants acknowledged the challenges associated with technology use but emphasised the potential benefits of immediate feedback and tacit knowledge sharing. Overall, CSC shows promise in facilitating triadic collaboration, bridging the theory-practice divide, and providing immediate feedback. By addressing the challenges and implementing the best practices identified in this study, CSC can potentially transform teaching practice and improve PST efficacy.

In future iterations, the Vavoula (2009) framework should guide research using CSC on a broader scale, using a rigorous quantitative data collection measure, including baseline and maintenance, to measure the impact on teacher fidelity and learner outcomes. In addition, it would be valuable to investigate how CSC may enable the triad to access elements of the third space, as discussed by Zeichner (2010).

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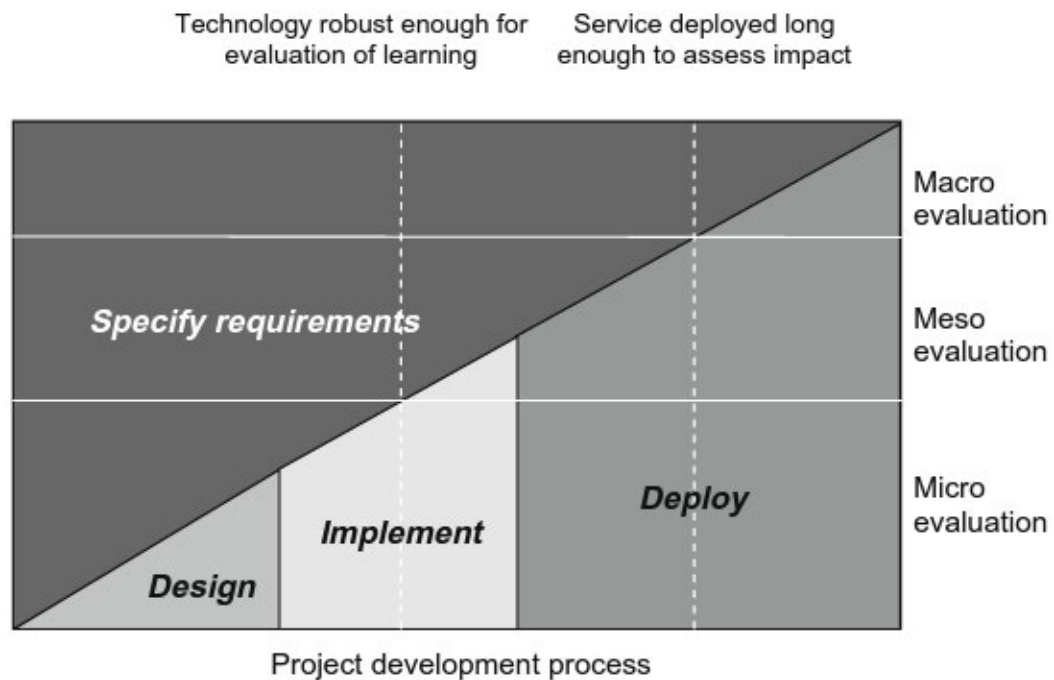
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3.7. Appendix I



(Vavoula & Sharples, 2009)

3.8. Links and implications

The findings revealed that CSC enabled triadic collaboration and provided a mechanism to bridge the theory-practice divide (RQ1). Tacit knowledge could be shared immediately between the triad, directly impacting PST practice (RQ2). It was also possible to provide questioning feedback to impact teaching practice (RQ2a). However, some participants struggled with cognitive overload. Guidelines for best practices were established and applied (RQ2b). The participants also reported positive experiences with CSC, such as increased confidence, motivation, and reflection. However, challenges and limitations were also identified, such as technical issues, noise interference, timing and content of feedback.

The pilot study concluded that CSC is a promising and innovative andragogical technique that can enhance the practicum feedback process and support the development of PSTs. The study also provided insights and recommendations for future iterations and research on CSC. This sets the stage for the subsequent stages of the research, as detailed in the following chapters.

CHAPTER FOUR: PAPER 2 - USING BUG-IN-EAR TECHNOLOGY AS A COACHING TECHNIQUE: A SCOPING REVIEW

4.1. Introduction

Chapter Four presents a scoping review that consolidates literature on BIE coaching, which, although following the pilot study in the thesis structure, co-occurred and contributed to its processes. This chapter informs the findings for best practices when using BIE coaching (RQ2b) and informs the development of CSC as a tool for ITE. The thesis's final chapters discuss the combined findings to meet the research questions' requirements.

The scoping review operates at the meso level of the M3 framework, focusing on organisational or community contexts and bridging the micro (individual) and macro (societal) levels. Utilising the PRISMA-ScR framework, the review systematically examines research on BIE coaching with teachers, paraprofessionals, and PSTs in various educational settings

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4.3. Links and implications

Key findings from the scoping review indicate that BIE coaching is cost-effective, supports professional development, and enhances learner outcomes. However, challenges such as technology issues persist while implementing BIE feedback. The review identifies gaps in the

literature, particularly in collaborative and synchronous BIE coaching, highlighting this as an area for further research and innovation. These insights are crucial for ensuring the effective application of CSC and addressing the theory-practice divide in ITE.

CHAPTER FIVE: PAPER 3 - COLLABORATIVE SYNCHRONOUS COACHING TO ENABLE THE THIRD SPACE IN INITIAL TEACHER EDUCATION

5.1. Chapter introduction

Chapter Five unpacks the potential of the third space to augment triadic collaboration and reduce the theory-practice divide in ITE. Analysing prior research cycles, the concept of the third space—an intermediary realm blending university and school settings—emerges as a key focus. This chapter explores how CSC can facilitate the creation of this third space, supporting boundary crossing, identity negotiation, hybrid roles, and epistemological alignment within practice based ITE.

Utilising the macro-level analysis of the M3 framework, this chapter investigates the broader impact of CSC on established educational practices and institutions. It aims to scrutinise how CSC can foster a digital third space that promotes egalitarian and dialogic exchanges, thereby bridging epistemological gaps in triadic relationships. The chapter also examines the potential challenges and implications of CSC for the future of ITE. Drawing on findings from previous research stages, this chapter synthesizes and extends insights to provide a comprehensive understanding of CSC's potential.

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Collaborative Synchronous Coaching to Enable the Third Space in Initial Teacher Education

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ABSTRACT

Research highlights the third space as a theory to enhance the practicum experience. This study explores how Collaborative Synchronous Coaching (CSC) can enable concepts found in the literature regarding the third space and initial teacher education (ITE). It used critical participatory action research to develop CSC and guide data collection. Semi-structured interviews were conducted with four triads, indicating that CSC is a new and practical andragogical technique to enable concepts of the third space in ITE. Pre and post-intervention surveys supported this conclusion. Authentic collaboration is facilitated, relationships de-hierarchized, and greater accountability encouraged, providing effective preparation of beginning teachers. A recommendation is to build a foundation of relational trust before implementing CSC.

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Introduction

The strength of collaboration between schools and initial teacher education (ITE) institutions is a critical element in supporting trainee teachers to enable change in their practice and in their schools (Bernay et al., 2020; Cohen et al., 2013; Whatman & Macdonald, 2017; Zeichner, 2010). Collaboration is applicable at all levels, with strong relationships required between school leaders, faculty staff, and individual teachers. Grudnoff and Williams (2010) assert that with this collective approach, it is possible to “devise practicum models that would align with a school’s professional culture, meet university credentialing requirements, and contribute to more effective preparation of beginning teachers” (p. 35). The Teaching Council of New Zealand recently established this relationship as a requirement for all ITE programs “with mutual benefits that are explicit and interdependent, structured, and with a shared responsibility for success” (2019, p. 10). Globally similar recommendations exist. In Australia, the Quality Initial Teacher Education Review (Department of Education Skills and Employment, 2022) recommended that collaboration between the school and the ITE provider must be a high priority, and reciprocal relationships should be developed to bridge the gap between theory and practice. Post-COVID research from Ofsted (2021) highlights that effective communication between partnership schools and delivery partners is essential, and when absent, opportunities for effective ITE are diminished. In a New Zealand based study, Bernay et al. (2020) found that there should be trust, mutuality and reciprocity for the relationship to be successful. Le Cornu and Ewing (2008) add that the practicum experience should be underpinned by a commitment to professional learning communities where all teachers’ ongoing professional learning journeys are prioritized. This research aims to support the expectation of collaborative relationships by exploring collaborative synchronous coaching (CSC) and the third space. The Third Space Theory by Homi Bhabha (1994) explores the idea that cultural identities are not fixed or binary but fluid and constantly evolving in the interstitial “third space” where different cultures intersect and hybridize.

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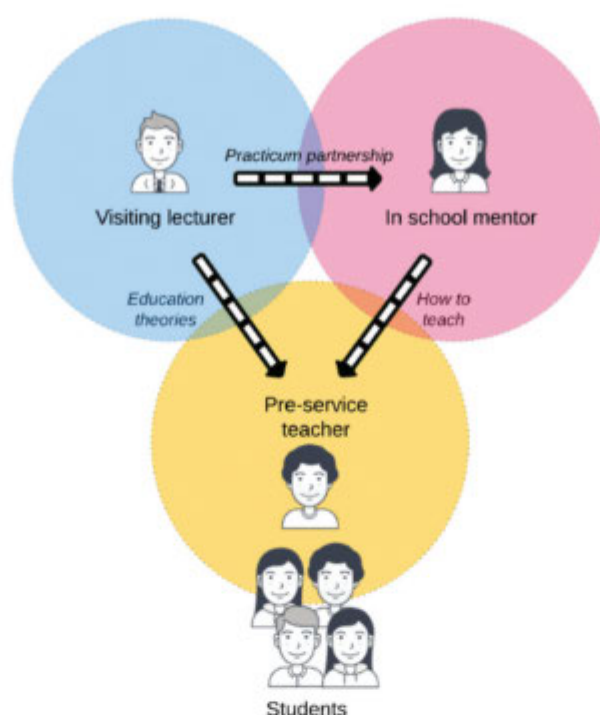


Figure 1. Traditional teacher training triad. Adapted from Bernay et al. (2020).

Rationale for the Study – Balancing the Triadic Relationship

The experience of all members in the triadic process can fail to meet the high expectations required for collaborative relationships (Cohen et al., 2013; Connolly et al., 2020; Haigh & Ward, 2004; Zeichner, 2010). The primary researcher in this project has been a preservice teacher (PST), an in-school mentor (ISM) and a visiting lecturer (VL) throughout his career and has had first-hand experience of the power imbalance between the roles. Complexity exists within the interactions; each party must understand roles and responsibilities for the practicum to be of value. Traditionally, the university led the approach (Figure 1) and involved three main parties with a top-down approach from the university. A gap exists between the separate spheres of the triad where communication and collaboration are difficult to establish and maintain. VLs conduct visits, observe, set goals and lead the hierarchy (Le Cornu & Ewing, 2008).

An overpowering influence from the school and mentor teacher can also exist (Cochran-Smith et al., 2014; Haigh & Ward, 2004). If priorities held by the ITE institution and the mentor do not align, PSTs can receive mixed messages and experience a power imbalance and a loss of professional agency (Cochran-Smith et al., 2014). Haigh and Ward (2004) concluded that the collaborative framework in the triad is only partially realized through the “triadic assessment dialogue” and that “more explicit discussion between the three partners regarding the practicum-related expectations of PST students, associate teachers and VLs may lead to a richer understanding of partnership roles and possible reform of the culture of the practicum” (p. 145).

Crossing Boundaries to Collaborate

Zeichner (2010) suggests a *boundary-crossing* approach to integrate and understand the differing triadic perspectives. Grudnoff and Williams (2010) found that co-construction between the expert and

novice enabled a more authentic experience. In their study of an alternative practicum approach, the PST felt supported when the ISM and the VL worked together to discuss teaching practice and varying perspectives for improvement. Despite the ISM and the VL noticing different strengths and weaknesses in the PST's practice, having a broader range of input was beneficial if applied in an agentic and co-constructed way.

Further to the traditional method depicted in Figure 1, Bernay et al. (2020) propose two different approaches to support collaboration. They align with Le Cornu and Ewing (2008) and suggest an aspirational evolution for the triad, focusing on professional learning that supports classroom practice for the professional learning community and the entire school community (2020, p. 140). A central theme in this progressive approach is the concept of a *hybrid space* (Bernay et al., 2020), or as Green et al. (2020) define, the *third space*.

Collaborative Partnerships in the Third Space

The concept of the third space is rooted in social-cultural theory, which explains how an individual's identity comprises various overlapping characteristics. It was first introduced by Bhabha (1994) to describe the space where cultures intersect and merge, resulting in new hybrid identities. Over time, various scholars have expanded upon this concept in different fields. Soja (1996) focused on urban environments and how the interconnectivity of physical, social, and mental spaces shapes our experiences and identities. Soja's work has emphasized the importance of spatial practices in shaping social relations and highlighted the third space's potential to challenge dominant discourses and promote social justice.

In education, the third space approach suggests a holistic ideal that recognizes social and cultural constructs that are not necessarily visible in a traditional transmission-based classroom. The third space can help break down and understand the irregular forces of what is often a one-way cultural exchange. Kris Gutiérrez and her colleagues were among the first to apply the concept of the third space to educational research within the ecosystem of the literacy classroom. Here, the third space is defined as a place where knowledge is constructed between the official and unofficial spaces of the learning environment, enabling new learning to occur by supporting the learner to develop a hybrid identity (Gutiérrez et al., 1999). Gutiérrez (2008) states that the third space is a "transformative space where the potential for an expanded form of learning and the development of new knowledge are heightened" (p. 152). Her work in applying the concept of the third space to educational research has emphasized the importance of this space as a site for the construction of knowledge. It has highlighted the need to cross physical, emotional, social, or cultural boundaries to create a shared vision and understanding.

The Third Space in ITE

In ITE, roles and responsibilities can be transformed to enable new opportunities to learn, reflecting the recommendations above of Bernay et al. (2020), Grudnoff and Williams (2010), and Haigh and Ward (2004). Cochran-Smith and Lytle (1999) state that it is impossible to divide between practice and theory; there must be something in between. The third space can be seen as a network of bridges (Tatham-Fashanu, 2021) between the dichotomous physical separation of the campus, where PSTs are guided through the theory of the classroom, and the classroom itself, where the theory comes to life (Cuenca et al., 2011). On a less visible level, the third space can be regarded as a paradigm shift toward a collaborative and democratic environment for relationships to evolve (Williams et al., 2018). There are opportunities to break down historical hierarchies in the third space; this can be supported to enable a shared vision that will benefit the PST and the learners with whom they work. Zeichner (2010) states that applying the third space

in ITE creates expanded learning opportunities and prepares PSTs to enact complex teaching practices.

Constructing the Third Space in ITE

Several studies have applied various tools to enable the third space in ITE. Cuenca et al. (2011) used breakout sessions to establish the third space. They found it enabled participants to access new conversations, refine more focus for field observations and cultivate deeper relationships. Youens et al. (2014) encouraged PSTs to video and share their practice with the VL and ISM, creating a learning conversation that connected the third space between the triad. There was “multi-layered potential of the ‘learning conversation’ model to disrupt traditional hierarchies of knowledge and to generate new modes of interaction at the intersection of school and university spaces” (p. 109). However, these studies did not include input or collaboration from the school or mentor teacher, a critical element as referenced by Haigh and Ward (2004); the focus was on two parties rather than the triad, indicating that there is a gap in the literature with regards to a collaborative triad and the third space. Daza et al. (2021) constructed a comprehensive overview of relevant research regarding the third space in ITE. In line with the ideas from Bhabha (1994) and Gutiérrez (2008), the main themes uncovered in the work from Daza et al. were “negotiating identities” and the “intersection of epistemologies.” Recommendations were that “future research might focus on the opportunities that digital technologies offer to foster a third space of professional practice in ITE” (2021, p. 12).

Synchronous Video Coaching in ITE

With the affordance of recent technologies, new opportunities exist to enable concepts of the third space with technology. It has been established that video footage of teachers can improve practice and reflection (Dann et al., 2017; Sherin & van Es, 2005). Evidence of synchronous video feedback exists in various contexts (Franklin et al., 2018; McCoy et al., 2018; Widodo & Rozak, 2016), with relative success in developing practice and critical reflection.

Bug-in-ear (BIE) coaching has been evaluated as an effective tool for synchronous feedback (Rosenberg et al., 2020). A key characteristic of BIE technology is the ability to modify how feedback is provided and acted upon, which is closely associated with single-loop feedback processes (Carless, 2019). By having a direct and discreet link to the PST, the VL or ISM can communicate in real-time using remote virtual feedback via video observation and a BIE device without disrupting the flow of the teaching episode (Horn et al., 2020; Scheeler et al., 2010). This approach is particularly relevant for PSTs, who often require scaffolding to perform evidence-based practices with fidelity (Rodgers et al., 2019).

While actions can be performed with fidelity, a criticism of BIE feedback is that it disempowers the PST by simply being instructed what to do. This has been mitigated in more recent BIE research through co-construction of the process between the coach and the teacher (O'Brien et al., 2021; Rosenberg et al., 2020). It is advised that a questioning approach supports good practice in BIE coaching (Gander & Dann, 2023). This supports the concepts of co-construction and agency within the triad to access the third space, as emphasized in much of the reviewed literature in the previous section (Green et al., 2020; Grudnoff & Williams, 2010; Sewell et al., 2017). However, there is a tendency for detailed feedback to increase the cognitive load of the PST, which can have a negative impact on teaching performance (Taylor et al., 2022). Remote video feedback has been particularly relevant during the pandemic due to challenges in performing face-to-face observations in schools and limited collaborative opportunities (Kidd & Murray, 2020).

Research Question

How might CSC enable concepts in ITE literature relating to the third space?

The concepts relating to the third space in the ITE literature are informed by “Partnerships as third spaces for professional practice in Initial Teacher Education: A Scoping Review” by Daza et al. (2021).

Methodology

Grounded in the Vygotskian paradigm that knowledge is social and constructed with others (DeVries, 2000), the study followed a constructivist framework, applying qualitative methods through critical participatory action research. Critical participatory action research is a collaborative approach that aims to empower individuals and communities by involving them in the research process (Kemmis et al., 2014). Following the literature review and recognizing the importance of flattening power structures within the triad, the authors believed this methodology was the most appropriate for facilitating participants’ empowerment and the social co-construction of knowledge through critical dialogue based on the use of CSC and the findings. The approach involved a cycle of planning, acting, observing, and reflecting, enabling participants to identify and address contextual issues (Kemmis et al., 2014). The cycles were applied to each use of the tool, where asynchronous feedback was collected through field notes, this enabled an iterative approach that improved application of the tool.

