THE UNIVERSITY OF SYDNEY

Evaluating the effectiveness of the Training in Interaction, Communication and Literacy (TICL) program in primary schools: A mixed-method pilot study

Heba Alshare

B.Sc (OT), MOT

Supervisor: Dr Michelle Villeneuve

Thesis presented in partial fulfillment of the degree of Master of Occupational Therapy

Discipline of Occupational Therapy

Faculty of Health Sciences

The University of Sydney

2017

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ACKNOWLEGEMENTS

Firstly, I would like to express my deep gratitude and appreciation to my supervisor, Dr Michelle Villeneuve, for her generous academic guidance and personal support throughout my learning journey in this research project. Her invaluable expertise and kindness made my learning time enjoyable and kept me engaged with my research. I consider her as a talented coach who consistently provided me with great mentoring and precise revisions, which has crafted my thesis and built up my research skills as a novel researcher.

I also would like to thank Professor Lynette Mackenzie for her continuous guidance and precious advice throughout this research course. I am also thankful to Professor Tricia McCabe who has introduced this subject matter and helped me to understand the context of my research topic. Many thanks go to Ms Julia Sterman with whom I practiced my interviewing skills and learned how to ask a good qualitative question. My sincere thanks go to Dr Robert Heard, who generously provided me with brilliant statistical advice and expertly helped me to understand the meaning of the quantitative results.

Secondly, I am indebted to the Hashemite University which offered me their sponsorship and financial support throughout my Master's program.

Thirdly, I wish to express sincere thanks to all my family members and friends who kept me motivated to work on my research with their encouraging words and pure wishes. Many thanks to my dad, brothers, sisters, uncles, aunties and my husband's family for all their wonderful emotional support.

Special thanks go to my mum, Dr Basimah Alshare, who has always inspired me as a great example of the successful woman that any lady wishes to be.

Tremendous thanks go to my grandparents who filled my life with unconditional love, and to whom I hold a very strong bond and unique relationship.

A huge thank you to my soul-mates, Nivin, Omaima and Amani who always charged me with positive energy, and whom their friendship never diminished by time or distance.

Finally, I dedicate this thesis to my lovely little daughter, Dyala, and to my husband, Mohammad Qattan, the man who consistently believed in me and brightened my life with passion, hope and laughter. Without their sacrifice and tolerance, I would not be able to complete this thesis. I am grateful for the joy, love and encouragement they gave to me.

Thesis abstract

Background: The increasing diversity of children in today's classrooms is posing complex considerations for teachers when designing instructions to support the learning needs of all students with and without disabilities in regular classrooms. Theoretical evidence recognises inter-professional collaboration and coaching as useful approaches to assist teachers in developing inclusive education competencies and integrating therapeutic strategies into classroom routines. However, there are limited empirical studies to support the link between coaching and positive changes in teachers' practices and students' outcomes. The Training in Interaction, Communication and Literacy (TICL) is a 10-week coaching program delivered by trained speech-language pathologists (SLPs) and/or occupational therapists (OTs) to support the Continuing Professional Development (CPD) of teachers in three skill areas: interaction, communication and literacy; in order to facilitate the children's learning in these areas. TICL was originally developed for a pre-school setting, but has been adapted and implemented in primary schools.

Aims: This pilot study aimed to evaluate the effectiveness of TICL for integrating speech-language strategies into classroom teaching practices at two primary schools in Sydney, Australia, and to explore the experiences of participating teachers to accommodate TICL to primary-school settings.

Methods: This study utilised a mixed-method approach. Focus group interviews were the primary data sources conducted to understand the experiences of participants, and analysed using inductive analysis. Nine teachers participated in the focus group interview at school 1, and three teachers participated in the focus group interview at school 2. The Interaction, Communication and Literacy (ICL) Skills Audit was used as a self-assessment tool to measure change in the participants' confidence across six skill areas and related 18 sub-skills through pre-post data. Descriptive analysis of this pre-post quantitative data was conducted.

Findings: Quantitative data analysis showed a statistically significant improvement in the participants' confidence in nine sub-skills of the ICL Skills Audit (P-value < 0.05). Results showed that the majority of participants across the 18 sub-skills either improved in their confidence or did not change. On very few occasions, the participants' confidence decreased. Focus group interviews revealed that (a) The relationship between participants and TICL coaches crossed over from feeling judged to reflecting on teaching practices through a collaborative approach, (b) The ICL Skills Audit was a useful reflective tool that raised the

participants' awareness of their existing teaching skills, (c) TICL facilitated the participants' learning through modelling and coaching in context., (d) the need to further discuss family involvement in TICL, and (e) TICL needs to be more literacy-based to accommodate the nature of primary classes.

Conclusion: There is a critical need for improved collaboration between teachers and SLPs/OTs to address diverse literacy needs of all children in classroom. This study showed that TICL coaching could be a promising approach to incorporate therapeutic strategies into teaching practices. Future long-term research is recommended with a larger sample to evaluate the effectiveness of TICL for integrating therapeutic strategies into teaching practices in primary schools.

Notes: This thesis contains two sections. Section I is the literature review referenced according to the American Psychological Association referencing style (APA 6th) as per the University of Sydney referencing guidelines. Section II is the journal manuscript referenced according to SAGE Harvard as per the Child Language Teaching and Therapy journal guidelines.

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Section I: Literature review

Introduction

Inclusion principles outlined in Education for all (EFA) (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2000) have gained traction over the past three decades. Inclusive education involves facilitating learning environments that allow all students to achieve their greatest learning potential in physical, social, cognitive and emotional development (Winter & O'Raw, 2010). In response to EFA, many countries have initiated inclusive education policies and practices to enable all children, including children with disabilities, to access learning in their regular community school (Hutchinson & Martin, 2012; Peters, 2007). Legislation in the United States preserved the rights of children with disabilities under the Education for all Handicapped Children Act (1975) and the Individuals with Disabilities Education Act (1990). In Britain, the Education Act (1981) and Special Educational Needs and Disability Act (2001) authorised the rights for inclusion of students with disabilities in mainstream schools. Similarly, the Disability Discrimination Act (1992) and the Disability Standards for Education (2005) in Australia encourage the enrolment of children with disabilities in regular schools. Increasing diversity of children in today's classrooms poses higher expectations on teachers to be able to support participation and achievement for all children with various learning needs (Rao & Meo, 2016).

Inclusive education approaches such as universal design for learning (UDL) emphasise the importance of creating equal opportunities and access for all students to learn a particular content in a way that works best with their diverse learning abilities and individual differences (Hall, Meyer & Rose, 2012). Inclusive education encourages the use of a stimulating and relevant curriculum that can be adapted to suit the learning needs of diverse students, and to create educational settings where barriers to learning and participation can be identified and eliminated (Winter & O'Raw, 2010). Despite consistent progress, Australian teachers are challenged to provide meaningful classroom-based support, creating inequities for disadvantaged students and those with additional learning needs (Anderson & Boyle, 2015).

Disadvantaged groups including students from low socioeconomic communities, students from non-English speaking backgrounds and students with disabilities achieve poorer outcomes in literacy assessments and other educational measures compared to their peers (Australian Government Productivity Commission, 2004). In Australia, 82% of students with disabilities attended governmental schools in 2002, and the number of students with disabilities attending mainstream schools has been increasing (The Australian Government

Productivity Commission, 2004). However, the Australian government released the Review of Funding for Schooling- Final Report (Department of Education, Employment and Workplace Relations, 2011) which clearly stated the existing inequality in performance and educational outcomes among disadvantaged groups of students across the Australian schooling system. Dempsey and Davies (2013) relied on a previous longitudinal study of Australian children (Australian Institute of Family Studies, 2011) to profile the prevalence of required additional services to support the educational needs of young Australian children. Their study revealed that 399 (12.3%) of 3251 students required additional specialised school services, where the main category in need for those required services was learning difficulties in reading representing 53.7%.

Students with learning difficulties, communication and/or speech-language disorders often have limited literacy acquisition and peer-to-peer interaction (Cohen, 2006; McKinnon, McLeod & Reilly, 2007; Tomblin, Zhang, Buckwalter & Catts, 2000). Childhood speech-language disorders and communication difficulties can contribute to negative outcomes on children's educational achievements, which may affect successful continuation of their grade-level requirements (Gosse, Hoffman & Invernizzi, 2012; Justice, Mashburn, Pence & Wiggins, 2008; Sailor, 2014; 2015). An Australian nationally representative study of 4329 young children revealed that children with language and communication difficulties achieved significantly poorer educational outcomes at age seven to nine years compared to their non-affected peers (McCormack, Harrison, McLeod & McAllister, 2011). Moreover, teachers and families reported that children with communication difficulties performed a slower progression in reading, writing and other school-related skills, while those children reported disadvantaged peer-relationships and less enjoyment at school than their peers. Another study of about 14,500 students in primary and secondary schools conducted in Sydney identified communication disorders as the second most common area of learning needs, affecting 13% of children in those schools (McLeod & McKinnon, 2007). A more recent study was conducted by McCormack and Verdon (2015) to explore the distribution and extent of vulnerability in communication skills among children across Australia using existing data of the Australian Early Development Census. Their study showed that 47,636 (17.4%) children were identified as developmentally at risk in language and cognitive skills, and 69,153 (25.3%) children were identified as developmentally at risk in communication and general knowledge skills. This increasing learning diversity of children in today's classrooms poses complex considerations for teachers when designing instructions to support the learning needs of all students with and without disabilities or learning difficulties (McNamee, Chen, Masur, McCray & Melendez, 2002).