Provision of Feedback/Coaching

CSC is an andragogical technique facilitating the third space through video remotely and in real-time. Currently, a single solution does not exist to enable CSC. Therefore the research team collaborated with participants to create a virtual third space from various digital tools. IRIS Connect Rooms were set up to create a virtual link between the PSTs classroom and the remote locations of the ISM and VL. Whilst the PST was physically teaching at the school, the ISM and the VL were always remote, sometimes elsewhere in the school and at other times in a different city. The ISM and VL could both see and hear what was

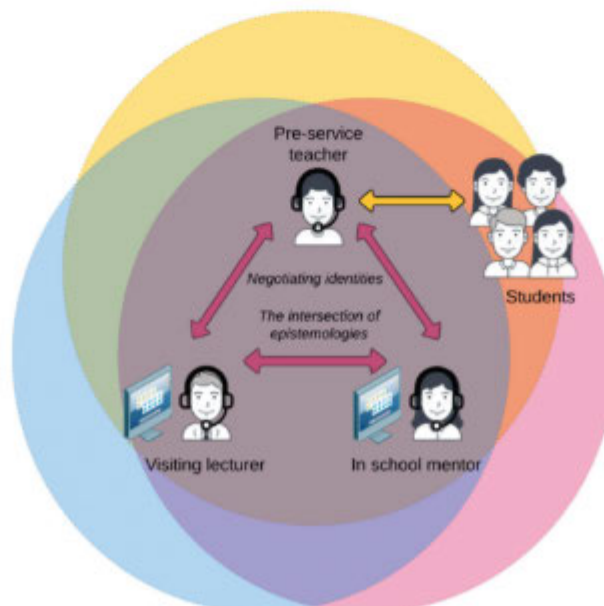


Figure 2. Collaborative synchronous coaching (CSC).

happening in the classroom, they could both provide feedback to the PST using a BIE device, and the PST could also communicate directly with the observers (Figure 2). A back channel was set up over Zoom between the ISM and the VL so they could discuss the teaching practice in real time without disturbing the PST during teaching. The gap identified in Figure 1 could be closed with multidirectional communication for each triad member. It is also important to note that the PST and the students, are placed at the top of the triad to disrupt the traditional power structure. Richardson Bruna (2009) claims that the third space exists without educators creating it and perpetuates a power imbalance when the dominant authority facilitates it. Therefore, it was important for the PST to initiate all elements of the interaction, for example, timing, location, and specific classes involved in the observation. The CSC sessions lasted from 20–45 minutes, and participants in the study used the technique between 3–5 times over six weeks.

Context

Participants in the study were PSTs studying on a two-year postgraduate master's level practice-based ITE course. Working relationships had been established in each triad before the study. Following the 2019 pandemic, visiting schools and observing teachers in person was challenging. The necessity to use technology to capture teaching practice evolved into a daily routine as teachers became more comfortable with video observations and reflecting on practice remotely. All 60 PSTs, their ISMs and VLs were invited to participate; twelve participants, including the lead researcher, opted into the study. Institutional ethics processes were followed, and consent was obtained. Pseudonyms were given to all participants in this study (Table 1).

School Contexts

All PSTs were teaching in decile 1–3 secondary schools in New Zealand. They had taught a specialist subject (English, Science, Design Technology) for two years at the same school. The study was conducted during the later stages of the COVID-19 pandemic when there were small class sizes and limited contact time.

Data Sources

Throughout the research, a constructivist approach to data collection was applied. The guiding framework for this study was drawn from a scoping review by Daza et al. (2021), who identified vital concepts to enable the third space in ITE (Table 2).

A survey was collectively developed with all participants; this reduced bias as there was a shared understanding of what was meant by the terms involved. The survey included open and closed

Table 1. CSC Participants.

Coaching triad	Position in program	Years teaching/coaching	Number of sessions using CSC
Triad 1			
Kurt (VL1)	Visiting lecturer (lead researcher)	20	5
Dave (PST1)	Pre-service teacher	2	
Chris (ISM1)	School Mentor	25	
Triad 2			
Annie (VL 2)	Visiting lecturer	17	3
Mark (PST 2)	Pre-service teacher	2	
Zoe (ISM 2)	School Mentor	23	
Triad 3			
Darcy (VL 3)	Visiting lecturer	20	3
James (PST 3)	Pre-service teacher	2	
Billy (ISM 3)	School Mentor	35	
Triad 4			
Aroha (VL 4)	Visiting lecturer	14	2
Joel (PST 4)	Pre-service teacher	2	
Phoebe (ISM 4)	School Mentor	20	

Table 2. Concepts to enable the third space in ITE.

Concept	Sub-concept
(1) Negotiating identities	a. Crossing boundaries b. Performing hybrid roles
(2) The intersection of epistemologies	a. Towards new pedagogical possibilities b. A digital third space c. Interconnecting knowledge sources

questions. There were dichotomous, multiple choice, checklist and Likert scale items (Appendix I). The Likert scale statements (1 = strongly disagree – 5 = strongly agree) were all positively framed toward the hypothesis that CSC supported concepts regarding the third space in ITE. It was completed by all four PSTs, two VLs and one of the ISMs before and after the research. Participants could use an alias in the survey to encourage openness in responses. Data was also collected through semi-structured interviews lasting between 40 minutes and one hour (Appendix II). The interview questions were co-constructed with participants and conducted over video calls at the end of the research, allowing for the collection of rich and detailed data about the participants' experiences and perspectives. Transcripts were shared and discussed, and participant feedback on findings contributed to the themes used for analysis. Ongoing field notes collected through participant reflections, reviewing the video recordings and discussion informed the evaluation of CSC.

Analysis

The within-subjects design pretest and posttest survey results were analyzed in SPSS. Only the ordinal data produced in the Likert scale questions was processed. The mean score for the sum of all ordinal data in the pretest (1) was 82.7, and the posttest was 92.1. Table 3 highlights the results of the paired sample t-tests, with the variable being the pre and post-results for all participants. The t-value is -3.213, and the significance value is 0.018. As $p < .05$, we can establish that there is a statistically significant difference.

When isolating the responses from the four PSTs, there was evidence of a greater significance, with the mean difference for the sum of the ordinal data being -15, the t value -7.071 and the two-sided p 0.006 (Table 4).

Overall, there was a positive correlation between the pre- and post indicating that CSC positively affected the concepts associated with the third space in ITE as defined by Daza et al. (2021).

Semi-structured interviews were recorded and transcribed using Otter.ai and then thematically coded and analyzed in NVivo. The concepts identified by Daza et al. (2021) were used as a deductive starting point for the coding. However, an additional concept emerged through discussion with the participants on the themes and the findings. PSTs, ISMs and VLs discussed how accountability was an important element of the third space as identified by Taylor et al. (2014); however, it was not explicitly discussed in the findings from Daza et al. (2021). Challenges relating to concepts found in the third space are also explored.

Table 3. All Participants Pre and Post-Score Data.

	Mean	t-value	Two-sided p
Pre/post-test	-9.42857	-3.213	0.018

Table 4. PST Isolated Pre and Post-Score Data.

	Mean	t-value	Two-sided p
Pre/posttest	-15	-7.071	0.006

Findings and Discussion

The findings and discussion are combined to maintain the flow between participant reflections on CSC and the established concepts from Daza et al. (2021) in Table 2. The structure follows the deductive and inductive themes.

Iterative Reflections from Field Notes

There were technical challenges with establishing and maintaining a digital third space. Bluetooth connections were inconsistent, and it was sometimes difficult for the ISM and VL to prioritize between the two applications, Zoom and IRIS Connect. Changing headphones and using multiple monitors mitigated these challenges. When providing feedback, allocating roles was not predetermined or explicitly discussed as a requirement in the technique's setup. The roles emerged unconsciously; participants commented on how it seemed most accessible if the feedback only came from one person; more than one voice in the PST's ear was overwhelming. Participants suggested that the application of CSC could transition throughout the year. Recommending a focus on understanding the school culture and context at the beginning of the training, then moving into the more specific pedagogical approaches as the PST became more confident with classroom interactions.

Negotiating Identities

Daza et al. (2021) summarize that the negotiation of identities encompasses how "PSTs, TEs [VL and ISM] based in schools and universities, and administrative staff cross institutional boundaries, collaborate across contexts, adopt hybrid roles, and rethink their identities in the third space" (p. 5). These characteristics are inherent to establishing a third space in ITE and were apparent in participant conversations. Daza et al. (2021) split negotiating identities into the sub-themes of "crossing boundaries" and "performing hybrid roles."

Crossing Boundaries

The semi-structured interviews indicated that the digital third space creates a collective third space where it is possible to cross boundaries, in this instance, virtually through CSC. Daza et al. (2021) write that boundary crossing is typical with knowledge sources through the formation of new communities and opportunities to learn. With CSC, the ISMs conveyed that working closely in the triad unlocked access to another layer of knowledge through the VL. This reflects Zeichner's (2010) perspective of crossing boundaries where it is possible to integrate and understand other perspectives. Billy (ISM 3) commented that it was a real learning experience to be in an observation and talk to an experienced mentor simultaneously, bringing knowledge back into the school.

It [CSC] gives us a bit more access directly to that expertise . . . There'd be nobody in our school who has done as much classroom observation as Darcy has. Getting that expertise . . . that's where the hierarchy, I think, shifts . . . It is a real art; it is something quite, quite powerful.

Chris (ISM 1) agreed and commented that it is "a powerful thing to be able to have different people watching each other. It's really good for everybody's practice." Establishing learning communities with foundations rooted in constructivism is fundamental to successful practicum experiences (Le Cornu & Ewing, 2008). Learning through CSC was community-based and reciprocal; Darcy (VL 3) also felt more confident and connected from the knowledge shared by Billy (ISM 3):

One of the things that I've learned about myself as a mentor through this process is that often it can be quite an isolating role . . . going in with these big calls about what you're seeing . . . bringing your own assumptions, your own kind of knowledge and position and experience and, you know, hidden stories around what you think is best practice. So, I think for me, I learned that it actually is a collaborative process. This is really powerful. And it helps

me as a mentor, in terms of hearing the perspective of the other person . . . having that second pair of eyes kind of reinforced my thinking, gave me confidence to kind of share what I was thinking.

Jackson and Burch (2019) highlight that feeling safe is essential if the triad aims to be in a position where they can challenge assumptions and take risks. It is important to note here that Darcy (VL 3) was aware of the opportunity to question her assumptions in the process; this supports a deconstruction of the hierarchy within the triad through a new community of practice.

Virtual boundary crossing was not only limited to the ISM and VL; it also supported a deeper reciprocal understanding of the contextual knowledge in the school or classroom held by the ISM and the PST.

I'm really conscious that I don't have the knowledge of the context. So I'm relying on you [Billy] as the in school mentor and James (PST) to be supporting me . . . I can never really truly know what that context is, because I'm other from it. (Darcy VL 3)

Chris (ISM 1) saw how the knowledge he held was valuable to the VL and how this could also support the PST. Possessing an awareness of personal experience and expertise in relation to others is critical in creating a meaningful third space (Sawyer, 2016).

I had the tacit knowledge that I had about the boys, about the setting, about the dynamics within the group. There's a whole lot of stuff there that I guess was valuable to you [VL] or was interesting to you. As you said earlier, it contextualised what you were seeing . . . you were more focused on Dave's pedagogy and the strategies he was using around his teaching. (Chris ISM 1)

Joel (PST 4) also explained this approach also had pedagogical benefits that were previously siloed. "It was the bringing together of Aroha [VL], the pedagogical instruction with Phoebe's [ISM] curriculum specialty instruction, boom, you know, that combination was fantastic."

Performing Hybrid Roles

An element of hybrid roles defined by Klein et al. (2013) is where the PST re-negotiates their identity away from being a recipient of knowledge from the other triad members and toward an active peer and problem solver. For this to occur, a level of trust is required from all parties, and CSC enabled this dynamic to be established from the PST perspective. "Having a bit of like, urgency, and time, pressure, and aggressive transparency . . . makes us a bit more open and real and honest" (Mark PST 2). Changing the hierarchy of who decides the focus of the observation shifted the power back toward the PST. "Having the participant acknowledge what it is that they want to improve on is a way for them to be more open to the feedback that they're receiving as well and more open to listen" (Dave PST 1). Mark (PST 2) mentioned that the whole experience felt collaborative and shared toward a common goal, reinforcing the dialogic and democratic conditions of the third space, not just the collaboration of individuals but a space to mediate a shared understanding of the goals for the learning community (Gutiérrez et al., 1999). "It felt very shared, there was no dictatorial 'you must do this, you must do that.' It was all very suggestive and collaborative." To summarize the power shift Mark (PST 2) described the process of receiving CSC:

If you're learning to drive, and the instructor has, like, the controls, and they can break at any point. Versus like, I don't know, if they're sitting in the backseat or something, they can't actually do it. Like, they're just relying on you to implement it. So, like the digital one. It's like, they can make suggestions. But, like, I can just ignore it, like, so I'm still kind of solely driving.

A heightened perception of responsibility puts the ball back in the court of the PST; they hold power as there are no other significant staff members in the room. All participants mentioned that the dynamic in the room was different because of a lack of presence of either the ISM or the VL. "I can see that maybe if you felt intimidated by having, like, more controlling people in the room that having them on the computer would be shifting the power balance back to the teacher" (Mark PST 2). The lack of presence stripped back the hierarchy. This empowers the PST; the students do not see them as being physically watched or observed. "It doesn't feel like I'm undermining Joel's practice, as opposed to

I would be if I was in the room" (Phoebe ISM 4). Another indication of a shift in the hierarchy was the move from a "tick box observation" to a "learning experience." Chris (ISM 1) elaborated; "I felt like we're all learning . . . seemed like there's less pressure on Dave [PST], in the past, lesson observations have felt more like an assessment . . . from both ends." Traditionally an observation is seen as an assessment in ITE (Youens et al., 2014) but using CSC, it was more of a reciprocal learning exercise according to the PSTs and ISMs. In New Zealand, reciprocal learning is known in Te Ao Māori as Ako. It is fundamental to teaching and learning in schools, being positioned as one of the cultural competencies required to support indigenous Māori learners (Ministry of Education, 2011). Ako was reflected explicitly in the comments of some participants. "I do think the culture of, and the increase of Ako used in this process was really impacting [sic]" (Phoebe ISM 4). "I feel like the essence, and the culture of Ako is really put into place in this sort of a setting, rather than being taught what Ako is and that, it's like it's actually put into practice" (Aroha VL 4). The establishment of non-colonial spaces is an original third space concept (Bhabha, 1994), and this discussion demonstrates the ease of naturally breaking away from hegemonic narratives within the safe environment of the third space.

The Intersection of Epistemologies

Daza et al. (2021) found that out of the 36 studies which explored the third space in ITE, there were 29 that involved a convergence of epistemologies, these were subdivided into "towards new pedagogical possibilities," "a digital third space" and "interconnection knowledge sources." The cross-over of knowledge provided access to innovative approaches.

Towards New Pedagogical Possibilities

Darcy (VL3) emphasized that having "that back-channel opportunity to kind of debrief about what you're watching was helpful." Billy (ISM 3) agreed and indicated he found this helpful, and there would not have been the conversation in the first place, at least not without disrupting the teaching session. The provision of immediate positive feedback was "conspicuously useful" while being simultaneously inconspicuous. James, the PST in the triad, also supported this perspective. Accessing new conversations was also a strong theme in the third space ITE research from Cuenca et al. (2011). To have two people observing the same classroom synchronously, with the added ability to communicate unobtrusively, heightened the quality of the feedback between the triad.

Annie (VL 4) felt like there was more shared trust with the way that they were interacting in the observation; this reinforces the "working together" approach rather than "working with" (Jackson & Burch, 2019; Taylor et al., 2014). Participants also discussed a shared nature to the feedback provided: "I felt like I didn't have to look at everything . . . we could rely on each other, there were two pairs of eyes" (Aroha VL 4). Chris (ISM 1) noted the ability to look at a range of matters through different lenses:

We were looking at it in different ways. I was aware of the guys [students] outside of the camera and the guys [students] sitting behind the camera, and at times . . . rather than being as focused on Dave [PST 1], I was more looking at how the students were responding to each other to the teacher engaging with their learning.

Joel (PST 4) mentioned the importance of having the multiple perspectives of both observers, rather than just one, had more impact: "It's a good balance of insight from the school as well as insight from studies." Joel (PST 4) also appreciated the ability of his observers to have "extra eyes" on the class.

Just having Phoebe and Aroha be able to see things that I couldn't, and in a practical environment . . . and going, "oh, hey, you need to stand here." So more physical, spatial awareness . . . noticing things where kids might go off task. And, and I suppose that was helpful in terms of learning, okay, in the future, I need to be over here, so I'm noticing the whole room.

Mark (PST 2) agreed and said it was “like having an extra pair of eyes to like spy on stuff” as if you had “superpowers.” It is perhaps critical to build on what Cuenca et al. (2011) discovered; third space interactions support a refinement of focus that may not have previously been accessible.

These instances of enhanced immediate feedback supported the development of practice by reducing the rate of error and, in turn, a rapid improvement. This is a common finding in real-time feedback scenarios (Rosenberg et al., 2020). However, adding another perspective from the second observer enabled a new andragogical approach, not accessible earlier in the teaching qualification. “I would have learned a lot faster. I wouldn’t have kept making the same mistakes” (Joel PST 4). The way the feedback was delivered also evolved with more of a direct approach, perhaps linking to a more rapid progression of skills for James (PST 3); “She [ISM] felt that she was far more critical in that session than she would have been if she had observed me and then met for conversation afterwards.” Darcy (VL 3) also felt like the feedback was more direct and to the point, meeting the needs of the urgency of a real-time situation. “I was a little more direct. One thing that I found helped with that, though, was the back channel . . . having that kind of conversation.”

However, James (PST 3) acknowledged that the relationship had to be established for the more direct type of feedback to be effective. “I’m so comfortable to hear that feedback . . . if that relationship wasn’t there, I would respond to it differently.”

A Digital Third Space

While only 4 of the 36 studies investigated by Daza et al. (2021) were digital, the power of connecting in a digital space has the potential to reduce hierarchical approaches by suspending the constraints of “time and space” during professional practice (p. 10). A digital process was also relevant and welcomed as this study took place at the end of 2021 when all schools in New Zealand had experienced prolonged periods of lockdown for two years due to COVID. The pandemic negatively impacted the triadic relationship; however, the CSC supported stronger connections. “As a triad, it [CSC] did bring us together, like we all basically made more meetings, you know, outside of the TMCs [triadic mentoring conversations] . . . I got to know Phoebe better relationship-wise in comparison to other ISMs [who had not used the technique]” (Aroha VL 4). Darcy (VL 3) agreed and mentioned that the technique brought the triad together and strengthened the relationship:

We’ve only met once in person, but I think doing the [CSC] sessions together kind of helped to strengthen our relationship . . . [It’s] a really healthy thing to be doing in terms of a visiting mentor [VL], who can often, I don’t know, be seen, as, you know, other outside external to a true mentoring relationship. So, I feel like this is a really useful, powerful tool in terms of developing that relationship between mentors.

Aroha (VL 4) stated that the approach also enabled a different type of interaction, perhaps more personal:

I could have easily looked at maybe some of [ISM] Phoebe’s observation notes that she had done with [PST] Joel, but I think it’s the avenue of communication, you know, because everyone’s talking. And I’m not just reading a document that I get a vibe, and even if it is online, I could still, you know, just with the small talk in between the mentoring as well, like that says a lot. It speaks volumes . . . It gave us obviously more opportunities to collaborate because we had to.

Being together in the same environment, trying to solve problems, for example connecting to the Bluetooth, and attempting something new enabled a unique way to connect as well as a more relaxed atmosphere as the participants were going through the same experience together: “The banter of the technology, like even that . . . that was cool. It just sort of relaxed the environment . . . you know, still professional, but still, you know, relatable, virtually, which was cool” (Aroha VL 4).