Challenges faced by teachers in today's classrooms

A common challenge that teachers face with inclusive classes is to develop a lesson that meets the standard curriculum while considering the range of learning abilities of their students (Rao & Meo, 2016). Teachers in inclusive classrooms often struggle to address the individual needs of students with learning difficulties due to time constraints, the need to teach a set curriculum and the number of students in classroom (Ehren, 2000). Research within the Australian context revealed teacher resistance to the notion and practical implementation of inclusive education (Conway, 2002; Konza, 2008; Westwood & Graham 2003). As teachers are placed at the front-line of the inclusive education process and are in charge of teaching responsibilities, they seem to be less enthusiastic toward integrating students with disabilities into their classrooms. This is linked to the teachers' perceived lack of confidence and skills to teach those students with special learning needs (Konza, 2008). Teachers in mainstream classrooms often report being overwhelmed with feelings of inadequacy and incompetence when they found themselves facing a wide range of students with disabilities and learning difficulties (Carroll, Forlin & Jobling, 2003; Gould & Vaughn 2000). Many teachers struggle to balance between maintaining individualised focus on students with special learning demands and the provision of teaching and supervision with the whole class. Teachers often perceive this as disadvantaging other children in their classrooms given their time constraints and large class sizes (Konza, 2008; Westwood & Graham, 2003). Added to these challenges responsibility placed on teachers to allocate time for collaborating with families, other school-based professionals, and external representatives from different agencies to support the inclusion of students with special learning needs (Konza, 2008). Research has documented the persistent challenges to collaboration between teachers and related service providers such as speech language therapy and occupational therapy support at school (Dockrell & Howell, 2015; Villeneuve, 2009).

An Australian study was undertaken in 2001 in 37 primary schools in Sydney to estimate the prevalence of speech disorders and other learning difficulties among children (McKinnon et al., 2007). This study revealed that 5309 children required additional learning needs due to different conditions such as communication disorders, behavioral/emotional difficulties, English as a second language, intellectual and/or physical disabilities. Notably, this study showed that there was a high prevalence of speech and communication disorders among children in those schools, where teachers required additional support from speech-language pathologists (SLPs) and curriculum modifications to facilitate the learning outcomes for those children. However, additional support was not often provided due to the following reasons:

(a) there were too few SLPs employed in New South Wales (NSW) education sector, and (b) most speech-language services were provided to pre-school children, while primary-school children often had limited access to speech-language services (McKinnon et al., 2007). Therefore, teachers in NSW primary schools are often the main direct source of support for children with additional learning needs in their classrooms (McLeod & McKinnon, 2010). Overby and colleagues (2007) investigated the perceptions of teachers on the academic and social-interaction skills of primary school-aged children with speech disorders (Overby, Carrell & Bernthal, 2007). This mixed-method study showed that teachers were hesitant about their skills to support the educational needs of children with communication difficulties, and reported their need for specific education and training to teach those children. Despite the challenges, collaborative models of service delivery are promoted as best practice for integrating therapy supports into classroom programming and school routines (Konza, 2008; Villeneuve, 2009).

The need for a collaborative approach

In the health sector, inter-professional education has gained recognition as a collaborative way of combining knowledge and improving outcomes for clients. Inter-professional education is identified as planned initiatives designed to create inter-professional learning opportunities through active interaction and collaboration (Freeth, Hammick, Reeves, Koppel & Barr, 2005). This collaboration is primarily targeted to recognise expertise of professionals from different disciplines, promote positive communication and working-relationships between the multidisciplinary team, and reinforce positive change in inter-professional practice. Freeth and colleagues (2005) highlighted the importance of inter-professional education programs which aim to facilitate a collaborative interaction among interdisciplinary professionals through the following strategy: "learn with, from and about each other" (Freeth et al., 2005, p. 11). Reeves and colleagues (2010) conducted a synthesis of systematic reviews, which indicated evidence of effective inter-professional education programs in enhancing knowledge, attitudes and skills of professionals from different disciplines through a collaborative process that positively influenced their practices and quality of services (Reeves, Goldman, Burton, & Sawatzky-Girling, 2010).

Inter-professional collaboration between school-based health professionals such as SLPs and occupational therapists (OTs) with teachers could be perceived as an influential approach to exchange expertise, skills and knowledge and provide quality school-based services. Many researchers have reported the increased need for improved collaboration between teachers and

SLPs to address literacy needs of children with speech-language difficulties in the classroom (Marshall, Ralph & Palmer, 2002; Overby et al., 2007; Peterson, Taylor, Burnham & Schock, 2009). Traditional service delivery of school-based speech-language pathology focused on providing individualised interventions for students with speech-language disorders targeted toward improving areas of deficits to meet the learning needs for each individual child (Hutchins, Howard, Prelock, & Belin, 2010). One of these traditional services is based on the pull-out model which involves providing speech-language therapy to children outside their classrooms and in isolation from the curriculum (Harn, Bradshaw & Ogletree, 1999). A common criticism of this model is that speech-language interventions delivered in this way have no or little relevance to the curriculum. As well, teachers and other professionals are unable to observe those interventions (Harn et al., 1999). Push-in models emerged as a more effective way for SLPs to deliver classroom-based services (Harn et al., 1999; Stephenson, 2008). A broader service-delivery model for integrating therapy support at school is based on collaborative consultation; which enables both professionals (e.g., SLP & teachers) to bring their diverse expertise and engage in an interactive process to support children with special learning needs (Harn et al., 1999; Strickler et al., 2014; Westwood & Graham, 2000). Interestingly, Westwood and Garaham (2000) conducted a study in 77 primary schools in NSW and South Australia to explore the teachers' perspectives about adopting a collaborative consultation model with colleagues, specialised health professionals and families to support students with special needs in their classrooms. Their study found that teachers considered collaborative consultation as a valuable approach to support them in teaching children with special needs. This collaborative solution involves sharing ideas, knowledge and professional expertise between teachers and other professionals, to allow teachers to better develop their teaching practices and instructional strategies for all children in their classrooms.