The digital aspect also enabled relationships to develop rapidly through the back channel with more opportunities to collaborate. Cultivating deeper relationships in the third space is a common outcome (Cuenca et al., 2011; Green et al., 2020). By choosing to engage on a personal level, individuals holding power can transition to power sharing (Wang, 2006); the virtual environment can be seen as the

middle ground and the environment to support this. There were connections made between the VL and the personal life of the ISM, crossing boundaries into the home of the ISM through the affordances of virtual observations.

Face-to-face online and being able to see and have conversations with her [ISM] whilst we were watching it, I think that that actually helped develop that relationship quite quickly. Whereas, like, the sort of in-school situation, you didn't, I don't think we ever got to observe at the same time ... if you sat in a classroom, you wouldn't have a conversation ... [we are] working from home at the moment, so at one point, her kids were showing me drawings that they'd done. (Annie VL 2)

An ISM stated that CSC disrupted the silos that triadic educators are often assigned to.

You'd have conversation with Joel, you might have conversation with Aroha. You might have the conversation with both of you in person, but it would be compartmentalised ... This, I think, brought us all very close together in terms of communication. We could have that clear. We're all on the same subject. We're all talking about Joel. With Joel. It was way more collaborative than I've had in the past. (Phoebe ISM 4)

Haigh and Ward (2004) indicate that when this bond is developed, it facilitates consistent and reliable practice judgments.

Interconnecting Knowledge Sources

While there is overlap with crossing boundaries of knowledge, the interconnection of knowledge sources is another vital element that characterizes the third space. Daza et al. (2021) explain that vertical, top-down notions of knowledge are deconstructed, and more democratic professional practice models are created. Participants in the third space feel their knowledge is valued and contributes to the triad's overall outcomes. A theme here is how the interconnecting knowledge supports new learning opportunities for the PST (Grudnoff & Williams, 2010). As previously mentioned, having feedback from someone with contextual knowledge of the school and combined pedagogical knowledge is compelling for transformational practice. James (PST 3) found the combined feedback valuable.

It's actually quite useful to have that kind of more unified voice ... so having the two significant mentors in the same space to have that conversation and to find common ground, I think, is really effective.

The benefit of consistency was also explained by Dave (PST 1), who described a "lag" in the time it took for the ISM and VL to catch up with each other prior to using CSC:

You're kind of comparing different lessons or what you've observed, and then you have to get on the same page. But if you both sort of observed those same lessons and are both on the same page, that feedback can be a bit more constructive.

The PSTs also acknowledged that it was helpful for the ISM and VL to observe the same lessons to understand more about the consistency of practice. "If something good or bad does happen, maybe with their like powers combined, they kind of know whether it's an ongoing issue, or whether it's like a one-off fluke" (Mark PST 2). There is often the challenge in ITE of the university suggesting one area to prioritize for improvement, and the ISM offering another area; this is confusing and lessens the impact of any feedback (Cochran-Smith et al., 2014). On occasions, PSTs can use this to avoid criticism; Mark (PST 2) likened it to being a student and attempting to "pull the wool" over the eyes of the teacher:

It reminds me of, like, being a school student, like our class used to always whine that we had too many assignments. And I'd be like, "Oh, Annie, like, you can't give us this English assignment. Because Kurt already gave us a math assignment during that same day" But yeah, helping them like have, like, a shared view, rather than just like, we both do our separate observations, and we submit a report at the end of the year, and like, we don't have to speak to each other.

The opportunity to collaborate in the backchannel was a common theme in the feedback, as noted in "boundary crossing" and "new pedagogical possibilities." It also supported interconnecting knowledge sources.

It was way easier communicating with Kurt, any feedback that I might have, that conversation that we were kind of having in the background, which you couldn't . . . just being able to have that conversation with someone as a fly on the wall. It was super, super interesting and valuable. (Chris ISM 1)

There is the opportunity for the varying perspectives to be combined, again flattening the hierarchy traditionally held by the VL. Overall, creating a shift in the epistemology of teacher education from where academic knowledge is seen as the authoritative source of knowledge on teaching to one where various aspects of expertise from the PST and ISM that exist in schools and communities are brought into teacher education, coexisting on an equal plane with academic knowledge (Zeichner, 2010).

Sewell et al. (2018) emphasize that the “divide between the ivory tower and the chalkface of the classroom” (p. 322) is at the center of the debate regarding the school-university partnership. The cross-over of the almost opposing cultures can create tensions within the triadic collaboration, drawing clear parallels with what Cochran-Smith and Lytle (1999) describe as conceptions of teacher learning. They acknowledge that neither the institution nor the school has the expertise to initiate development in education; it requires a collaborative effort. They explicitly state that it is not helpful to regard theory and practice as separate elements applied in different contexts, which are often divided by the ITE provider, and the school. What is more productive is an approach that supports a “knowledge of practice” which can be found by understanding the broader social, political, and cultural issues by working in professional learning communities. CSC, and particularly a blended approach in which the focus shifts fluidly from a practical or contextual focus to a pedagogical and theoretical focus, could be a solution depending on the progress of the PST. Cochran-Smith and Lytle (1999) maintain that “practice is more than practical, that inquiry is more than an artful rendering of teachers’ practical knowledge, and that understanding the knowledge needs of teaching means transcending the idea that the formal-practical distinction captures the universe of knowledge types” (p. 274).

Accountability

Through inductive thematic analysis accountability was identified. By creating shared goals monitored with more of an “overseeing eye,” the PSTs appreciated the unified voice, which enabled greater transparency, leading to accountability. These areas are not explicit in the review from Daza et al. (2021) however establishing conditions for critical discourse is a central tenet of the third space (Bhabha, 1994); transparency and accountability can facilitate this environment through a dialogic approach to competing discourses (Moje et al., 2004). James (PST 3) explained the benefits of having greater accountability through using CSC:

In those kinds of follow-up conversations that I have, after an observation, I find it easy . . . [and] talk about things more broadly and thematically and find a space where I’m having that conversation in a way that I’m really comfortable. And I find it quite easy to navigate away from the questions that I find difficult in those conversations. Whereas by having two people in the room for me, as a participant, there’s less space to hide because they’re both offering different perspectives, they’re both seeing the same thing. There’s nowhere to hide; I find it quite useful to have a system which, to me, is a little more robust, makes me more accountable, and can be more critical as well. And then I know that, yeah, there’s less space for me to kind of wriggle out of the uncomfortable gaze of the mentor sometimes.

Mark (PST 2) also held this sentiment, who felt it was possible to “fake it” through the TMC. “In this situation [CSC], it’s very open and honest and real, which I think is better . . . if something goes bad, you guys are gonna see it, and we’re going to talk about it.” The third space often requires an uncomfortable tension; the critical discourse emerges within this. Mark (PST 2) continued to explain that all parties had an open and personal stake in the outcome of his professional experience; they were working together in a collaborative environment with more “ownership” rather than just “with.” “They’d be more invested in it. Because they’re like, ‘I’m part of the assessment now’.” The accountability of other members in the triad was noted by Chris (ISM 1), who reflected on past experiences

where he had minimal contact with the VL; beyond completing check box lesson observations. By using CSC, he felt he should make more effort.

My dealings with that other student teacher [who was not using CSC] . . . were completely with her. Anything else that I did was online, filling out lesson observation forms. I think I would probably be more inclined to put more effort and energy into my role if I'd had some contact person with the institution. But they'd been, yes, just faceless . . . without sort of any deeper connection.

Annie (VL 2) also noted the open accountability of all staff to be contributing after suggesting that some students have not had any observations for a term:

In some schools where the in-school mentors haven't done a great deal, I think that having that sort of responsibility and collaboration where you're like, you know, you were going to make this appointment, you're going to do the observation

Potential Challenges

The technology was a consistent area that participants discussed when asked what could have been different when using the approach. While this led to opportunities to connect and solve problems, it was also a source of frustration and required improvement. The VL guided the use of the tool, and without this technical expertise, it may be challenging to implement in broader contexts with reliable results. Sinclair et al. (2020) also encountered similar challenges with implementation fidelity at a school level when using BIE feedback.

Provision of feedback created tensions in the third space. Coaches in the study had previously been encouraged to develop reflective dialogue (Hinojosa, 2022), where questions and prompts were used post-observation to promote critical reflection. Darcy (VL 3) explained this was hard "in the moment" as it felt uncomfortable.

I find it quite difficult in the moment to be very direct . . . Which I was actually quite nervous about . . . Because that's not really how I mentor, you know, I wouldn't go into a mentoring conversation, giving that really direct feedback, straightaway, it would be more of a kind of organic, natural, asking some reflective questions.

Billy (ISM 3) felt that the approach was hierarchical, although they did not see this as a challenge due to the existing relationship between the triad.

There's two of us on one side giving feedback . . . A little like "dance, monkey dance," you know, from the outside. I'm not sure that's a problem, particularly in relation in the context of other relationships. But it does need to be borne in mind . . . If you've got somebody who feels more vulnerable.

While James (PST 3) disagreed with Billy (ISM 3), the feelings discussed still require awareness, particularly if the relationship between the triad was not harmonious before using the technique.

Limitations

The Likert scale questions were all positively framed; this can have create a bias toward answering in a positive frame of mind (Mertens & Ginsberg, 2009). The research team conducted the semi-structured interviews so there is the potential that the participant responses were influenced by their presence. Triads in this study were in positive working relationships, hence the interest in participating. It would be interesting to explore if CSC is effective with triads who had not worked together before or were not working well. More research is needed to assess if the PST does play an equal role in the triad, and additional focused studies are warranted to confirm a genuinely flattened power structure. There is also the challenge discussed in this study of the type of feedback provided: can a more directive approach still contribute to lasting change? In addition, no maintenance measurements were applied to understand any lasting effects. A more comprehensive range of data points would also be helpful to collect in the future, for example, the impact on learners in the classroom or analysis of dialogue between the triad.

Conclusion and Future Direction

This study reveals that CSC is a new and practical andragogical approach that can enable concepts of the third space identified in ITE literature. It supports authentic collaboration and the de-hierarchizing of relationships, particularly between the ISM and VL, to enable more effective preparation for beginning teachers by providing a supportive and nurturing learning environment. By removing the physical presence of the observers, educators using CSC can navigate their identities within the space more transparently, collaboratively, and constructively. The power of synchronous feedback from more than one person reframes the conversation into a new paradigm. In this context, the third space promotes dialogic discourse to create connections between social and cultural constructs, disrupting the binaries we are often placed in as educators. Creating authentic learning communities can bridge expertise gaps and increase the rate of PST development. Observers transition between traditionally divided epistemologies of knowledge to develop new perspectives, “to see something different while watching the same thing,” and apply this to contextualized feedback in real time. This allows us to explore how this approach may be used to enhance ITE and the critical collaborative relationships that effective education relies on.

In this study, the third space is not merely a space that creates new possibilities but flattens a power structure that traditionally stifles collaboration. Co-construction can be de-colonized and evolve to support authentic indigenous spaces. Accountability is activated, supporting critical discourse to flourish with “nowhere to hide” through a dialogue of trust. Discomfort is an associated element; however, a recommendation is to build a solid foundation of relational trust before implementing CSC.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendix

Appendix I

Co-constructed questions for the pre and post-test survey

Question: Please respond to these statements regarding how you currently feel you work as a triad (the team of the Pre-service teacher, the In school mentor and the Hoe Åkau). 1 = Strongly Disagree, 5 = Strongly Agree

The school, the ITE provider and the pre-service teacher are well connected
 I feel like there is a strong connection between the coursework, the school the classroom
 I feel like I understand my roles and responsibilities
 I feel safe in this triadic relationship
 I understand the professional contexts of the other members in the triad
 I can negotiate my personal and professional identity.
 I feel like there is reciprocity in the triadic relationship
 I feel like I can perform different roles as a learner, mentor and coach
 I feel like the triad works together to support collaboration and sense making
 I feel like there is a neutral space within the triad where everyone has equal influence
 I feel like I work together, rather than in parallel to the other members of the triad
 I feel like we can create new possibilities
 I feel like the triad operates as a community of practice
 I feel like the triad works well in a digital space
 I feel comfortable engaging in pedagogical dialogue with the other members of the triad
 I feel like my knowledge is valued
 I feel like my opinions are valued
 I feel like we can construct knowledge together
 I feel like there is collaborative engagement
 I feel like there is critical engagement
 I feel like there is a good connection between the practice and the theory

Appendix II

Prompts for participant questions in semi-structured interviews.

Question

Which aspects of collaborative synchronous coaching were most effective and why? What could be different next time?

What observable and measurable impacts on teaching and learning were there?

What specific parts of the process are the most significant and why?

What did you learn about working with the other members of the group?

How about communication methods? Did it impact dialogue?

What happened to the collaborative relationship through using CSC?

Do you think your role changed at all?

How did you develop the focus of the observation and the feedback?

Were there any new or different types of conversation?

Were there any new opportunities to create knowledge?

Were there any surprises?

Anything else?

5.2. Links and implications

The chapter highlights how CSC can provide an alternative way to support collaborative pedagogical development for PSTs while strengthening relationships and opportunities for reciprocal learning. CSC also enables the triad to access the third space. In this research, the hybrid learning zone crosses the boundaries of theory and practice and fosters the negotiation of identities, roles, and epistemologies. This paper created new knowledge by testing a novel approach to providing feedback, demonstrating the potential to create meaningful collaboration and a narrowing of the theory–practice divide.

CHAPTER SIX: PAPER 4 - COLLABORATIVE SYNCHRONOUS COACHING TO SUPPORT TRIADIC COLLABORATION AND BRIDGE THE THEORY-PRACTICE DIVIDE IN INITIAL TEACHER EDUCATION

6.1 Chapter introduction

The conference paper was presented at ASCILITE 2023 in Christchurch, New Zealand. [Link to presentation slides](#). A poster was also presented (Appendix D) and a video was created that summarised the main findings (Appendix D1).

Gander, T. (2023, December). Collaborative Synchronous Coaching to support triadic collaboration and bridge the theory-practice divide in initial teacher education. In proceedings ASCILITE 2023, Christchurch, New Zealand.

<https://publications.ascilite.org/index.php/APUB/article/view/685/548>



Presenting research at the ASCILITE doctoral symposium

6.2. Published paper

ASCILITE 2023

People, Partnerships and Pedagogies

Collaborative Synchronous Coaching to support triadic collaboration and bridge the theory-practice divide in initial teacher education

Tim Gander

University of Southern Queensland & academyEX

Advancements in technology have enabled a range of approaches to support preservice teacher development. This research suggests using collaborative synchronous coaching (CSC), through Bug-in-Ear (BIE) technology, as a tool to reduce the theory-practice divide by enhancing collaboration between the visiting lecturer, the mentor teacher and the preservice teacher. Three stages of research were conducted to test CSC's effectiveness in providing feedback. The study examined the concept of CSC, protocol and best practices for using CSC, and the tool's potential to establish a collaborative third space in ITE. The findings from field notes, semi-structured interviews and video observations suggest that CSC is a new coaching technique that can provide an alternative way to support collaborative pedagogical development for preservice teachers while strengthening relationships and opportunities for reciprocal learning. Educators using CSC can navigate their identities within the space more transparently, collaboratively, and constructively. The power of synchronous feedback from more than one person reframes the triadic conversation into a new paradigm.

Aims, objectives and overview of the research

This research addresses the multidimensional and widespread challenge of the theory-practice divide in initial teacher education (ITE). This is explored through two critical elements of ITE, (1) the provision of equitable access to consistently high-quality feedback and timely professional coaching to support preservice teacher development, and (2) the facilitation of the *third space* (Green et al., 2020) with intentional collaboration and alignment between the ITE provider and the school which the preservice teacher is placed. The ITE-specific challenges of equitable access to high-quality coaching feedback and collaborative partnerships present an opportunity to integrate technology to provide the coaching required via remote video observation tools where an expert practitioner may not be physically available.

This study stems from the researcher's dual role in co-ordinating practicum partnerships and as a visiting lecturer (VL) on a practice-based ITE programme. Experiencing the value of the differing perspectives within the triadic relationships but unable to find an effective or timely way to share knowledge with the triad of VL, preservice teacher (PST) and in-school mentor (ISM). The need to provide expert curriculum and pedagogical advice to trainee teachers in a geographically challenged country was also amplified by COVID-19 and the government's requirement to restrict physical access to schools. A remote tool was required to unite all triad members in challenging times.

This research was developed using participatory action research in stages built on the 3-Level Evaluation Framework (Vavoula & Sharples, 2009). Stage one was a pilot study that explored the hypothesis that collaborative synchronous coaching (CSC) will enable intentionally aligned and consistent augmented VL and ISM feedback to support triadic collaboration and bridge the theory-practice divide. Stage two incorporates findings from the literature and a wider scoping review to highlight best practices in the application of CSC and, through social constructivism, explores if user-defined requirements could be met. Stage 3 explores the ability of CSC to enact concepts described in the ITE third space literature in a wider group of triads in a range of schools in New Zealand.

CSC is built on the concept of Bug-in-Ear (BIE) coaching. BIE enables a direct and discreet link to the PST. The VL or ISM can communicate in real-time, giving remote virtual feedback via video observation with a BIE device without disrupting the lesson (Horn et al., 2020; Randolph et al., 2020). Scheeler (2012) explores how BIE technology has been used to provide high-quality synchronous feedback in classrooms to enhance teaching efficacy. Research spanning the last two decades has demonstrated that BIE coaching is an effective evidence-based practice (Sinclair et al., 2020). CSC augments BIE coaching by enabling the ISM and VL to simultaneously interact with the PST remotely (figure 1) while maintaining a private backchannel, hence the

collaborative element.

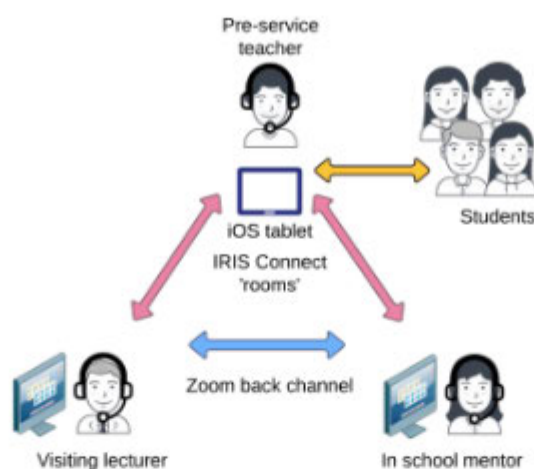


Figure 1. Collaborative Synchronous Coaching (CSC)

Research questions

Stage 1

1. How might CSC support triadic collaboration to bridge the theory practice divide while providing feedback in initial teacher education?

Stage 2

2. How might CSC assist in delivering user defined goals: Sharing tacit knowledge?
3. How might CSC assist in delivering user defined goals: Providing questioning feedback?
4. What are the best practices when using CSC?

Stage 3

5. How might CSC enable concepts in ITE literature relating to the third space?
 - a. Negotiating identities.
 - b. Intersection of epistemologies.

Literature review

This literature review encompasses the three central topics for the enquiry. Initially discussing the current challenges and perceptions related to the theory practice divide in ITE, focusing on the structure of the triadic relationship between the PST, ISM and VL, secondly the provision of coaching, and more specifically feedback through Bug-in-Ear coaching is explored. Finally, a review of the literature based on the third space in education and how it could be utilised to mitigate the theory practice divide.

Significant problems in the field of research within the domain

Initial teacher education (ITE) is crucial in preparing pre-service teachers to become effective educators. However, the theory-practice divide has long been identified as a challenge in ITE. There is often a significant gap between the theories and methods taught in teacher education programs and teachers' actual classroom practices (Cochran-Smith & Zeichner, 2009; Korthagen et al., 2006). This can lead to feelings of inadequacy or frustration among trainee teachers who may feel unprepared to deal with the realities of the classroom. Differences in expectations between teacher education programs and placement schools can compound the issue (Bernay et al., 2020). For example, a teacher education program may prioritise certain teaching methods or

theories, while a placement school may have different priorities based on the needs of its students and community (Cochran-Smith et al., 2014; Haigh & Ward, 2004).

Collaborative partnerships in ITE

The strength of collaboration between schools and ITE institutions is a critical element supporting trainee teachers to enable change and improvement in their practice and in their schools (Bernay et al., 2020; Cohen et al., 2013; Whatman & Macdonald, 2017). Collaboration is applicable at all levels with strong relationships required between school leaders and faculty staff, as well as individual teachers. The Teaching Council of New Zealand established this partnership as a requirement for all ITE programs “with mutual benefits that are explicit and interdependent, structured, and with a shared responsibility for success” (Teaching Council of New Zealand, 2019, p. 10). In Australia, the Quality Initial Teacher Education Review (Department of Education Skills and Employment, 2022) recommended that collaboration between the school and the ITE provider must be a high priority, and reciprocal relationships should be developed to bridge the gap between theory and practice. Grudnoff and Williams (2010) assert that with this collective approach it is possible to “devise practicum models that would align with a school’s professional culture, meet university credentialing requirements, and contribute to more effective preparation of beginning teachers” (p. 35). Bernay et al. (2020) found through reviewing the literature that there should be trust, mutuality and reciprocity for the relationship to be successful.

Traditionally the approach has been led by the university (Figure 2) and involved three main parties, the PST, ISM, and the VL working together to integrate theory and practice. However the good intentions to support collaboration are not always met with the lived experience which can be less than ideal for all members in the relationship (Cohen et al., 2013; Haigh & Ward, 2004). There can be an imbalance within the traditional triadic relationship with an overwhelming influence from the school and mentor teacher (Cochran-Smith et al., 2014). If the priorities held by the ITE institution and the mentor do not align, the preservice teacher receives mixed messages. While this binary perspective oversimplifies the complexities within the relationships, Cohen, Hoz and Kaplan (2013) established that ultimately there are “conflicts and gaps between goals and actions, between the practicum triad, and between the two systems involved in the practicum: supervisors and mentors acting in different directions at the same time” (p. 29). Sewell et al. (2018) confirm that the “divide between the *ivory tower* and the *chalkface* of the classroom” (p. 322) is at the center of the debate regarding the school-university partnership. Complexity exists within the interactions; the roles and responsibilities must be understood by each party for the practicum to be of value. Sewell et al. (2018) suggest a *boundary crossing* approach to integrate and understand the differing perspectives. A key element of the challenge is finding productive and collaborative ways to work together (Sewell et al., 2018, p. 324).

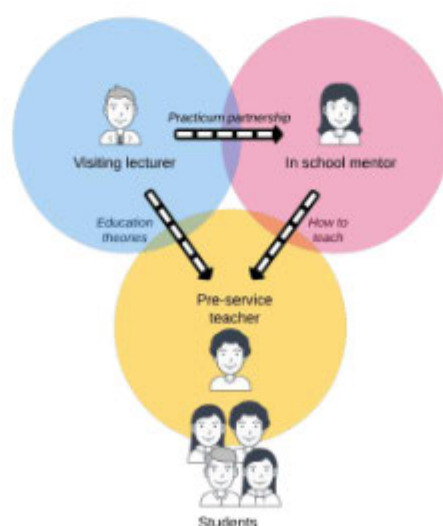


Figure 2. Traditional teacher training triad. Adapted from Bernay et al. (2020).

Note: Adapted from “Three models of effective school-university partnerships,” by R. Bernay, P. Stringer, J. Milne, & J. Jhagroo. 2020, New Zealand Journal of Educational Studies, 55(1), p. 138. <https://doi.org/10.1007/s40841-020-00171-3> Copyright 2020 by Springer. It was adapted with permission.

Outline of the current knowledge of the problem domain, as well as the state of existing solutions

A central element of triadic collaboration is when feedback is provided to the PST from the VL and PST. The main opportunity for this is during a triadic conference (Cohen et al., 2013). While the aim of the conference is to enable a collaborative assessment based on the performance of the PST during practicum (Jons, 2019), the summative assessment requirements of the VL, and the formative teaching practice focus of the ISM often contradict each other (Zhang et al., 2015). The triadic conference can exacerbate the theory-practice divide unless there is a more open and inclusive approach to feedback.

Coaching in education

An opportunity to provide aligned feedback to reduce the theory-practice divide is through the coaching process (Henning et al., 2015; Lofthouse & Thomas, 2015; Whatman & Macdonald, 2017). The requirement to consistently receive high quality practice related feedback and coaching shapes and develops the careers of all educators, and at the trainee stage it provides the means to understand what is working well, and what needs to be improved (Marshall, 2009). Joyce and Showers (1980) first proposed coaching in education as an approach to improve in-service training and the implementation of evidence based practices in classrooms, discovering the most effective training had cycles of professional learning, implementation of a specific teaching approach and peer feedback in small coaching groups. Developing from the supervisory conceptions of coaching (Joyce & Showers, 2002) are a range of coaching approaches which support more of a side-by-side approach (Blakely, 2001) which is similar to the distinction made by Ippolito (2010) stating that elements of coaching can focus on either responsive or directive styles, this is complementary of the agentic feedback and collaboration cycles described in the study by Bernay et al. (2020) above.

In the ongoing work on coaching by Knight (Knight, 2017, 2019; Knight et al., 2015) he finds evidence that coaching is an effective method to support the development of teaching practice, and should be included wherever professional learning takes place. This is echoed in a review of the literature by Kretlow and Bartholomew who state “preservice and in-service teacher training should include a coaching component whenever possible, to intentionally train teachers to use evidence-based practices in the classroom” (2010, p. 293).

High quality feedback

Coaching is established as a powerful process and an essential element of coaching is the feedback provided in this process (Jones et al., 2018). While Sadler (2010) suggests that the relationship between the form, timing and effectiveness of feedback is “complex and variable with no magic formulas” (p. 536), he also advises that in any feedback model the shift must be away from “telling the students about the quality of their work (disclosure) and towards having them see and understand the reasons for quality (visibility), and in the process develop personal capability in making complex judgements” (p.546). These key elements are also evident in research which advocates for a noticing approach to teacher improvement (Sherin & Van Es, 2009; Stoetzel & Shedrow, 2020; van Es & Sherin, 2002). Research has demonstrated that the timing of the feedback is often dependant on the task being performed (Hattie & Timperley, 2007). Conventionally a preservice teacher would receive feedback once a lesson had finished due to the constraints of a traditional classroom observation environment (Scheeler et al., 2006), this is known as deferred feedback. However, Kulik and Kulik (1988) found that deferred feedback is not as desirable as immediate feedback for improving process level teaching performance. It is possible, although cumbersome and less common, to provide immediate feedback. With immediate feedback the lesson is interrupted by the mentor teacher, or visiting lecturer to provide the feedback, disrupting the preservice teacher, and the learners (Scheeler et al., 2006). While there are disadvantages with this approach immediate feedback can scaffold the concept of ‘reflection-in action’ by Donald Schön (1987), and has the further potential to build the efficacy of preservice teachers in developing another of Schön’s concepts ‘knowing-in action’ which is associated with the tacit knowledge that is often unobtainable to preservice teachers (Cochran-Smith, 2010). The provision of feedback has been a focus of Boud (2015) who insists that “learners must develop their capacity to calibrate their own judgements and appreciate the qualities of their work and how it might otherwise be improved” (2015, p. 4), this builds on concepts related to Schön’s work on ‘reflection in action’ and ‘knowing in action’ (1987). These concepts relate directly to the provision of feedback to teacher trainees who require a range of feedback both immediately and over time to support growth and development. The links between immediate feedback, development of ‘reflection in action’ and instantaneous

access to tacit knowledge holds the potential to augment the feedback process with technology to support and develop preservice teacher efficacy in the classroom.

Bug in ear technology

With the affordance of new technologies there are further opportunities regarding the provision of feedback for it to be effective and potentially collaborative. The work of Scheeler (Scheeler & Lee, 2002; Scheeler, McAfee, Ruhl, & Lee, 2006; Scheeler, Congdon, & Stansbery, 2010; Scheeler et al., 2012; Randolph et al., 2020) provides a foundation to explore how Bug-in-Ear (BIE) technology has been used to provide synchronous high quality feedback in classrooms to enhance teaching efficacy. A key characteristic of BIE technology is the ability to modify the way that feedback is provided and acted upon, closely associated with single loop feedback processes (Carless, 2019). By having a direct and discreet link to the preservice teacher the visiting lecturer or mentor teacher can communicate in real time using remote virtual feedback via video observation and a BIE device without disrupting the flow of the teaching episode (Horn et al., 2020; Scheeler et al., 2010). This approach is particularly relevant for preservice teachers who often require scaffolding to perform evidence-based practices with fidelity (Rodgers et al., 2019).

Within the research from Scheeler (2012) there are further compelling arguments to justify the use of immediate feedback via BIE technology, namely reducing the likelihood of trainee teachers perpetuating negative habits and ineffective practice which can permanently embed in their teaching, this is disrupted through immediate feedback by alerting preservice teachers to modify their teaching techniques to perform them correctly if there is the opportunity in the same lesson. An interesting element in Scheeler's (2010) research is the method used to develop the protocols associated with the feedback provided during the synchronous sessions, the teaching teams agreed on keywords and instructions that would not distract from the teaching and flow of lesson, but would prompt a change or development in behaviour. This falls within the theme of co-construction and agency within the triad to support a third space as emphasised in much of the reviewed literature in the previous section (Green et al., 2020; Grudnoff & Williams, 2010; Sewell et al., 2017). Scheeler has continued to investigate *iCoaching* and in her most recent work continues to find benefits in the use of BIE technology and has linked this with an improvement in student academic performance (Randolph et al., 2020). This continued work moves towards addressing a gap in the research regarding learner outcomes with regards to the impacts of BIE feedback on teaching performance (Sinclair et al., 2020).

Although studies by Randolph (2020), Rock (2009; 2014) and Scheeler (2002; 2006; 2010) demonstrate that using BIE technology to receive immediate, corrective feedback improved teaching performance in a convenient and unobtrusive method there were limitations. In all instances the feedback was provided to teachers working in one-on-one scenarios which does not involve the cognitive load and complexity of receiving feedback while in whole class instruction (Benedict et al., 2016), this would be a consideration if the BIE tool was used in a more general classroom setting. Sinclair et al. (2020) reviewed 32 studies where synchronous performance feedback was delivered via technology to impact teaching. Many of the studies were of high methodological quality and qualified synchronous feedback via technology as a valid evidence-based practice. However there were limitations in that many of the studies examined discrete interventionist behaviours and were executed in isolated environments indicating doubts around the benefits on general teacher skills or students outcomes (Sinclair et al., 2020). In addition, the authors claim that the use of technology tools to provide synchronous feedback is intensive and not "feasible or desirable" (2020, p. 97) for use with all teachers. Owens et al. (2020) explain that the BIE device used in their study only worked in certain parts of the classroom, restricting movement of the teacher. It is problematic that in the twenty years of developing BIE for classroom use there continue to be challenges in the effectiveness of the technology. None of the studies in the reviewed literature described experiences regarding the provision of collaborative synchronous coaching from the mentor teacher and the visiting lecturer simultaneously, indicating a gap in current research.

Collaborative partnerships in the third space in education

Further to the traditional approach depicted in Figure 2, Bernay et al. (2020) propose two additional approaches to support collaboration. They argue for the triad to evolve to focus on professional learning that better supports classroom practice for the professional learning community as well as the entire school community. Importantly, the preservice teacher is recognised as equal within the relationship. A central theme established in the progressive approach is the concept of a *hybrid* space (Bernay et al., 2020). Green et al. (2020) also describe a hybrid space and define this as the third space. In discussion of the literature, Green et al. (2020) concluded that

the third space was often challenging to establish and difficult to maintain due to inconsistencies in personnel and a lack of ongoing funding to support the relationships. Opportunities to break down historical hierarchies in the third space should be supported to enable a shared vision which will benefit the preservice teacher, as well as the learners which they are working with. Any space that is created should support engagement with “innovative practice and experimentation to meet the learning needs of individual children or priority learners” (Bernay et al., 2020, p. 137).

The third space concept is based on social-cultural theory, explaining how an individual's identity comprises a complex range of overlapping characteristics (Bhabha, 1994). It can be used to break down and understand the irregular forces of cultural exchange. In education, Moje et al. (2004) described the third space as a place to (1) build bridges between marginalised discourses, (2) navigate across different discourse communities, and (3) create conversational spaces that bring competing discourses into dialogue with each other. Gutiérrez (2008) also explored the concept extensively within the ecosystem of the literacy classroom. Here the definition evolves into a place where knowledge is constructed between the official and unofficial spaces of the learning environment. “It is a transformative space where the potential for an expanded form of learning and the development of new knowledge are heightened” (Gutiérrez, 2008, p. 152). A common theme in the literature is crossing physical, emotional, social, or cultural boundaries to create a shared vision and understanding. In ITE, this symbolic space nurtures non-hierarchical relationships within the triad. Roles and responsibilities are transformed to enable new opportunities to learn, reflecting the recommendations above of Bernay et al. (2020), Grudnoff and Williams (2010), and Haigh and Ward (2004). Cochran-Smith & Lytle (1999) state that it is impossible to divide between practice and theory; there must be something in between. The third space can be seen as a bridge between the dichotomous physical separation of the campus where PSTs are guided through the theory of the classroom and the classroom itself, where the theory comes to life (Cuenca et al., 2011). On a less visible level, the third space can be regarded as a paradigm shift towards a collaborative and democratic environment for relationships to evolve (Williams et al., 2018). While there have been successful studies that aim to create hybrid ‘third spaces’ to support triadic collaboration (Howell et al., 2017; Wetzel et al., 2018; Youens et al., 2014) they have not been able to provide immediate feedback, which can support more rapid development in practice based environments (O'Brien et al., 2021; Rock et al., 2014; Sinclair et al., 2020).

In summarising the literature there is a need to nurture collaborative relationships within the triadic relationship to reduce the theory practice divide. It is well established that teachers require feedback to improve their practice in both short- and long-term cycles. For feedback to be effective in short single loop feedback processes it must be systematic, corrective, positive and immediate. Coaching is a useful technique to support the double loop feedback process and the development of teacher efficacy in longer cycles of feedback (Carless, 2019). For preservice teachers to be effective the third space must be utilised to support successful partnerships. However there does not seem to be a wide range of evidence based on the combination of remote and synchronous coaching to support these concepts for classroom teaching. There is also minimal evidence describing a collaborative synchronous approach which could provide strengthening of the third space as well as opportunities to use short- and long-term feedback cycles for coaching. It is clear within the studies discussed that technology is simply the tool to provide feedback. Many studies have attempted to emulate the existing experience by substituting the coach with the tool, rather than augmenting the whole experience with a new approach.

Outline of the applied research methodology

Grounded in the Vygotskian paradigm that knowledge is social and constructed with others (DeVries, 2000) this project employed a mixed methods approach applied through participatory action research (Kemmis et al., 2014). Participatory action research can be summarised as “enquiry with people, rather than research on people” (Altrichter et al., 2002, p. 130). This is also echoed by Hodges (2014) emphasising the focus on participating in the change, rather than analysing the change. Participants in the research supported the construction of research questions and user defined requirements with regards to effective feedback. Participants were also involved with analysis of data and discussion of findings.

The participatory action research methodology was applied across the 3-Level Evaluation Framework by Vavoula & Sharples, (2009) which has been successfully used to assess mobile tools in an educational context (Koole et al., 2018).

Participants and place

The participants are at the center of this project. The primary participants in this study were preservice teachers on a practice based Master of Teaching and Leadership program in New Zealand. All preservice teachers in the study had been using IRIS Connect (a dedicated video reflection tool) for over a year and their schools and students have already provided informed consent to permit the use of the tool to improve teaching practice. An invitation was sent to all 64 second year preservice teachers on the program to gauge the level of interest regarding participation in the study. Four triads took part in the research. Ethics were approved by the IRB.

Data collection and analysis

The data collection process followed the Micro, Meso and Macro stages, based on the 3-Level Evaluation Framework (3M) developed by Vavoula and Sharples in 2009. The 3M framework has been effectively used to evaluate mobile tools in different educational contexts (Fabian & Topping, 2019; Kabassi, 2017; Koole et al., 2018). The framework was created to address the challenges faced in assessing mobile learning, including capturing learning in different contexts, measuring mobile learning processes and outcomes, and considering the wider organizational and socio-cultural context of learning.

The 3M framework is designed to operate at three different levels: micro, medium, and macro, to aid understanding of the learning taking place in a range of contexts. The micro level examines the interaction, activity, and behavior of individual learners or actors in a learning context. The data was analysed through a participatory lens with the focus on a self-reflective collective study of practice and transformational action to improve practicum pedagogy (Kemmis et al., 2014).

Stage 1 – Micro Scale (RQ1)

The micro scale focusses on the technology, does it work the way intended, meeting the requirements of the task. This stage consisted of a pilot study to test the concept of CSC and the most effective set up for the technology. The aim was to establish if it was possible to simultaneously communicate within the triad while providing practice feedback to live teaching. In line with social constructivism and participatory action research qualitative and quantitative data was collected through a co-constructed survey which assessed the effectiveness of the tool for each member of the triad.

Stage 2 – Meso Scale (RQ2)

Once the technology has been tested and is robust enough to be used in classroom teaching the meso scale assesses how CSC could impact traditional practicum feedback methods in ITE. Social constructivism enabled user defined requirements with regards to pedagogical outcomes which were then tested requirements as defined by the PSTs, VIs and ISMs. Again, semi-structured interview was also held with each triad following the trial. The findings were aligned with an in-depth scoping review to refine best practice in using the tool. These results influenced the specific protocols involved in the timing of the feedback during the teaching episode, how the feedback is delivered, and application of key phrases or language applied by the visiting lecturer and mentor teacher to support the preservice teacher in modifying practice.

Stage 3 – Macro Scale (RQ3)

The macro scale examines the organisational impact and wider implications of the tool. Findings from stages 1 and 2 informed the implementation of this stage. The overarching goal of reducing the theory practice gap through engaging the third space was the focus and the success of implementation was measured against the findings from a scoping review of how the third space had been applied in ITE.

The third space is critical at this stage to disrupt the institutionalised hegemonic underpinnings of the relationship. The strengths and weaknesses of all parties must be acknowledged for the tool to be successful, for example the school mentor could know more about the individual attributes of the class that is being taught, and the visiting lecturer may have more of an understanding of the pedagogical methods to support teaching of a particular topic.

Qualitative data was collected through small group interviews with the triad, as well as quantitative data through co-constructed surveys. Data was also collected through analysing data on IRIS Connect, which has the functionality of tagging and timestamping teacher actions.