This shift toward supporting teachers in their classrooms to embed therapy supports into classroom programming through a collaborative approach is also promoted in the occupational therapy literature (Case-Smith & Rogers, 2005; Villeneuve & Hutchinson, 2012). There is need for research that elaborates how therapists and teachers can collaborate more effectively to support participation and achievement for all learners. Literature on inclusive education and UDL highlights the importance of integrating support and training for teachers; to enable them to provide a comprehensive instructional approach that addresses the learning diversity of all students (Courey, Tappe, Siker & LePage, 2013; Levy, 2008; Rose & Gravel, 2009). Coaching and training on embedded instruction has been commonly used to

assist teachers in developing inclusive education competencies to assure the learning gains for all students (Rakap, 2017; Snyder, Hemmeter, McLean, Sandall & McLaughlin, 2013).

Coaching as a collaborative approach

Coaching is defined as an ongoing process that involves direct observation, modelling and role-playing by an individual who provides instruction and feedback to another individual on certain skills (Stormont, Reinke, Newcomer, Marchese & Lewis, 2015). Coaching in educational settings refers to tailoring knowledge and providing guidance to build on the teacher's professional skills within the classroom context (Powell & Diamond, 2013). Recently, there has been a shift toward improving the continuing professional development (CPD) of teachers through extended in-class coaching instead of short-term traditional workshops and conferences conducted outside the school context (Darling-Hammond, Wei, Andree, Richardson & Orphanos, 2009; Neufeld & Roper, 2003). Literacy coaching in particular has great potential to engage teachers in an ongoing process of professional learning and developing teaching practices (Neufeld & Roper, 2003; Peterson et al., 2009). Stover and colleagues defined literacy coaching as "embedded professional development focused on reflection" (Stover, Kissel, Haag & Shoniker, 2011, p. 500), in which the coach and teacher need to engage in a trusting relationship by spending time in class together and reflecting on teaching practices. This allows the coach to understand the teacher's unique learning style, current level of knowledge and experience, and to elicit meaningful learning objectives derived from what they need/want to learn.

In order to support successful ongoing professional development for teachers, many researchers have emphasised that the coaching process should be collaborative, reflective and responsive to the specific individual needs of teachers (Anderson & Olsen, 2006; Joyce & Showers, 2002; Neufeld & Roper, 2003; Peterson et al., 2009; Stover et al., 2011; Taylor, Pearson, Peterson & Rodriguez, 2005). Optimal literacy coaching involves engaging teachers and coaches in cycles of observations, demonstrations and reflections, in order to guide teachers toward effective instructional decisions that can influence positive learning outcomes for students (Mraz, Algozzine & Kissel, 2009). Joyce and Showers (2002) highlighted the importance of incorporating modelling into coaching, which enables teachers to observe coaches while interacting with children and apply learned strategies into their practices. Mentoring is another term often linked to coaching and used interchangeably in educational settings (Jones, 2015). Coaching and mentoring are recognised as professional development approaches that aim to provide continuous on-site guidance and support to enable teachers to learn, plan and evaluate their teaching practices (Onchwari & Keengwe, 2008).

The TICL program

Training in Interaction, Communication and Literacy (TICL) is a 10-week on-site coaching program delivered by trained SLP/OT coaches to support the CPD of teachers in three skill areas: interaction, communication and literacy. The aim of TICL is to facilitate the learning process of preschool-aged children in these three skill areas (El-Choueifati, 2011). TICL was initiated and designed by SLPs as a professional development program for pre-school teachers. TICL was developed through participatory action-research in Sydney, Australia. Participatory action-research (PAR) is a collaborative form of research that involves a process of reflective cyclical changes directed toward improving practices (Chevalier & Buckles, 2013). TICL has been implemented in pre-school settings in Sydney through a partnership between Bankstown Community Resource Group (BCRG, 2017) and The University of Sydney (El-Choueifati, 2011).

The Interaction, Communication and Literacy (ICL) Skills Audit is a valid, reliable and evidence-based assessment tool developed for use in the TICL program as an outcome measure to assess the CPD of teachers (El-Choueifati, McCabe, Munro, Galea & Purcell, 2011; El-Choueifati, Purcell, McCabe, Heard & Munro, 2014). A systematic review was conducted to determine key CPD skill areas to be included in the ICL Skills Audit (El-Choueifati, Purcell, McCabe & Munro, 2012). The ICL Skills Audit was further developed with input pre-school teachers resulting in a self-assessment tool covering six skill areas and underwent reliability testing. The ICL Audit is designed to be used for two purposes: (a) as a self-assessment completed by teachers, and (b) as an observational assessment completed by the TICL coach. Both the TICL coach use the ICL Skills Audit to evaluate (a) the teacher's overall confidence on each skill area of the ICL Skills Audit measured on a five-point likert scale ranging from "not at all confident" to "very confident", and (b) the frequency of the teacher's behavior to use a particular skill in their classroom measured on a five-point likert scale ranging from "never" to "all the time". Figures 1 and 2 illustrate the five-point likert scales of confidence and frequency of behaviors.

The ICL Audit aims to evaluate the frequency and level of confidence of using specific instructional and interactional skills by teachers. The ICL Audit is one step in enabling individualised coaching support for teachers and customisation of the TICL program for shared learning with groups of teachers. The ultimate aim of TICL is to enable teachers to integrate interaction, communication and literacy strategies into classroom programming and everyday school routines to impact language and literacy in pre-school aged children (El-Choueifati et al., 2014). The ICL Skills Audit has excellent intra-rater reliability of the with

an average of 92. Inter-rater reliability was fair-to-good with an average of 75 (El-Choueifati et al., 2014). Table 1 represents the six core skill areas of professional development and related elements in the ICL Skills Audit.

For each skill area and related sub-skills of the ICL Skills Audit, pre-post ratings of confidence completed by both teachers and the TICL coach answer the following question:

How confident is the teacher in using this particular skill in their practice according to this scale?

Not at all confident A little confident Moderately confident Quite confident Very confident
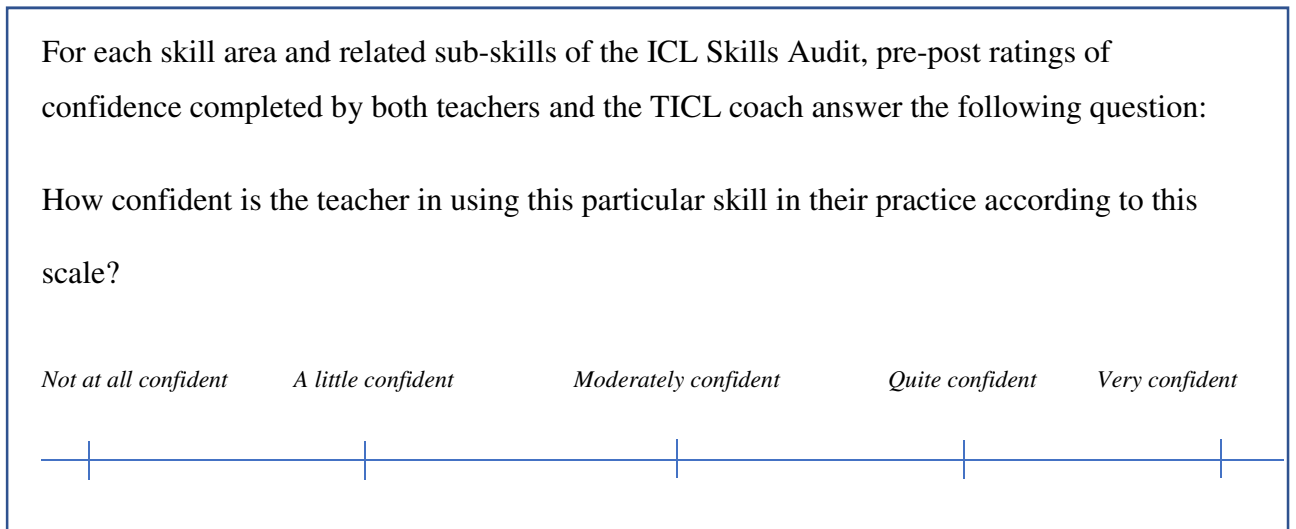
Figure 1. five-point likert scale of teachers' confidence across six main skill area and related sub-skills

For each skill area and related sub-skills of the ICL Skills Audit, pre-post ratings of frequency of behaviors completed by both teachers and the TICL coach answer the following question:

How often does the teacher use this particular skill/behavior in their practice according to this scale?

Never Not often Sometimes Often All the time
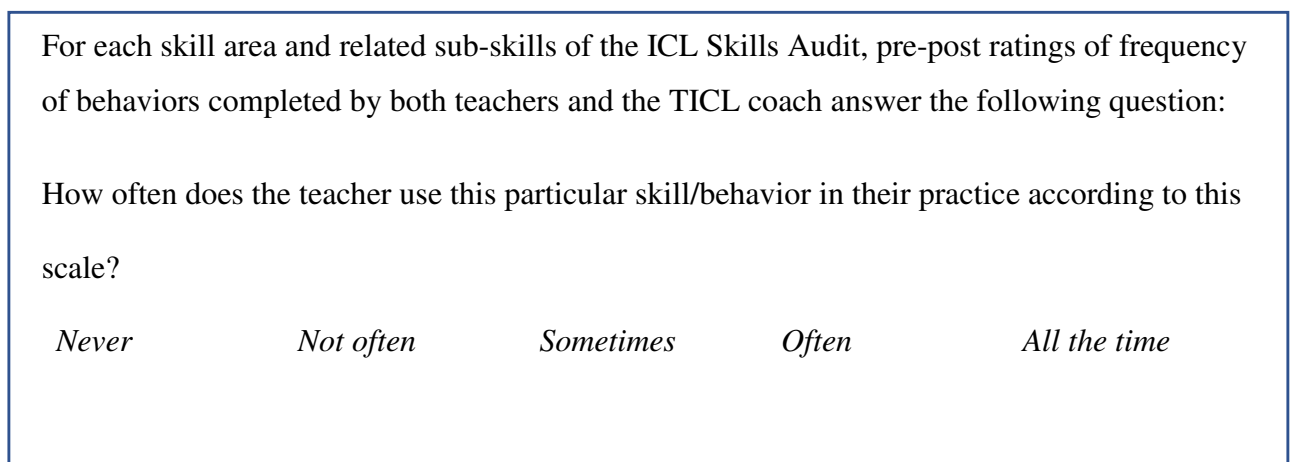
Figure 2. five-point likert scale of teachers' frequency of behaviors across six main skill area and related sub-skills