Presentation of any preliminary ideas, the proposed approach and the results achieved so far

The PhD is in the final stages of publication and to date a scoping review on effective BIE coaching practice has been published in the *International Journal of Mentoring and Coaching in Education*. The pilot study on how CSC might bridge the theory-practice divide in ITE is currently in review. The final publication of 'Flattening the power structure: Collaborative Synchronous Coaching as the third space in the practicum' is also in review.

The results of the pilot study in stage 1 demonstrate that CSC is a valid method of delivering real-time practice feedback that can support triadic collaboration. The user defined goals of 'sharing tacit knowledge' and 'providing questioning feedback' were met in stage 2. There were some tensions and challenges with CSC when used with the triads. Technical difficulties were discovered with Bluetooth connections failing and sound issues that had to be solved. There were also challenges for the ISM and VL in deciding who was providing the feedback, and when it should be provided as to not break the flow of the teaching session. Cognitive load was also a challenge for some PSTs when receiving 'questioning feedback'. This led to the development of several suggestions for best practice when using CSC. 1) Establishing roles, responsibilities and outcomes, 2) developing a seamless technology solution and 3) transparency (particularly for student participants in the classroom). When digging deeper into concepts associated with the third space in ITE results demonstrated that CSC could aid in supporting authentic collaboration and de-hierarchising relationships to enable more effective preparation for beginning teachers. CSC promotes dialogic discourse and disrupts traditional binaries in education. Creating authentic learning communities can bridge expertise gaps and increase PST development. Observers can develop new perspectives and apply contextualised feedback in real-time. Overall, this emphasises the concept of reciprocal learning and within the Aotearoa context, 'ako'.

Proposed contribution to the field of research/description of the PhD project's contribution to the problem solution in the domain

The aim of this research is to inform and contribute to ITE reform and policy through leveraging a deeper understanding of best practice using current technology, advocating for alternative approaches in employment-based courses. A positive relationship in the third space can be facilitated through the co-construction, timing and type of feedback that is delivered through CSC. In doing this the research also aims to enhance the provision of equitable access to consistent high-quality feedback in ITE. CSC acts as a support for the preservice teacher who may be placed in locations where there is not adequate support in place, enabling greater equity in the support and provision of high-quality teachers. This approach also aims to instigate the most impact on teacher efficacy through research informed feedback processes. The opportunity to deliver feedback remotely is also an exercise in reducing the financial impact of the observation process, namely through time and travel to remote locations. CSC could also be transferred to any practice based preservice field for example medicine or paraprofessionals who require support to develop their skills.

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6.3. Links and implications

The chance to share the research with fellow scholars and researchers interested in integrating technology into teaching and higher education facilitated connections for further collaborative research opportunities. It was also an opportunity to consolidate the learning and step back from the process of the research to evaluate the findings and the new knowledge created. This was a beneficial step to take in the process of writing the exegesis.

CHAPTER SEVEN: GENERAL DISCUSSION AND CONCLUSIONS

7.1. Introduction

This research addresses the challenge of the theory-practice divide in ITE, and explores the use of CSC through BIE technology as a tool to enhance feedback and collaboration between the PST, VL and ISM. The research aimed to test the concept, protocols and best practices of CSC and to examine it's potential to create a third space that fosters reciprocal learning and power-sharing in ITE.

This chapter brings together the findings presented in the published articles, research poster and conference presentations and aims to critically analyse and interpret them as a entire body of work with comparisons to existing literature as well as evaluating the limitations and significance. The discussion will lead to the conclusions of the research and suggest directions for future research.

7.2. Brief Overview of Research Objectives and Key Findings

The research adopted a participatory action research approach in three stages, based on the 3-Level Evaluation Framework by Vavoula and Sharples (2009). The theoretical frameworks that guided the research were initially based on social constructivism (Vygotsky, 1978) and evolved into a boundary crossing third space framework (Daza et al., 2021).

The research questions were:

Stage 1

RQ1 How might CSC support triadic collaboration to bridge the theory practice divide while providing feedback in initial teacher education?

Stage 2

RQ2 How might CSC assist in delivering user defined goals: Sharing tacit knowledge?

RQ2a How might CSC assist in delivering user defined goals: Providing questioning feedback?

RQ2b What are the best practices when using CSC?

Stage 3

RQ3 How might CSC enable concepts in ITE literature relating to the third space?

The research participants were PSTs, VLs and ISMs involved with the two year Masters of Teaching and Education Leadership course at The Mind Lab. The participants opted into the research and contributed at each stage from the development of the CSC tool to the analysis of the results. Therefore the participatory nature of the action research methodology was relevant.

The three research stages developed and tested the CSC tool (stage 1), evaluated the CSC tool against user defined requirements as well as establishing best practices (stage 2), and explored how the CSC tool could support concepts relating to the third space (stage 3). Within each stage there were cycles of ‘design’, ‘implement’ and ‘deploy’ (Vavoula & Sharples, 2009) aligned with ‘diagnose’, ‘act’ and ‘reflect’ (McTaggart, 1997).

The key findings in the research established that CSC is a new and effective andragogical technique that can support collaborative pedagogical development for PSTs, while strengthening relationships and opportunities for reciprocal learning. CSC also enables the establishment of a digital third space that nurtures non-hierarchical and dialogic interactions, and bridges the epistemological gaps between the triad members. The research contributes to the literature on coaching, feedback, and partnerships in ITE, and provides practical implications for the use of CSC in various educational contexts.

7.3. Discussion

In discussion of the findings we return to the original framework from Vavoula and Sharples (2009) to guide the dialogue.

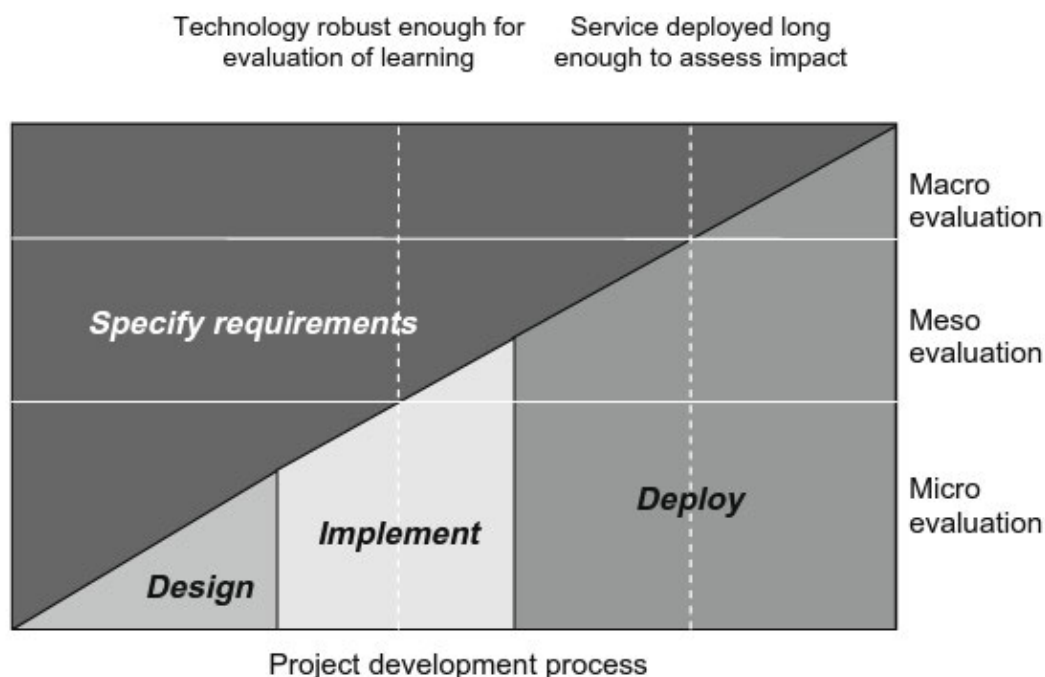


Figure 5. M3 Framework (Vavoula & Sharples, 2009)

The theory-practice divide was the focus of the research throughout all stages. The theory-practice divide, or the gap between the theories and methods taught in teacher education programs and teachers' actual classroom practices, has been a long-standing and widely debated research topic in ITE (Cochran-Smith & Lytle, 1999; Korthagen, 2001; Zeichner, 2010). During the initial stage of design and micro evaluation, the participants established that CSC could bring together the theory and practice (RQ1). This was based on the finding that contextualised practice-based pedagogical feedback from the VL and ISM could be delivered in a timely manner, and in doing so, impact the teaching performance of the pre-service teacher. This finding could align to the belief held by Griffiths and Tann (1992) who state that:

the gap between theory and practice is better construed as a mismatch between the observer's theory and the practitioner's own theory. Or to put it another way, what we still tend to label as 'theory' and 'practice' are more accurately seen as 'public' and 'personal' theories. (pp. 70–71)

CSC enabled a transparent dialogue between all parties to disrupt the misalignment of the labels that each member of the triad assigns to theory and practice.

The collaborative approach also enabled the theory based summative assessment approaches of the ITE provider to simultaneously combine with the formative contextual teaching practice feedback. Within the first micro design stage an initial focus was on implementing the technology and overcoming challenges with several audio and video channels used

through one device per participant. With multiple rounds of testing and troubleshooting a variety of platforms and tools, the original concept was formed and it was possible to communicate simultaneously within the triad while providing live practice feedback on teaching. Therefore it was deemed suitable for deployment for classroom testing at a subsequent meso level. Through classroom observation, field notes, co-constructed survey responses and focus group interviews it was established that CSC was an effective way to provide intentionally aligned high quality remote collaborative feedback to PSTs anywhere in the country. This is significant for several reasons. Firstly there are existing inequities in how feedback is provided to PSTs, if you are not located in a region with subject specific expertise (for example teaching Te Reo Māori in Invercargill where there are very few Te Reo Māori speakers) it is difficult to receive regular specialised feedback. Secondly a remote feedback approach significantly reduces the cost of the practicum experience as it is possible for the VL to provide feedback from distance to PSTs on practicum while simultaneously discussing the teaching practice with the ISM. Thirdly this develops further opportunities for connection and pedagogical development which were expanded in the following stages of the study.

These findings are consistent with the existing literature:

- CSC enabled simultaneous communication within the triad. This finding is consistent with the literature on BIE coaching, which shows that BIE technology allows real-time feedback and interaction between the coach and the teacher (Scheeler, 2012; Sinclair et al., 2020).

CSC supported triadic collaboration and reduced the theory-practice divide. This finding is consistent with the literature on collaborative partnerships in ITE, suggesting that triadic collaboration enhances the alignment and integration of theory and practice, as well as the quality of feedback and support for the PST (Bernay et al., 2020; Cochran-Smith et al., 2014; Haigh & Ward, 2004).

The second stage of the research, which examined the tool at a meso level on the M3 framework aimed to confirm the best practices (RQ 2b) and consisted of a scoping review and field based research carried over from the published paper in stage one (RQ 2 and RQ 2a). The scoping review identified 20 relevant studies and confirmed that BIE feedback was a cost effective approach to support the development of teachers and pre-service teachers. Delivering BIE feedback remotely yields the widest range of benefits for ITE providers through the access to expertise provided by remote coaching, as well as the reduction in cost through time and travel, this also confirms the discussion and finding from the first stage of

research regarding the provision of CSC enabling greater equity in the provision of feedback. The scoping review of the literature also identified common technology issues with BIE feedback and established that simple approaches work most effectively. There were gaps in the literature, particularly with regards to collaborative synchronous BIE feedback and this was identified as an area for further research and was the core concept in the study.

To critically evaluate the findings from stage two of the research, it is important to consider how the CSC approach facilitated the achievement of user-defined goals of sharing tacit knowledge and providing questioning feedback, as well as identifying best practices for using CSC (RQs 2, 2a & 2b). The practice-based trials in stage two confirmed the feasibility of sharing tacit knowledge through real-time communication and collaboration. PSTs reported gaining valuable insights from the VLs and ISMs, who revealed their complex decision-making processes and pedagogical reasoning during teaching episodes. Both VLs and ISMs benefited from exchanging perspectives and experiences with each other and the PSTs. This sharing of tacit knowledge was enabled by using pre-agreed keywords and instructions, along with open-ended questions and prompts that encouraged reflection and inquiry. The ability to share tacit knowledge in real-time represents a significant development in the field of ITE. Unlike explicit knowledge, which is easily articulated and communicated, tacit knowledge is deeply embedded in individual experiences, beliefs, attitudes, and values, and it accumulates over time. Often described as 'knowing how' rather than 'knowing what,' tacit knowledge is crucial for bridging the theory-practice gap in ITE. However, it is not easily conveyed through traditional instructional methods, posing a challenge for ITE programs in supporting PSTs in developing this essential knowledge. While tacit knowledge can be cultivated through reflection and practice, it often informs the quick, reasoned decision-making required in complex professional situations, such as those encountered in the PSTs classroom. Making this tacit understanding explicit and teachable meets a significant challenge that is often a barrier for PSTs looking to improve their practice rapidly. Qualitative feedback from PST participants indicated that they would have appreciated the CSC intervention at the beginning of their practice placement and that it would have contributed to rapid progression in teaching efficacy.

CSC allowed the triad members to provide and receive questioning feedback that was timely, specific, and constructive. The feedback focused on the strengths and areas agreed on for improvement of the PSTs' teaching practice, as well as the strategies and resources they

could use to enhance the learning outcomes. The feedback also aimed to foster the PSTs' self-efficacy and self-regulation by engaging them in metacognitive processes. However this was a challenge for the PSTs who acknowledged that processing multiple requests increased cognitive load. This finding is significant as while it uncovers that it is possible to deliver questioning feedback to positively impact teaching practice, it also highlights one of the weaknesses of the approach and an area for further investigation and development. Teaching is a complex activity that demands managing multiple tasks simultaneously, which can increase the cognitive load, particularly on PSTs. They struggle to bridge the gap between theoretical knowledge and practical demands of teaching, while also learning new concepts and skills. PSTs experience stress and uncertainty, which adds to their cognitive load. Additionally, the use of technology in teaching can further exacerbate cognitive load. If CSC contributes to additional cognitive load it could be detrimental to teaching practice.

Stage two of the study also identified some best practices for using CSC through combining the findings from evidence in publication one as well as the scoping review. The best practices included:

- Establishing clear and shared goals and expectations for the CSC intervention, and ensuring that all triad members are familiar with the technology and the protocols
- Balancing the amount and type of feedback to avoid overwhelming or distracting the PSTs, and ensuring that the feedback is relevant, actionable, and aligned with the agreed learning objectives
- Creating a trusting and collegial relationship among the triad members as well as the students in the classroom, fostering a culture of mutual learning and professional growth
- Providing opportunities for follow-up and reflection after the CSC intervention, and using the video recordings and feedback data to inform future practice and research

These findings are consistent with the literature cited in the published articles in this thesis on teacher education, feedback, and coaching, which suggest that:

- Tacit knowledge is a crucial aspect of teacher's professional practice and learning, and it can be elicited and shared through collaborative and reflective processes (Youens et al., 2014)

- Feedback is a powerful tool for enhancing teacher's performance and development, and it should be goal-referenced, timely, ongoing, content-rich, user-friendly, transparent, and addressable (Hattie & Timperley, 2007)
- Coaching is an effective method for supporting teacher's learning and growth, and it should involve evidence-based practices, co-construction of knowledge, and reciprocal relationships (Knight, 2019; Kretlow & Bartholomew, 2010)
- This learning is relevant for all members of the triad and provides professional learning for school mentors (Hobson, 2002) and the triad as a whole (Bernay et al., 2020).

Therefore, the findings from stage two of the research demonstrate that CSC is an innovative approach for bridging the theory-practice divide and fostering triadic collaboration in ITE and can also share tacit knowledge and deliver questioning feedback. However, the findings also indicate some limitations and challenges of CSC, such as the technical issues, and potential for cognitive overload.

The third stage of the research expanded to a macro level, focusing on the socio-cultural context of learning, exploring elements of the third space in ITE. It applied learning from the previous stages to provide a comprehensive understanding of the issues involved with CSC and the third space. The third space in ITE is a concept that refers to a hybrid space where the traditional boundaries between the university and the school are blurred, allowing for non-hierarchical and collaborative relationships among the triad members. This concept has been utilised in teacher education to describe the arena where universities, schools, and dominant discourses converge in less hierarchical ways. Findings indicated that:

- CSC enabled the enactment of the third space in ITE by facilitating the negotiation of identities, the crossing of boundaries, the performance of hybrid roles, the intersection of epistemologies, and the interconnection of knowledge sources.

- The triad members navigated between these spaces using the digital third space which fostered collaboration, reflection, and learning.

Participants explained that accountability refers to the sense of responsibility and commitment that the triad members felt towards themselves, each other, the students, and the school when using CSC. This sense of accountability was enhanced by the transparency, honesty, and authenticity of CSC, which reduced the space for avoiding difficult questions or feedback. The response also highlights that accountability fostered critical discourse and

professional growth, as the triad members were more open to challenge and learn from each other.

- The triad members experienced a shift in their roles and relationships, from being evaluators and evaluated to being co-learners and co-teachers, highlighted by the Māori concept Ako

- The triad members reported that CSC enhanced their understanding and practice of teaching, their communication and feedback skills, and their professional growth

- Overall the participants felt a greater amount of accountability through their connection to the other participants

These findings suggest that CSC can reduce the theory-practice divide and enhance the quality of ITE by enabling the third space. The findings also reflect the literature:

- Collaborating in the third space can create a structure to support members of the triad with a collaborative environment where boundary crossing is encouraged (Zeichner, 2010).
- Working in the third space involves managing shifting identities between teacher and teacher educator, responding to changing perspectives on learning and teaching, and negotiating sometimes finely balanced and difficult relationships (Soja, 1996).
- Accountability was seen as a positive outcome of CSC, as it improved the quality and consistency of the teaching and learning experience and the collaboration and communication within the triad (Moje et al., 2004).

Within the New Zealand context particular attention should be paid to another of the additional findings inducted from the participant focus groups when discussing the third space. Ako is a concept from Te Ao Māori that recognises the reciprocal and relational nature of knowledge exchange, where both teachers and learners can learn from each other and co-construct new understandings (Lee, 2008). This aligns with the principles of the third space that this study aims to investigate, such as crossing boundaries, negotiating identities, performing hybrid roles, and interconnecting knowledge sources. Furthermore, Ako reflects Aotearoa's cultural diversity and values and can help foster a more inclusive and responsive education system that respects and honours the Treaty of Waitangi and the rights of indigenous Māori learners. An approach that incorporates Ako also encourages collaborative

inquiry, reflective dialogue, and evidence-based improvement to support the professional development of tertiary educators.

7.4. Reflection on Social Constructivism and Vygotskian Thought

Throughout this research, Vygotsky's social constructivist framework has provided a foundational lens through which the development of PSTs and the efficacy of CSC were examined. Vygotsky's concept of the zone of proximal development (ZPD) has been particularly relevant in understanding how the interactions between PSTs, VLs, and ISMs facilitate learning. The ZPD posits that learners can achieve higher levels of understanding with the support of more knowledgeable others (Vygotsky, 1978). This was evident in the triadic collaborations within this study, where the scaffolding provided by VLs and ISMs enabled PSTs to move beyond their existing capabilities and bridge the theory-practice divide.