Table 1

The Six Core Skill Areas of Professional Development and Related Elements in The ICL Skills Audit (El-Choueifati et al., 2011, p. 2).

Skills:	Elements (sub-skills):
I. Developing positive and responsive adult and child interactions	1. Observe the child's interest/ focus to encourage the child to start an interaction. 2. Respond verbally to the child's topic of interest. 3. Respond to the child in a way that engages children in extended conversations and encourages turn-taking. 4. Expand on what children say. 5. Extend on the topic by providing information that relates or adds information to the child's topic. 6. Develop vocabulary by introducing and exposing children to new and unfamiliar words.
II. Explicit literacy instruction	1. Encourage awareness of print. 2. Encourage play with words. 3. Create a print environment.
III. Developing storytelling skills	1. Encourage children to listen to different stories. 2. Encourage children to tell their own stories. 3. Use questions or comments to help children understand parts of a story.
IV. Encouraging all children in a group to participate	1. Use prompts to encourage children's attention, interaction and participation. 2. Use a variety of questions that can be answered verbally and non-verbally so all children can be involved.

V. Fostering peer-to-peer interactions	Use verbal prompts that encourage peer to peer interaction.
VI. Developing responsive family involvement in language and literacy	1. Use a variety of strategies for learning about family strengths and needs related to their child's language and literacy. 2. Communicate positively with families about their child's language and literacy skills. 3. Provide a range of strategies in which families can support their child's language and literacy at home.

TICL structure

The 10-week TICL program begins with a kick-start session, which helps in introducing TICL aims and discussing adult-learning styles. In the first two-weeks, participating teachers and the TICL coach complete pre-training ICL Skills Audit as a base-line measure of teachers' skills. As part of this process, the TICL coach meets individually with each participating teacher for approximately a 30-minute coaching session; to discuss similarities and differences in ratings on the ICL Audits. This appreciative discussion has two aims. First, to recognise and provide feedback to the teacher on their skills with integrating interaction, communication, and literacy into their everyday teaching practices. Second, to enable teachers themselves identify specific skill areas they would like to develop through the TICL program (El-Choueifati et al., 2014). Once the individual coaching sessions are completed, the TICL program continues for a six-to-eight-week period. During this time, teachers attend one-hour weekly group booster sessions, in which the TICL coach facilitates active discussion and shared learning across the six skill areas of the ICL Skills Audit. Teachers and the TICL coach also engage in a series of individual coaching sessions completed between the group learning (booster) sessions. In the remaining two weeks, teachers and TICL coach re-assess using the ICL Skills Audit. Figure 3 and 4 illustrate the timeline and structure of TICL.
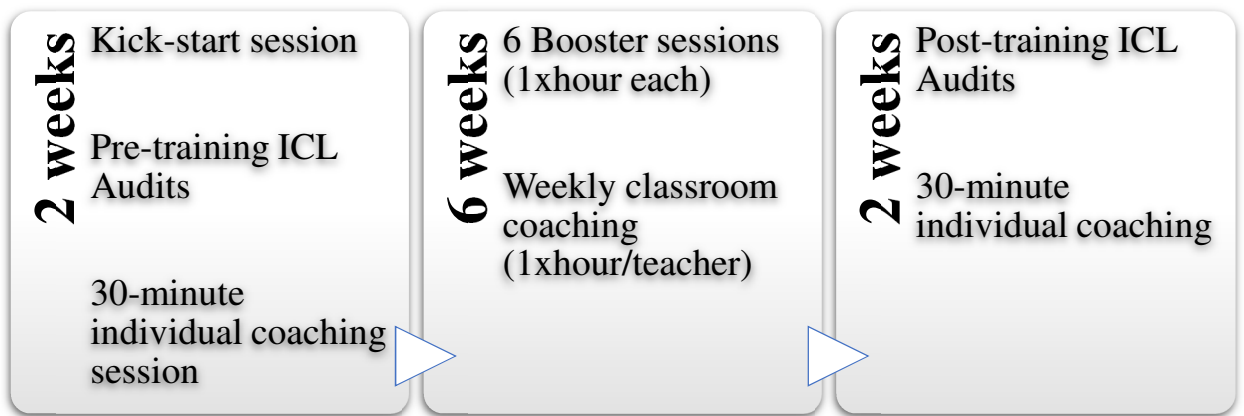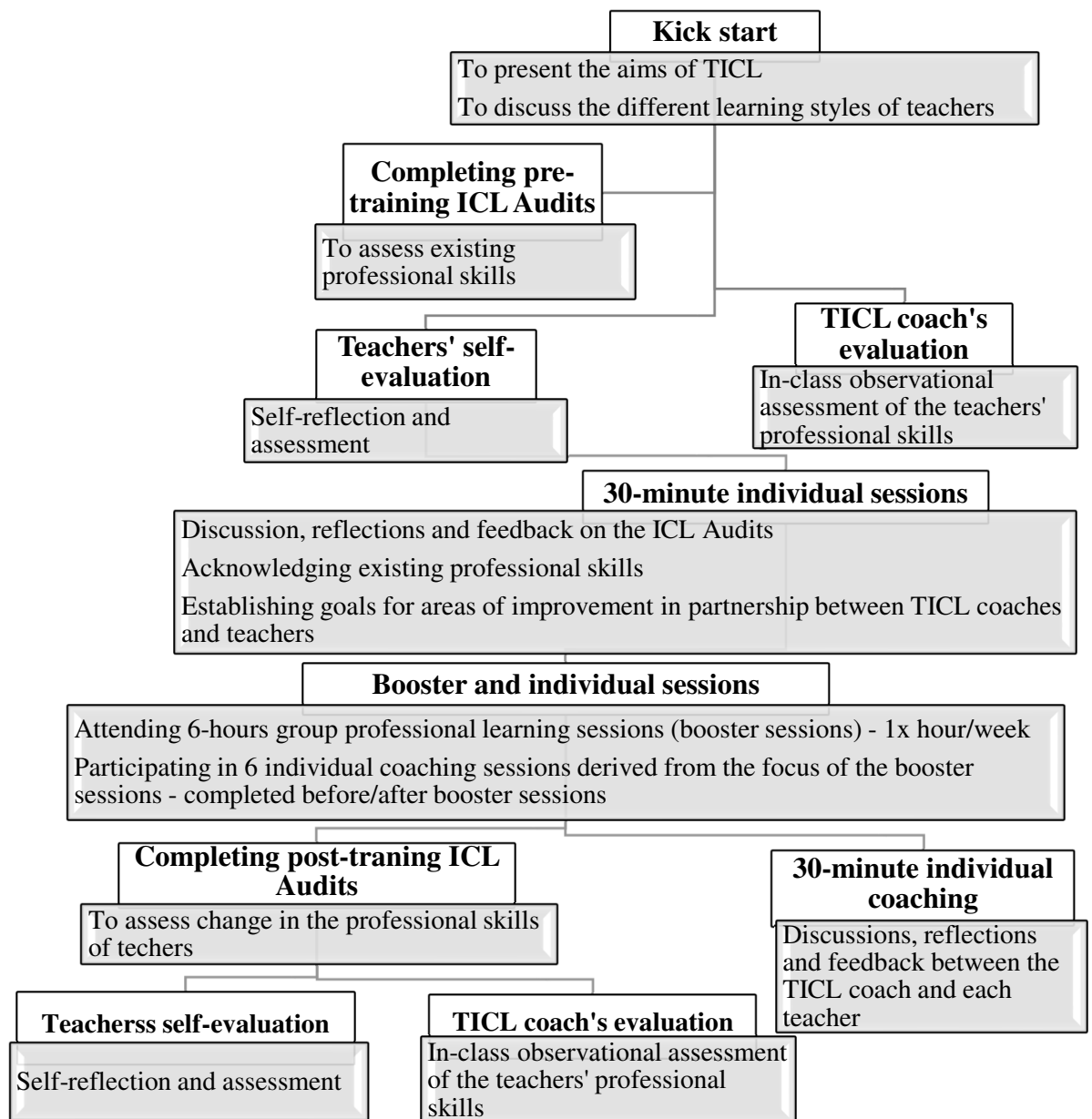
Figure 3. Timeline of the 10-week TICL program

Figure 4. Structure of the TICL program

Adapting TICL for implementing in primary schools

TICL is an example of a coaching program in which SLPs/OTs work collaboratively to enable CPD for teachers and facilitate inclusive delivery of strategies that promote interaction, communication, and literacy for all children in the classroom. The TICL program was recently adapted and implemented in two primary schools in Sydney, Australia. Literature on literacy coaching and CPD programs was reviewed to understand the impact of similar school-based training programs on CPD of teachers and learning achievement of students. For the aim of this review, TICL coaching is defined as an in-class, appreciative, strength-based form of mentoring, in which the TICL coach observes, evaluates and provides feedback to teachers who also participate in evaluating their own teaching practices through self-reflection.

Search strategy

The following databases were searched to identify relevant literature: CINAHL, PsycINFO and ERIC. Search terms used were 'school-based speech-language therapy*', 'communication disorders*', 'speech-language disorders*', 'learning disorders*', 'students with disability*', 'inclusive education', 'education for all', 'universal design for learning', 'coaching', 'literacy coaching', 'mentoring', 'collaboration', 'inter-professional collaboration', 'teacher*', 'teachers' professional development', 'professional development training', 'professional development program*', 'primary-school*'. Boolean operators such as 'AND' or 'OR' were often used to combine and/or limit search for relevant studies. Search was limited for studies published in English. Abstracts of relevant studies were screened and reference lists of accepted studies were hand-searched to explore additional publications.