BIE technology can be viewed as a modern tool for scaffolding within the ZPD. By providing real-time feedback, the BIE device functioned as a "mediational means," enabling PSTs to access support precisely when needed, thus promoting learning contingent upon their immediate context (Vygotsky, 1978). This aligns with Vygotsky's assertion that learning is a socially mediated activity, where tools and signs—be they cultural or technological—serve to enhance cognitive development. In this context, the immediacy of BIE feedback provided an additional layer of scaffolding that allowed PSTs to reflect in action (Schön, 1983), further deepening their understanding of effective teaching practices.

The collaborative nature of the triad reflects Vygotsky's idea of co-construction of knowledge (Vygotsky, 1978). Each triad member brought their knowledge, expertise and perspective, contributing to a shared learning experience. This was particularly significant when dealing with the differing experience levels between career-changer PSTs and ISMs. The ISMs, despite having less subject-specific experience, contributed pedagogical insights, while the PSTs brought their professional expertise, resulting in a co-constructed understanding of teaching practice. This highlights that ako and the reciprocal nature of learning are central to Vygotsky's theory and underscores the importance of considering relational dynamics in the learning process.

Vygotsky emphasised the role of language as a primary tool for cognitive development, and in this study, language played a crucial role through feedback dialogues (Vygotsky, 1986). The feedback provided by VLs and ISMs acted as a form of verbal scaffolding, shaping the PSTs' internalisation of teaching practices. The reflective dialogues

that followed each feedback session further supported this internalisation, allowing PSTs to articulate their understanding, identify areas for improvement, and consolidate new knowledge into their practice. This iterative process of dialogue and reflection reflects Vygotsky's notion of inner speech, wherein external guidance gradually becomes internalised, leading to greater autonomy and mastery (Vygotsky, 1986).

Social constructivism and Vygotskian thought, in particular, have provided a valuable lens for interpreting the data and understanding how learning occurred within the triadic coaching model. The principles of scaffolding, co-construction, and the importance of language and tools have all been evident in how CSC and BIE technology facilitated participant development. By framing the findings through this lens, the research contributes to the practical understanding of teacher education and reinforces the importance of social mediation and collaborative learning in professional growth.

7.5. Conclusions

This study embarked on an exploration of CSC through BIE technology as a tool to bridge the theory-practice divide in ITE. Utilising a PAR methodology and the M3 framework, the study revealed that CSC can foster triadic collaboration, provide timely feedback, and enable the third space in ITE. Despite some identified challenges, the study highlighted the transformative potential of CSC in empowering pre-service teachers, disrupting traditional power structures, and integrating diverse perspectives in ITE. Grounded in social constructivist principles, the study demonstrated how collaborative scaffolding and mediated feedback can enhance the learning experience, suggesting that CSC offers a promising approach to enhancing teacher education and ultimately improving educational outcomes.

7.6. Implications

This research has implications regarding the practicum experience in field-based ITE. By using CSC, the practicum coaching and feedback process can be redefined. CSC can also improve the quality and consistency of practicum assessments through transparent collaborative dialogue, potentially redefining the practicum process entirely. The literature review and the scoping review identified that there was a gap in the literature regarding the use of CSC. Therefore, this research has the potential to enable a exceptional influence. Based on the findings of this study, the use of CSC to provide collaborative, specific and timely feedback to PSTs can have the following implications:

- For PSTs, CSC can help develop professional competence and confidence by receiving clear and constructive feedback on performance. CSC can empower PSTs to develop agency and identity while reducing the power imbalance and hierarchy within the triad. The context of PST practice is understood effectively by the VL, who previously may not have a detailed understanding of the school context. This approach is based on the belief that those directly affected by a particular issue have unique insights and experiential knowledge that can enrich the research process and lead to more meaningful and contextual results.
- For ISMs, CSC can provide more effective and efficient feedback to PSTs by focusing on the relevant criteria and evidence through discussion with the VL. It can also help align formative and summative judgements with VLs and reduce the workload and subjectivity involved in practicum assessments. CSC is an opportunity for ISMs to improve their skills through the shared knowledge in the triad, particularly mentoring and coaching from the VL.
- For VLs, CSC can provide more of a context-based understanding of how pedagogical approaches can be applied in practice. This improves the quality of feedback and ultimately supports the PST in a more targeted way. CSC reduces the time and cost of travel associated with practicum visits.
- For ITE providers, CSC can be applied in various contexts and settings, such as remote or rural placements, where access to expert support may be limited. CSC can enhance the quality and validity of practicum assessments by ensuring they are based on consistent and transparent standards and processes. By developing working partnerships, CSC can also enhance the quality and consistency of feedback and coaching across different ITE programs and providers. It can also provide an opportunity to train and develop ISMs consistently with transparent and consistent feedback from VLs.

Therefore, CSC has significant implications for ITE, as well as for the professional development and practice of educators. Beyond the ITE field, CSC is applicable in any practice-based preservice field, for example, medicine or paraprofessionals who require support to develop their skills.

7.7. Limitations

There were a range of limitations that could be mitigated in future studies. Limited participants were available due to the complexity of ensuring all triad members opted into the study. Therefore, the sample size was small and consisted of twelve participants working in four triads; the primary researcher was also a participant and triad member. This small sample size limits the generalisability and transferability of the findings to other contexts and situations. A broader sample size would be beneficial in future research. This could be mitigated with a longer lead in time and expanding the study to include several ITE programmes to include more participants.

Another limitation is potential bias in the reported results, particularly from the qualitative interview data. As this research was self-funded, the research team conducted semi-structured interviews, which could have influenced the participants' responses. This could have been mitigated by hiring an interviewer to conduct the interviews on behalf of the research team; this would be possible if funding applications were successful in the future. It is possible that the results of the semi-structured interviews were affected by the fact that all three members of the triad were interviewed together. Although each participant had the opportunity to provide confidential feedback using the survey, any sensitive feedback would have been captured and analysed. However, the open group dynamics during the semi-structured interview may still have had an impact on the results. The potential bias and subjectivity of the data analysis also relied on the researcher's interpretation and coding of the data. It would be essential to consider the validity and reliability of these findings and the need for further research to confirm and extend these findings.

The research team did not measure the longer-term impacts of CSC. Once the intervention was withdrawn, the PSTs could have returned to pre-intervention teaching practices, and the triad could have reduced their collaboration. This could have been mitigated by measuring teaching performance or other study-specific metrics before and after the intervention to understand the maintenance of the effects over time.

Another limitation of the results concerns learner outcomes. However, this was not a focus of the study due to the complexity of understanding the impacts of any intervention on learner outcomes; it is essential to understand the impact of CSC on students in the classroom.

There were consistent challenges with the technology. At the time of implementation, no all-in-one technology solutions could provide simultaneous feedback from multiple channels while maintaining an observer backchannel and encrypted data privacy. Therefore, a bespoke approach was developed by combining several tools. This was problematic, and there were technical challenges with noise, feedback and Bluetooth unreliability. This could be mitigated by gaining funding to develop a secure and specific solution enabling CSC on one platform.

In addition to the limitations mentioned, it is crucial to recognise that CSC may only be applicable in some situations and with select PSTs. It was understood that via consent, the PST participants were comfortable trying the tool as they had a good relationship with their VL and ISM. However, they indicated that peers would not be interested in receiving BIE feedback via CSC. This was also acknowledged by the ISMs, who agreed that the approach would only suit some students, particularly those who were anxious while being observed. The research also indicates that there could be negative implications based on cognitive load; this is of particular concern for beginning teachers who are processing a broad range of information from the classroom to understand how to teach effectively. There is also the potential limitation that without training or guidance, the BIE feedback delivered by CSC could be detrimental to teaching practice.

Interestingly, the potential drawbacks of BIE technology are not confined to the educational sector, and we have seen examples of this recently in major sporting events. The implications of BIE-assisted decision-making in the Rugby World Cup final 2023 were felt on the world sports stage. The television match official's (TMO) interference overwhelmed the game, and many claim that the TMO is now overshadowing the game. It is essential to recognise that if CSC is applied in ITE, the feedback is appropriate and supports effective evidence-based teaching practices, in addition to the collaborative benefits highlighted in this study.

7.8. Suggestions for Future Research

The findings from this research open up several avenues for future exploration:

1. Future studies should validate CSC's effectiveness across diverse contexts with larger sample sizes. For example, working in ECE, primary or secondary contexts with large, medium or small class sizes.

2. An investigation into the factors that contribute to cognitive load while using CSC would enable an understanding of the most effective prompts to use when communicating with the PST.
3. There are opportunities for more detailed data collection. For example, investigating the specific dialogue exchange between the triad. In addition, with video capture, it would be possible to examine how the dialogue impacts the immediate actions of the PST. Another approach could examine how PSTs apply the theoretical knowledge shared by the VL and ISM to understand more about the potential to bridge the theory practice divide.
4. Longitudinal studies could be carried out to assess the long-term impacts of CSC on the professional growth and practice of PSTs and student learning outcomes.
5. Comparative studies could be conducted to examine the differences and similarities between CSC and other coaching models or feedback methods, particularly the relevance of CSC at different points of PST training.
6. The effectiveness of CSC for other educational stakeholders, such as school leaders, teacher educators, parents, and PLD providers, should be explored. Are there opportunities to include others in the collaborative dialogue?

These future directions will contribute to the ongoing development and refinement of CSC and the broader field of teacher education and professional learning.

This research has highlighted the significant potential of CSC in ITE. By bridging the divide between theory and practice and encouraging collaboration among the triad, CSC could revolutionise the way ITE is approached. It is essential to continue exploring and refining this innovative approach to enhance teacher education and improve future generations' learning outcomes. This research is just the beginning, and its implications are far-reaching, promising a new era in ITE.

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APPENDICIES

APPENDIX A UNIVERSITY OF SOUTHERN QUEENSLAND HUMAN RESEARCH ETHICS (HRE) COMMITTEE APPROVAL E-MAIL

Dear Timothy

Thank you for submitting your ethical review approval for the project listed below.

The University of Southern Queensland conforms to principles of minimising duplication of ethical review for research projects, in accordance with Chapter 5.3 of National Statement on Ethical Conduct in Human Research (2007).

Your project has now been administratively reviewed to ensure that USQ's role in the project has been disclosed duly approved as outlined below. As part of the approval the research team acknowledge that relevant information and advice about this ethical approval may be exchanged with relevant review body/ies. The Principal Investigator will be responsible for informing the ethical review body that reviews and approves the research at all other sites at which the research will be conducted; the name and location of any other body that will conduct an ethical review of the research; and any previous decisions made about the research by other review bodies (in Australia or elsewhere).

USQ HREC ID: H21REA046

Project title: Collaborative Synchronous Coaching for Social Justice

Approval date: 19/03/2021

Expiry date: 25/02/2024

Project status: Approved (with conditions).

The standard conditions of this approval are:

(a) conduct the project strictly in accordance with the proposal submitted to the originating registered human research ethics committee and ethics approval, including any amendments made to the proposal required by that committee;

(b) advise the USQ HREC (via human.ethics@usq.edu.au) immediately of any complaint or other issue in relation to the conduct of this project which may warrant review of the overarching ethical approval of the project;

(c) provide advice via submission of a USQ HRE Amendment for ethical approval of any amendments or revision to the original approved project by the originating registered human research ethics committee prior to implementing any changes;

(d) complete and submit a USQ milestone (progress) report as requested, and at least for every year of approval; and

(e) complete and submit a USQ milestone (final) report when the project does not commence within the first 12 months of approval, is abandoned at any stage, or is completed (whichever is sooner).

Additional conditions of this approval are:

(a) Nil.

Failure to comply with the conditions of approval or the requirements of the National Statement on Ethical Conduct in Human Research (2007) may result in withdrawal of ethical approval for this project.

If you have any questions or concerns, please contact an Ethics Officer.

Kind regards

The Human Research Ethics Team

**APPENDIX A1 THE MIND LAB RESEARCH ENTERPRISE AND ETHICS
(REE) COMMITTEE APPROVAL E-MAIL**

Reference: staff.2021.0001

Kia ora Tim

The Mind Lab Ethics Panel has approved your ethics application relating to the following research project:

Title: Collaborative Synchronous Coaching for Social Justice

Researcher(s): Tim Gander

Date of commencement: 25th February 2021 (for a period of 3 years)

Your ethics application was accepted at the meeting of the Research, Enterprise and Ethics Working Group on **25th February 2021**

The readers recommended that this ethics application should be approved with minor amendments made during the meeting.

Please use the statement below on any information sheets, surveys or other documents that are used with individual participants and/or organisations involved in your research project.

This study has been accepted as ethical by The Mind Lab Ethics Panel, approval number staff.2021.0001. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Panel by emailing ethics@themindlab.com. Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

APPENDIX A2 PARTICIPANT INFORMATION SHEET STAGE 1

University of Southern Queensland



Participant Information for USQ Research Project

Project Details

Title of Project: **Collaborative synchronous coaching for social justice (Stage 1)**
Human Research Ethics Approval Number: H21REA046

Research Team Contact Details

Principal Investigator Details

Tim Gander

[REDACTED]
[REDACTED]

Supervisor Details

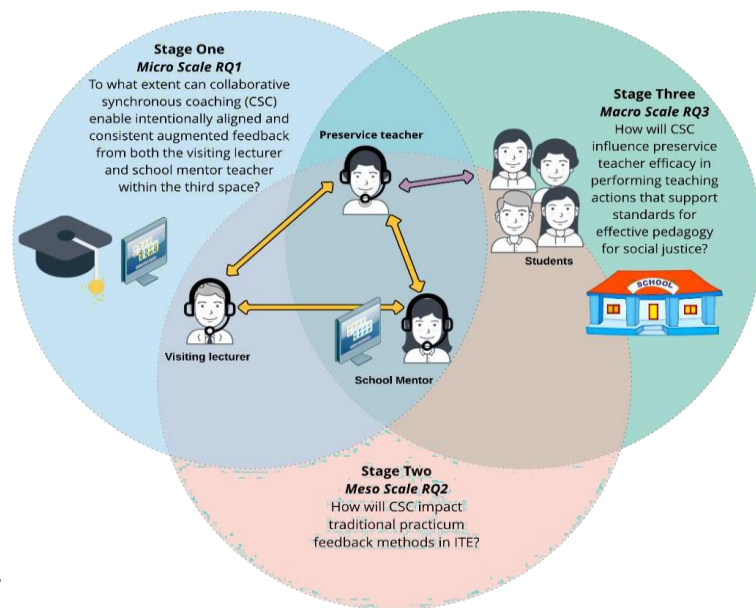
Dr Chris Dann

[REDACTED]
[REDACTED]
[REDACTED]

Description

This project is being undertaken as part of Doctor of Philosophy in Education.

The purpose of this project is to investigate an alternative method for providing practicum feedback to preservice teachers. The hypothesis is that the provision of collaborative and synchronous coaching feedback will support preservice teachers developing pedagogical practice. The overall aim is to develop effective teaching practice for social justice.



The research uses the IRIS Connect tool, as well as a wireless in ear microphone to enable real-time communication from the school mentor and Hoe Ākau during teaching sessions.

The research team requests your assistance as a participant in the study as you are involved in the practicum experience. There are three stages in the research, and you are invited to opt into any of the phases.

Stage one (term 1 2021) – Testing the concept of ‘collaborative synchronous coaching’

Stage two (term 2 2021) – Establishing best practice for using ‘collaborative synchronous coaching’

Stage three (term 3 2021) – Taking part in a study to understand the third space.

Participation in Stage One

Your participation in stage one will involve field trials of the tool. This will occur over three teaching sessions of 20-60 minutes where you will use the tool to communicate with either the visiting lecturer and school mentor, or the visiting lecturer and the preservice teacher depending on your role. This would be very similar to the observations that are already carried out; however, IRIS Connect would be used to provide real-time feedback. The teaching sessions will be recorded using the IRIS Connect platform and used for reflection as

per standard practice. Following the trials there will be three interviews that will take approximately 10-30 minutes of your time.

The interview will take place at a time and venue that is convenient to you.

Questions will include how you feel about using the tool to communicate with others. How effective you think it could be in improving practice, and how it could support collaboration between the school and the ITE provider.

The interview will be audio recorded. If you do not wish for recording to occur, please advise the researcher.

There is also the option to co-construct a survey which will collect data regarding the use of the tool, this would take 40-60 minutes to create and would be used as a reflective document following use of the tool and reflection on the teaching session. It would take less than 5 minutes to complete the survey.

Your participation in this project is entirely voluntary. If you do not wish to take part, you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. You may also request that any data collected about you be withdrawn and confidentially destroyed. If you do wish to withdraw from this project, please contact the Research Team (contact details at the top of this form).

Your decision whether you take part, do not take part, or to take part and then withdraw, will in no way impact your current or future relationship with the University of Southern Queensland or The Mind Lab.

Expected Benefits

The research aims to enhance the provision of equitable access to consistent high-quality feedback. It is expected that this project will directly benefit you by improving teaching practice as well as collaboration between key partners in the practicum experience. However, it may also benefit wider practice in initial teacher education and influence the way that feedback during practicum is delivered.

The information gathered throughout this research could be used in the following ways:

- Publications (e.g. journal articles, books, chapters, course material)

- Presentations (e.g. conferences and seminars)
- Professional development and teacher education programmes

Risks

In participating in the field trial there are minimal risks, use of the tool may cause heightened stress and impact teaching performance for participants. This will be managed by the participants having the ability to remove the earpiece at any time and continue teaching without collaborative feedback.

In participating in the interview and survey there are no anticipated risks beyond normal day-to-day living.

Privacy and Confidentiality

All comments and responses will be treated confidentially unless required by law.

- Interviews will be audio recorded for transcription.
- The interview will be transcribed using either a transcriber or a digital tool and checked by the research team listed at the top of this form.
- You will be provided with a copy of the interview transcript for review and endorsement prior to inclusion in the project data
- You will be given a week to review and request any changes to the transcript before the data is included in the project for analysis.
- The audio recording will not be used for any other purpose.
- The video recording from IRIS will be used for personal reflection. The IRIS Connect footage will not be available beyond the participants who were involved in the lesson.
- Survey responses will be anonymised and used for quantitative data collection Your data will be securely deleted once the project is completed.

This project uses participatory action research to guide the methods used, therefore you will be invited to participate in the analysis and summary of results before they are shared.

Any data collected as a part of this project will be stored securely as per University of Southern

Queensland's [Research Data Management policy](#).

Consent to Participate

We would like to ask you to sign a written consent form (enclosed) to confirm your agreement to participate in this project. Please return your signed consent form to a member of the Research Team prior to participating in your interview.

Questions or Further Information about the Project

Please refer to the Research Team Contact Details at the top of the form to have any questions answered or to request further information about this project.

Concerns or Complaints Regarding the Conduct of the Project

If you have any concerns or complaints about the ethical conduct of the project, you may contact the University of Southern Queensland Manager of Research Integrity and Ethics on +61 7 4631 1839 or email researchintegrity@usq.edu.au. The Manager of Research Integrity and Ethics is not connected with the research project and can facilitate a resolution to your concern in an unbiased manner.

Thank you for taking the time to help with this research project. Please keep this sheet for your information.

APPENDIX A3 PARTICIPANT INFORMATION SHEET STAGE 2

University of Southern Queensland



Participant Information for USQ Research Project

Project Details

Title of Project: **Collaborative synchronous coaching for social justice (Stage 2)**
Human Research Ethics Approval Number: H21REA046

Research Team Contact Details

Principal Investigator Details

Tim Gander
Email:

[REDACTED]
[REDACTED]

Supervisor Details

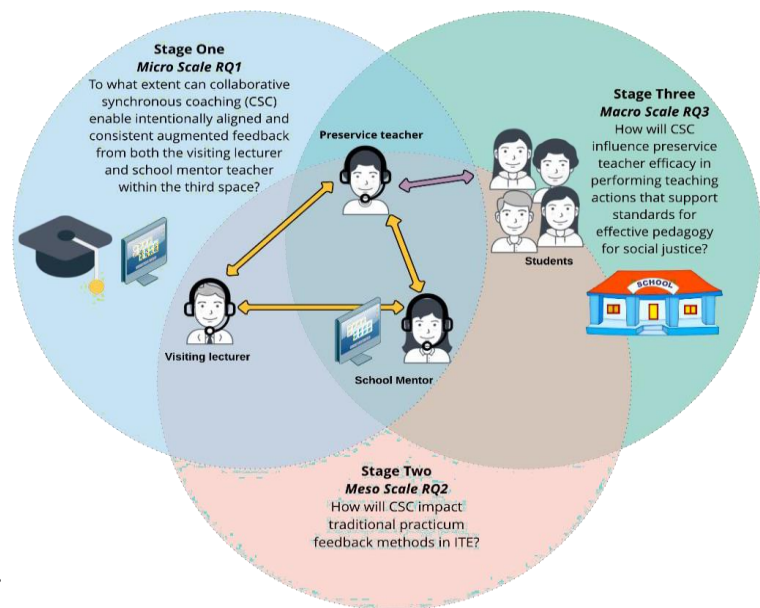
Dr Chris Dann
Email:

[REDACTED]
[REDACTED]
[REDACTED]

Description

This project is being undertaken as part of Doctor of Philosophy in Education.

The purpose of this project is to investigate an alternative method for providing practicum feedback to preservice teachers. The hypothesis is that the provision of collaborative and synchronous coaching feedback will support preservice teachers developing pedagogical practice. The overall aim is to develop effective teaching practice for social justice.



The research uses the IRIS Connect tool, as well as a wireless in ear microphone to enable real-time communication from the school mentor and Hoe Ākau during teaching sessions.

The research team requests your assistance as a participant in the study as you are involved in the practicum experience. There are three stages in the research, and you are invited to opt into any of the phases.

Stage one (term 1 2021) – Testing the concept of ‘collaborative synchronous coaching’

Stage two (term 2 2021) – Establishing best practice for using ‘collaborative synchronous coaching’

Stage three (term 3 2021) – Taking part in a study to understand the third space.

Participation in Stage Two

Your participation in stage two will involve co-construction of how the tool is used in the classroom as well as field trials of the tool. Co-construction will occur for three 30-60-minute meetings to establish protocol used during teaching sessions. The testing of protocol will occur over three teaching sessions of 20-60 minutes where you will use the tool to communicate with either the visiting lecturer and school mentor, or the visiting lecturer and

the preservice teacher depending on your role. This would be very similar to the observations that are already carried out; however, IRIS Connect would be used to provide real-time feedback. The teaching sessions will be recorded using the IRIS Connect platform and used for reflection as per standard practice. Following the trials there will be three interviews that will take approximately 10-30 minutes of your time.

The interview will take place at a time and venue that is convenient to you.

Questions will include how you feel about the way the tool was used. How protocol could be established to support effective use in changing practice and how CSC could impact traditional practicum feedback methods in ITE?

The interview will be audio recorded. If you do not wish for recording to occur, please advise the researcher.

A focus group with all participants involved in the study will be conducted online and will last 40-60 minutes.

There is also the option to co-construct a survey which will collect data regarding the use of the tool, this would take 40-60 minutes to create and would be used as a reflective document following use of the tool and reflection on the teaching session. It would take less than 5 minutes to complete the survey.

Your participation in this project is entirely voluntary. If you do not wish to take part, you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. You may also request that any data collected about you be withdrawn and confidentially destroyed. If you do wish to withdraw from this project, please contact the Research Team (contact details at the top of this form).

Your decision whether you take part, do not take part, or to take part and then withdraw, will in no way impact your current or future relationship with the University of Southern Queensland or The Mind Lab.

Expected Benefits

The research aims to enhance the provision of equitable access to consistent high-quality feedback. It is expected that this project will directly benefit you by improving teaching practice as well as collaboration between key partners in the practicum experience. However, it may also benefit wider practice in initial teacher education and influence the way that feedback during practicum is delivered.

The information gathered throughout this research could be used in the following ways:

- Publications (e.g. journal articles, books, chapters, course material)
- Presentations (e.g. conferences and seminars)
- Professional development and teacher education programmes

Risks

In participating in the field trial there are minimal risks, use of the tool may cause heightened stress and impact teaching performance for participants. This will be managed by the participants having the ability to remove the earpiece at any time and continue teaching without collaborative feedback.

In participating in the interview and survey there are no anticipated risks beyond normal day-to-day living.

Privacy and Confidentiality

All comments and responses will be treated confidentially unless required by law.

- Interviews will be audio recorded for transcription.
- The interview will be transcribed using either a transcriber or a digital tool and checked by the research team listed at the top of this form.
- You will be provided with a copy of the interview transcript for review and endorsement prior to inclusion in the project data
- You will be given a week to review and request any changes to the transcript before the data is included in the project for analysis.
- The audio recording will not be used for any other purpose.

- The video recording from IRIS will be used for personal reflection. The IRIS Connect footage will not be available beyond the participants who were involved in the lesson.
- Survey responses will be anonymised and used for quantitative data collection. Your data will be securely deleted once the project is completed.

This project uses participatory action research to guide the methods used, therefore you will be invited to participate in the analysis and summary of results before they are shared.

Any data collected as a part of this project will be stored securely as per University of Southern

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Consent to Participate

We would like to ask you to sign a written consent form (enclosed) to confirm your agreement to participate in this project. Please return your signed consent form to a member of the Research Team prior to participating in your interview.

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Thank you for taking the time to help with this research project. Please keep this sheet for your information.

APPENDIX A4 PARTICIPANT INFORMATION SHEET STAGE 3

University of Southern Queensland



Participant Information for USQ Research Project

Project Details

Title of Project: **Collaborative synchronous coaching for social justice (Stage 2)**

Human Research Ethics Approval Number: H21REA046

Research Team Contact Details

Principal Investigator Details

Tim Gander
Email:

[REDACTED]
[REDACTED]

Supervisor Details

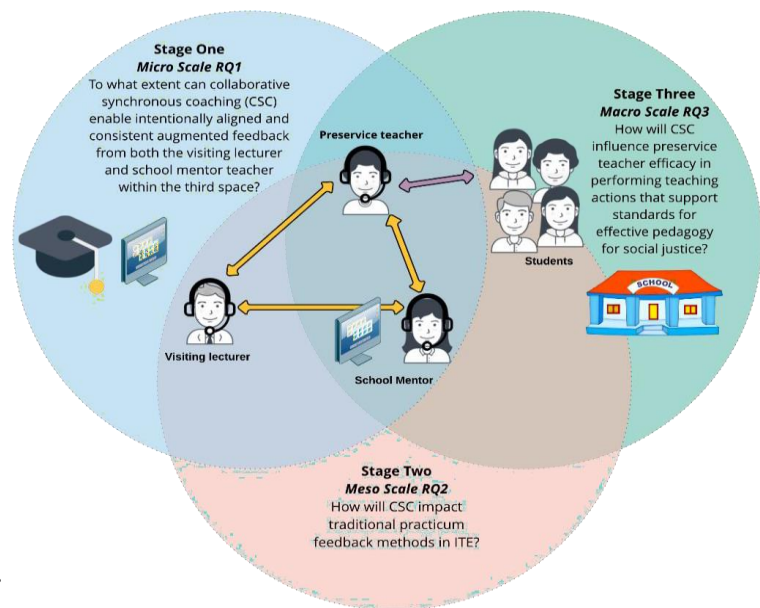
Dr Chris Dann
Email:

[REDACTED]
[REDACTED]
[REDACTED]

Description

This project is being undertaken as part of Doctor of Philosophy in Education.

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Stage one (term 1 2021) – Testing the concept of ‘collaborative synchronous coaching’

Stage two (term 2 2021) – Establishing best practice for using ‘collaborative synchronous coaching’

Stage three (term 3 2021) – Taking part in a study to understand the third space.

Participation in Stage Three

Your participation in stage two will involve co-construction of how the tool is used in the classroom as well as field trials of the tool – there will be particular focus on how the tool is used to collaborate. Co-construction will occur for three 30-60-minute meetings to establish protocol used during teaching sessions. The testing of protocol will occur over three teaching sessions of 20-60 minutes where you will use the tool to communicate with either the visiting

lecturer and school mentor, or the visiting lecturer and the preservice teacher depending on your role. This would be very similar to the observations that are already carried out; however, IRIS Connect would be used to provide real-time feedback. The teaching sessions will be recorded using the IRIS Connect platform and used for reflection as per standard practice. Following the trials there will be three interviews that will take approximately 10-30 minutes of your time.

The interview will take place at a time and venue that is convenient to you.

Questions will include how you feel about how you worked together and some of the reflections of collaborating remotely.

The interview will be audio recorded. If you do not wish for recording to occur, please advise the researcher.

A focus group with all participants involved in the study will be conducted online and will last 40-60 minutes.

There is also the option to co-construct a survey which will collect data regarding the use of the tool, this would take 40-60 minutes to create and would be used as a reflective document following use of the tool and reflection on the teaching session. It would take less than 5 minutes to complete the survey.

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Expected Benefits

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- Presentations (e.g. conferences and seminars)
- Professional development and teacher education programmes

Risks

In participating in the field trial there are minimal risks, use of the tool may cause heightened stress and impact teaching performance for participants. This will be managed by the participants having the ability to remove the earpiece at any time and continue teaching without collaborative feedback.

In participating in the interview and survey there are no anticipated risks beyond normal day-to-day living.

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- The audio recording will not be used for any other purpose.

- The video recording from IRIS will be used for personal reflection. The IRIS Connect footage will not be available beyond the participants who were involved in the lesson.
- Survey responses will be anonymised and used for quantitative data collection Your data will be securely deleted once the project is completed.

This project uses participatory action research to guide the methods used, therefore you will be invited to participate in the analysis and summary of results before they are shared.

Any data collected as a part of this project will be stored securely as per University of Southern

Queensland's [Research Data Management policy](#).

Consent to Participate

We would like to ask you to sign a written consent form (enclosed) to confirm your agreement to participate in this project. Please return your signed consent form to a member of the Research Team prior to participating in your interview.

Questions or Further Information about the Project

Please refer to the Research Team Contact Details at the top of the form to have any questions answered or to request further information about this project.

Concerns or Complaints Regarding the Conduct of the Project

If you have any concerns or complaints about the ethical conduct of the project, you may contact the University of Southern Queensland Manager of Research Integrity and Ethics on +61 7 4631 1839 or email researchintegrity@usq.edu.au. The Manager of Research Integrity and Ethics is not connected with the research project and can facilitate a resolution to your concern in an unbiased manner.

Thank you for taking the time to help with this research project. Please keep this sheet for your information.

APPENDIX A5 PARTICIPANT CONSENT FORM



University of Southern Queensland

Consent Form for USQ Research Project

Project Details

Title of Project: **Collaborative synchronous coaching for social justice**
Human Research Ethics Approval Number: H21REA046

Research Team Contact Details

Principal Investigator Details

Tim Gander
Email:

[REDACTED]
[REDACTED]

Supervisor Details

Dr Chris Dann
Email:

[REDACTED]
[REDACTED]
[REDACTED]

Statement of Consent

By signing below, you are indicating that you:

- Have read and understood the information document regarding this project. ☐ Yes / ☐ No
- Have had any questions answered to your satisfaction. ☐ Yes / ☐ No
- Understand that if you have any additional questions, you can contact the research team. ☐ Yes / ☐ No
- Understand that the interview/focus group will be audio recorded. ☐ Yes / ☐ No
- Are over 18 years of age. ☐ Yes / ☐ No
- Agree to maintain the confidentiality of the information discussed by other participants and researchers during the focus group ☐ Yes / ☐ No

- Agree to participate in phases 1, 2 and 3 of the project (delete where appropriate). ☐ Yes / ☐ No

Participant Name

Participant Signature

Date

Please return this sheet to a Research Team member prior to undertaking the focus group.

APPENDIX A6 EMAIL TO POTENTIAL PARTICIPANTS

Kia ora {Given Name}! As a member of the MTEL team and a PhD student with the University of Southern Queensland I am carrying out some research this year, please complete the [form](#) if you are interested in being involved in the project. Further details including a consent form and information sheet will be sent out once you have indicated an interest.

Your participation in this project is voluntary. It is up to you to decide whether or not to take part in this project. If you decide to take part in this project, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. If you withdraw from the project before data collection is completed, your data will be returned to you or destroyed. Your relationship with the researcher will not be affected by either decision you make

Ngā mihi nui,

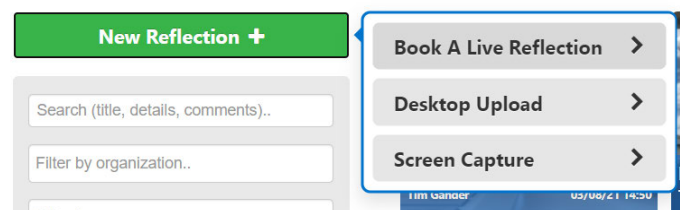
Tim Gander

APPENDIX B1 SETTING UP IRIS CONNECT FOR CSC #1

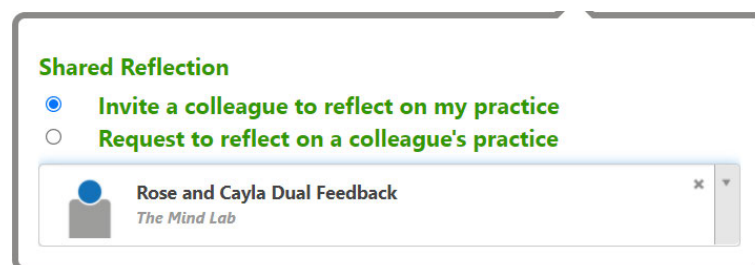
Thank you for your interest in trialling this technology. This is the first time that this has been attempted so we are excited about the potential of this approach. In saying that there could also be some challenges in how this technology works so we appreciate your patience and persistence in advance! Before the project begins please complete [this form](#) once. Please follow these steps to use this technology for your observations.

Prior to the observation

1. **Preservice teacher** arranges a time for the observation with the ISM and HA
2. When logged into Iris the **preservice teacher** creates a 'New Reflection'/'Book A Live Reflection'



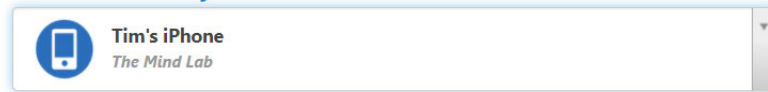
3. In the reflection 'type' the **preservice teacher** should select a 'Shared Reflection' and 'Invite a colleague to reflect on my practice'. The colleague should be '[Insert HA and ISM name] Dual Feedback' (the HA and ISM both have access to this account).



4. **Preservice teacher** selects *their phone* as the device as well as the arranged time for the observation. It is often good to select 15mins before and after the observation so it provides a chance to set up and test the technology, as well as pack down following the observation.

Select devices

Select a camera system

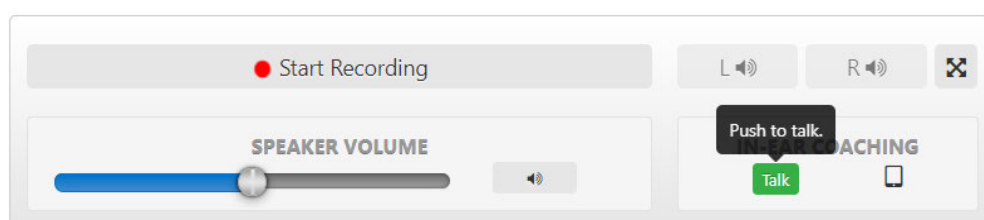


On the day of the observation

1. **Preservice teacher** sets up the camera in the class as usual and connects the bluetooth earpiece to the phone and starts the reflection before the lesson to test the connection.
2. The **HA and ISM** both [login](#) to the 'Dual Feedback' account on the IRIS Connect login (Tim has sent the login details) and start the reflection, you might have to accept the invitation first, and if it is the first time using the web app it will ask for access to your microphone, please accept. Chrome has been the most successful browser. The **HA and ISM** will both be able to talk to the preservice teacher and observe the teaching in the room, however the **HA and ISM** will not be able to hear each other through the observation software. Please make sure that you are wearing headphones to stop echo.
3. As a back channel the **HA and ISM** will use Zoom and record the session, please keep the mic on in Zoom to record the back channel audio. The **HA** will set up and start the Zoom meeting using the HA account and send the meeting link to the **ISM**. This could happen before the lesson so there could be a chance to catch up on any specific things to focus on. You can choose if you have your camera on but you will more than likely be watching the lesson on the video rather than looking at the other observer. The **HA** will record the meeting on Zoom.

During the observation

1. The **preservice teacher** will teach as usual, but will be able to hear and respond to the **HA/ISM** when they click the microphone button.



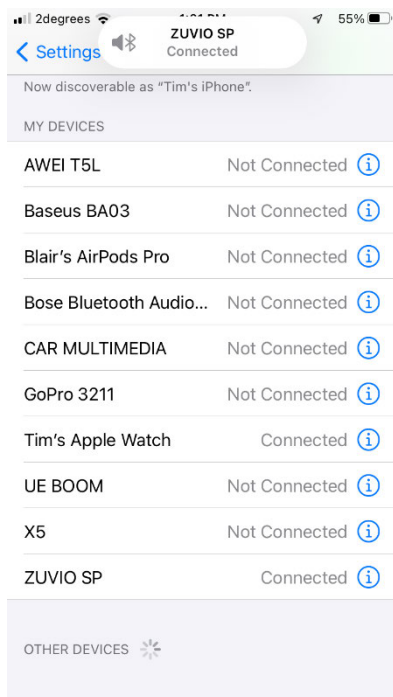
If the **HA/ISM** would like to communicate with the preservice teacher then they will click the 'microphone button' on the interface for the observation. Only one person should talk to the preservice teacher at one time. The message to the teacher will probably be negotiated between the **HA and ISM** on the Zoom back channel.

Following the observation

1. Complete the process using the usual feedback process, or discuss between the **Preservice teacher, HA & ISM** the most productive approach.
2. Complete the [form](#) that will inform the research project.
3. **HA** sends the Zoom recording to Tim.

*Tips for pairing the headphones to the phone

Before starting the observation the pre-service teacher will have to make sure that they have the headphone (probably better to just use one) connected to the phone.



1. Pair the headphone in the main iOS settings by taking it out of the charging case and long pressing the button on the headphones until the light is flashing (you'll only have to do this the first time you use them). In the bluetooth settings on the device select 'ZUVIO SP'. It should say 'Connected'. (The next time that you take them out of the case near the phone they should connect automatically).
2. In the IRIS app go to 'advanced' and then 'pairing' and make sure that the Bluetooth Mic connected is the ZUVIO SP. This should have happened automatically after connecting the

headphones to the phone through the main iOS

Pairing Manager



Video

Tap to pair an Apple device as a secondary camera



Audio

Channel 1: Tap to pair an Apple device as a microphone

Channel 2: Bluetooth mic connected: ZUVIO SP



Back

settings.

APPENDIX B2 SETTING UP IRIS CONNECT FOR CSC #2

The IRIS Connect app has not been consistent in providing reliable results so this approach should simplify the process. Thank you for your persistence! In this approach you will all login with your own IRIS Connect accounts, the ISM will use the one set up for the research (eg. 'roseandmarc').

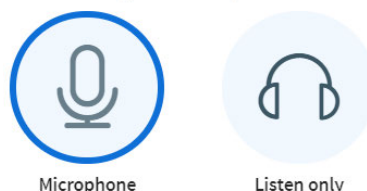
Prior to the observation

1. **Preservice teacher** arranges a time for the observation with the ISM and HA.
2. The link to the '**Room**' has been sent to each person in the triad (it is the same link), this is how you will connect for the coaching for every session, this link won't change.
3. **Preservice teacher** checks that the bluetooth headphones can connect to the computer (or device that will be used for the observation).

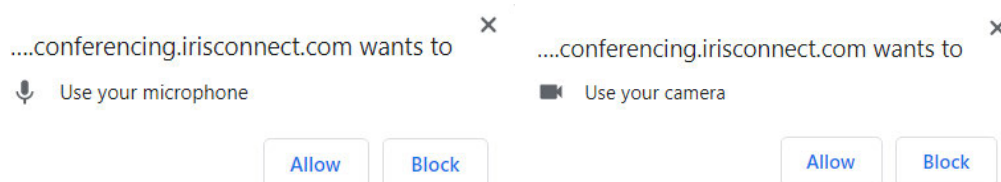
On the day of the observation (Preservice teacher)

1. Preservice **teacher** sets up the computer (or chromebook) in the class as usual and connects the bluetooth earpieces to the computer and starts the '**room**' before the lesson to test the connection - the camera on the computer should be pointing to the teaching space (like you would with the IRIS app on your phone). The IRIS 'room' will ask you how you'd like to join the audio - select 'Microphone'.

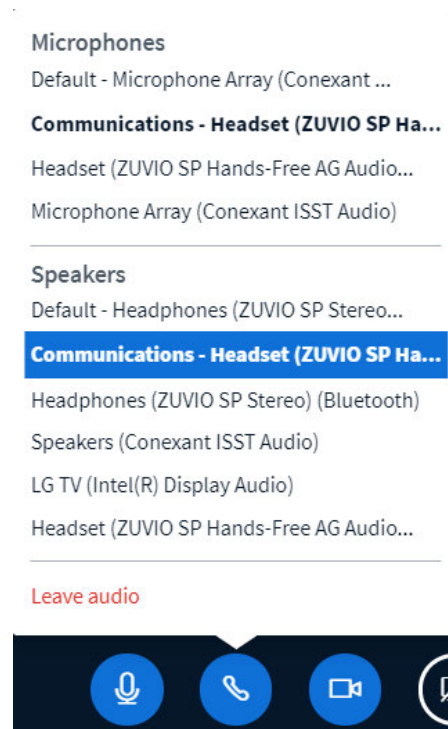
How would you like to join the audio?



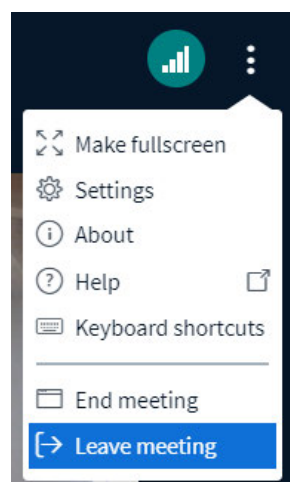
2. The 'browser' might also ask for permission to use the microphone/camera the first time you use it, please 'allow' this.



3. Check the headphones are connected in the 'room' by clicking the 'telephone' button. You need to use the headphones for the 'Microphone', and the 'Speaker' (If you put one of the headphones back in the case it will disconnect them both so if you are only using one earpiece leave the other one out of the case!)



4. The HA/ISM will be able to talk to you during the lesson, please test that you can communicate with them via 'rooms' before the lesson starts. At the end of the lesson all you will need to do is go to the top right of the screen and click the 3 dots and then end the lesson. It will upload and save automatically.



End CSC Testing (Clare/Marc/Rose)



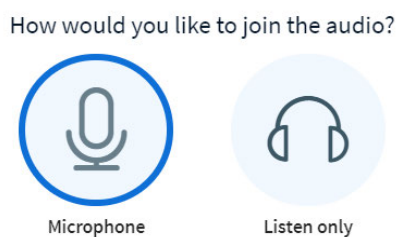
This action will end the session for 2 active user(s). Are you sure you want to end this session?

Yes

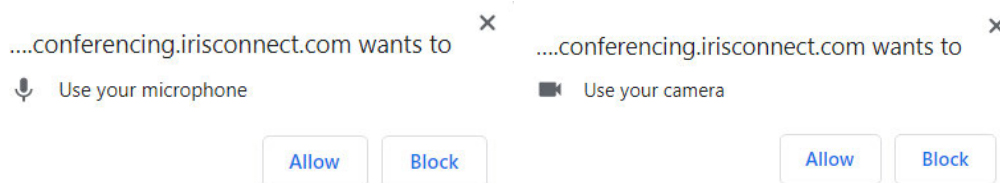
No

On the day of the observation (ISM/HA)

5. The HA and ISM teacher will click the link to the 'room' and login using their own IRIS accounts, the ISM will use the one set up for the research (eg. 'roseandmarc').
6. When you join the room It will ask you how you'd like to join the audio - select 'Microphone'.



7. The 'browser' might also ask for permission to use the microphone/camera the first time you use it, please 'allow' this.



8. You should be using headphones to connect to the room so there isn't any feedback - this should set up automatically but you can change any preferences by using the 'phone' button. The microphone will probably be the default computer microphone unless you have headphones with a built in microphone. Test it out to check that there is no feedback and everyone can hear you.

Microphones

Default - Microphone Array (Conexant ...

Communications - Microphone Array (Co...

Microphone Array (Conexant ISST Audio)

Speakers

Default - Headphones (Conexant ISST A...

Communications - Headphones (Conexant...

Speakers (Conexant ISST Audio)

Headphones (Conexant ISST Audio)

LG TV (Intel(R) Display Audio)

Leave audio



9. As a back channel the **HA and ISM** will use Zoom and record the session. The **HA** will set up and start the Zoom meeting using the HA account and send the meeting link to the **ISM**. You can choose if you have your camera on, however Zoom might not let you use the camera for the IRIS 'room' and 'Zoom' at the same time. You will more than likely be watching the lesson on the video rather than looking at the other observer. The **HA** will record the meeting on Zoom.

10. The ISM and HA will be able to listen to the classroom and the preservice teacher through the 'room' and communicate with each other through 'zoom'. Therefore ISM and HA will need to check that they are on 'mute' in the 'room' so they are not accidentally talking to the preservice teacher. When either the ISM or HA would like to talk to the preservice teacher they will need to unmute in the 'room'. The microphones can be left on in 'Zoom' the whole time as the ISM/HA not communicating with the preservice teacher will be able to listen to the conversation.

11. If at any point the classroom is too loud for the ISM and HA to communicate on 'Zoom' it is possible to 'leave' the audio from the 'room'. You can do this by clicking the same button that provides the sound options (the telephone symbol) and then click leave audio at the bottom. This is the same as muting yourself and the preservice teacher. You can join the audio when you are ready to listen again by clicking the same button and joining the audio again, it will ask you to do an echo test and you can click the green thumb and it will let you back in!

Microphones

Default - Microphone Array (Conexant ...

Communications - Microphone Array (Co...

Microphone Array (Conexant ISST Audio)

Speakers

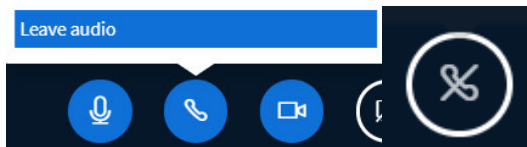
Default - Headphones (Conexant ISST A...

Communications - Headphones (Conexant...

Speakers (Conexant ISST Audio)

Headphones (Conexant ISST Audio)

LG TV (Intel(R) Display Audio)



This is a private echo test. Speak a few words. Did you hear audio?

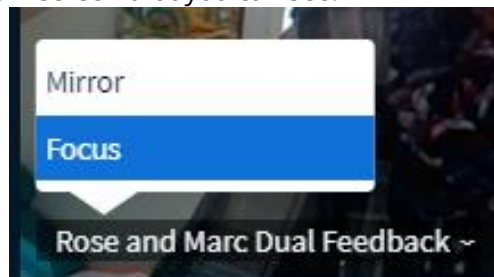


Yes

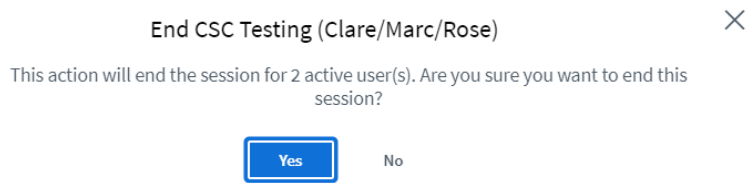
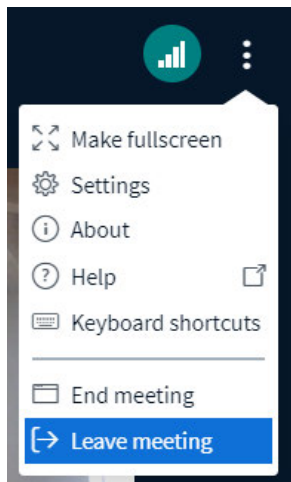


No

12. There are some other options in the room, if you would like to see a larger picture of the classroom you can click on the Preservice teacher name below their video and select 'focus'. This will make the picture the main screen that you can see.



At the end of the observation the preservice teacher should finish the session, however if you need to leave or end the session you can click on the 3 dots on the top right corner of the screen and then either leave or end the session. Ending the session terminates the session for everyone.



Following the observation

1. Complete the process using the usual feedback process, or discuss between the **Preservice teacher, HA & ISM** the most productive approach.
2. Complete the [form](#) that will inform the research project.
3. **HA** sends the Zoom recording to Tim.

APPENDIX C1 EVIDENCE OF PARTICIPATION IN THEME DEVELOPMENT AND INITIAL USER REQUIREMENTS

Receiving and enacting....

In your role what elements of the lesson observation feedback process contribute to improving pre-service teacher practice?

PST - Feedback on how you used language, providing practical examples in practice, supporting how to notice the things that you might not always notice (tacit knowledge, the things you just know from experience!), being asked questions to support good practice

ISM - Having dialogue about teaching, discussion of practice, improve teaching immediately

HA - Offer alternative approaches, support teacher to notice strengths and weaknesses, support the teacher to reflect independently, provide goal orientated feedback

(Tacit or practice based knowledge, use of language/teacher talk, reflection,

Supporting **noticing what's going** on and who is engaged or not engaged in a busy workshop environment. Providing goal orientation feedback. Providing feedback on my **specific choice of wording** in addressing the class and individuals. (PST)

Real **practical examples** compared to the high level theory that we discuss/learn - e.g. you could have said blah when the student did blah (PST)

Supporting the development of **aspects of practice** (giving instructions, assessment for learning, effective questions etc.) through questioning.(PST)

Use of dialogue used by the teacher to support them to notice their strengths and weaknesses, providing feedback which is goal orientated and ensuring the lesson observer allows the participant to reflect independently in order to demonstrate progress towards their goals. (HA)

Providing goal orientated feedback, guiding participants to review practice, offer external ideas of how **things may be done differently** or similarly for a greater outcome for all. (HA)

The **discussion** is helpful - allowing the participant to talk through their own thoughts on the criteria supporting noticing though questioning - (ISM)

In your role what would you hope to achieve by using collaborative synchronous coaching (CSC)?

PST - Action feedback immediately, raise engagement in class,

ISM - Improve practice more rapidly

HA - Build confidence, immediate progress, reflecting critically in practice (support thinking on their feet)

(building confidence, immediate progress in practice)

I would hope to be able to **action feedback immediately and initiate a** more responsive feedback cycle - particularly in relation to practical feedback (think about where I am standing, the pace at which I'm speaking, phrases which are/are not helpful etc.) (PST)

Different ways of managing behaviours (**immediate action/impact**) and ideas on how to ask more **effective questions of my students and their work**. (PST)

To be able to monitor everything that is going on in the workshop environment, to know where to stand at certain times in order to see everyone and keep everyone safe and on task. The main thing I hope to

achieve is a greater ability to be able to keep the whole class (about 20 to 25 students) consistently engaged in their work, and to be able to teach better student agency. (PST)

Calling attention to examples and allowing them to be **fixed/improved in the moment**, rather than just critiquing afterwards (PST)

They can gain feedback in real time and therefore improve and **implement pedagogy faster (ISM)**

To **build the confidence of the teacher to adapt their practice in the moment**, supporting them to be flexible and adapt. Once the lesson has finished, it can be challenging to pin point how a teacher might respond differently in the moment. This tool might support teachers to **make progress more immediately** by trying something in the moment and seeing the immediate impact of the strategy suggested to them. (HA)
Increase of present and active thinking, immediate solutions where needed, "eyes at the back of the head" (HA)

APPENDIX D RESEARCH POSTER

The following research poster was presented at ASCILITE 2023 in Christchurch New Zealand. [Online link to the poster here.](#)

Collaborative Synchronous Coaching for triadic collaboration in teacher education: Bridging the theory-practice divide

Introduction

"Practice is more than practical inquiry is more than an artful rendering of teachers' practical knowledge, and understanding the knowledge needs of teaching means transcending the loss that the formal-practical distinction captures the universe of knowledge types"

McIntyre and van der Stoep (2019)

This study stems from the researcher's experience as a trainee teacher, as well as more currently as a coordinator of practicum partnerships and a visiting lecturer on a practice-based ITE program. The study aimed to find an effective way to collaborate and share knowledge among the triad members (pre-service teacher + PST, in-school member + ISM, and visiting lecturer + VL), especially with the COVID-19 pandemic restricting access to schools.

Objective

The objective was to disrupt the theory-practice divide in initial teacher education (ITE) by focusing on two key elements: (1) providing equitable access to intentionally aligned high-quality feedback for pre-service teachers and (2) fostering collaborative partnerships between ITE providers and schools within the 'third space'.

Methodology

This research was developed using participatory action research in 2020/21 based on the 3-level 'collaboration compass' (Vassak & Shorrock, 2019).

Each stage was participatory and iterative, including elements of ongoing action/measure and reflect.

Data was collected through:

- Co-constructed surveys
- Field notes and observations
- Semi-structured interviews

Four triads took part in the research. They were based in secondary schools throughout New Zealand.

Participants were involved in the analysis of data and the creation of subsequent iterations.

Collaborative Synchronous Coaching (CSC)

CSC involves triadic synchronous coaching by linking pre-service teachers (PST), ISM, and VL, while maintaining a private backchannel for collaboration.

Findings

Collaboration to bridge the theory-practice divide: ●●●

- Knowledge sources of the theory-based assessment and the formative contextual teaching practice are combined.

Sharing tacit knowledge: ●●●

- Bringing expertise into schools for coaching and mentoring
- Understanding of the varying demands of each member of the triad
- Understanding of the contextual knowledge for PST and VL

Providing questioning feedback: ●●●

- Difficult to process for the PST
- Hard to change the teaching plan on the spot for PST
- Questionable consensus change in practice if PST was ready

CSC in the third space: ●●●

- Hybrid identities
- Flex
- Accountability

Best practice when using CSC

- Integrate roles, responsibilities and outcomes
- One person provides feedback
- Pre-determined prompts
- PST seeks a space to receive feedback
- Develop a seamless technology solution
- Transparency, particularly for students in the classroom.

Conclusion

CSC augments traditional one-to-one coaching by promoting open dialogue and transparent communication, combining theoretical and practical teaching requirements. CSC enables all members to provide ongoing, high-quality feedback. The research will inform the feedback provided at the end of the PST directly. Inspiring in this third space prompts designed to create connections between social and cultural contexts, encouraging the triad members to often provide high-quality feedback. The research will inform the feedback provided at the end of the PST directly. Inspiring in this third space prompts designed to create connections between social and cultural contexts, encouraging the triad members to often provide high-quality feedback.

Limitations

The technology was not designed to support this approach, and therefore, there can be something that goes to a Bluetooth connection showing that. The equipment for PST can be overwhelming. If used as an assessment tool, it could be harmful to relationships in the triad. There is an element of bias in participatory action research.

References

Archer, L., Stringer, P., Miller, J., & Mayes, J. (2019). The impact of effective school-university partnerships: New Zealand school-based research and practice. *Journal of Curriculum Studies*, 51(1), 1-18.

Chen, S., & Stringer, P. (2019). School-based research and practice: Teacher learning in a networked world. *Journal of Curriculum Studies*, 51(1), 1-18.

McIntyre, A. (2019). *Principles for Participatory Action Research in Education*. (3rd ed.) Auckland: Auckland University of Education.

Vassak, J., & Shorrock, P. (2019). Sharing the challenges in evaluating practice learning. In J. & P. (Eds.), *Principles for Participatory Action Research in Education*. Auckland: Auckland University of Education.

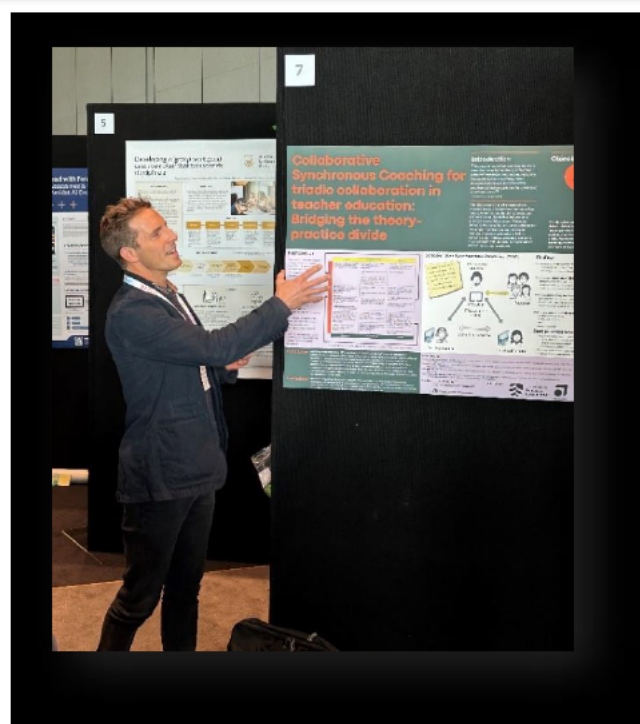
Author

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linkedin.com/tim.gander

Affiliations

University of Southern Queensland
asciliteEX

Feedback and contact



Sharing during the poster showcase

APPENDIX D1 RESEARCH SUMMARY VIDEO

This video summary was created using generative AI tool Lumen5 and was used to share the research via interactive QR codes on the research poster, as well as in research presentations and on social media and research networking platforms such as LinkedIn and Academia.edu.