Coaching and theoretical underpinnings

Coaching can be trailed back to philosophical aspects of adult-learning theories. The theory of andragogy by Knowles (1948) perceives the adult learner as a voluntary participant in the learning process who engages with a facilitator in an equal relationship to achieve defined learning objectives. The andragogy theory describes the adult learner as a keen individual to be self-directed and internally-motivated to engage in a purposeful learning, critically reflect on past experiences and adapt actions to reform social roles (Dominguez & Hager, 2013). This adult learning theory has provided a paradigmatic shift in perceiving the relationship between the coach/mentor and the adult learner (Zachary & Fischler, 2009). The traditional role of the coach/mentor was given the authoritarian/expert role, while the

andragogy theory reframed this role into a facilitator role, where both the coach/mentor and adult learner participate in a mutual learning process. Mezirow (1990; as cited in Cox, 2015) referred to the transformative learning as "the process of learning through critical self-reflection, which results in the reformulation of a meaning perspective" (p. xii). Coaching can be a transformative learning experience that may lead to a desired change and/or reformulation of perspectives related to work practices and professional development through self-reflection (Mezirow & Taylor, 2009). Self-reflection allows the individual to actively examine their beliefs and perspectives related to a particular experience and engage in a process of re-thinking, analysing and developing more insight into that experience (Gibbs, 1988). Role-modelling is considered as an influential mentoring practice in social learning theories where adult learners tend to observe mentors and imitate their practices (Driscoll, 2000).

Cox (2015) indicated that coaching refers to more than a learning aspect as it includes "unlocking potential, a collaborative solution, a powerful alliance, a collaborative and egalitarian relationship, or a life-transforming experience" (p. 28). Encouraging teachers to reflect on their own teaching practices allows coaches to facilitate coaching conversations, which may foster a positive change in teachers' practices and lead to enhanced student outcomes (Peterson et al., 2009; Stover et al., 2011). Coaching conversations involve asking questions aimed to: (a) deepen the teachers' understanding of the effectiveness and impact of their instructions on students learning, and (b) provide constructive feedback to guide teachers toward a process of self-discovery through reflection (Peterson et al., 2009; Stover et al., 2011).

The coach-teacher relationship has been recognised as a significant element to achieve effective coaching and mentoring. The principles of the transformative learning theory can be linked with the relationship nature between the coach/mentor and adult learner. When the coach/mentor engage with the adult learner in a mutual learning relationship that involves critical thinking, reflections, analysing and brainstorming ideas, this can lead to changing perspectives and/or work-related practices (Dominguez & Hager, 2013). Relationship-building between mentors and teachers enables a comfortable zone for teachers to critically reflect on their skills and practices, so that mentors can understand the teachers' perceived areas of improvement and identify relevant goals (Onchwari & Keengwe, 2008). Hence, mentoring is structured in line with the teachers' identified needs, which is congruent with the core principle of andragogy theory that recognises adult learners as self-directed and

internally motivated. Mentors are ideally placed to support teachers in achieving their professional development goals and creating required change in their instructional practices.

Conversely, judge-mentoring is identified as a negative relationship between an experienced mentor and less experienced teacher, in which the mentor tends to critically judge the teacher's teaching practices too often and/or too readily through criticism, comments and feedback (Hobson & Malderez, 2013). This type of mentoring is often perceived as compromising the relationship between the coach/mentor and teachers and disqualifying the potential mentoring benefits. Hobson and McIntyre (2013) found that mentoring with overly judging and evaluating attitudes may result in teachers becoming reluctant to communicate their weaknesses and expose their vulnerabilities with mentors. This can eliminate the ability of the two professionals to work collaboratively in order to facilitate the teacher's professional development. Therefore, building a positive and reflective relationship between the coach/mentor and teachers is critical to achieve effective coaching.

Gap in the literature

Many CPD programs adopted the use of coaching as a professional development approach to support teachers in their classrooms. Literature on literacy coaching supports theoretical evidence that coaching provided to teachers can lead to a high quality professional development, improved instructional practices and student outcomes (Allen, Pianta, Gregory, Mikami & Lun, 2011; Desimone, 2009; Neuman & Cunningham, 2009; 2008; Powell, Diamond, Burchinal & Koehler, 2010; Sailors & Price, 2010). However, there are limited empirical studies to support the link between literacy coaching and positive changes in teachers' practices and students' outcomes (Darling-Hammond et al., 2009). Yoon and colleagues conducted a rigorous meta-analysis of 1300 experimental studies that investigated the impact of providing teachers with intensive CPD training programs on students' achievements (Yoon, Duncan, Lee, Scarloss & Shapley, 2007). The researchers could identify only nine well-designed studies that utilised pre-post testing using control groups. Their study found that those programs offered 49 hours training on average within a period of one year, which resulted in a considerable learning achievement for students.

There are few other examples of international programs targeted toward improving the CPD of teachers that have shown measurable changes. Head Start was an effective language and literacy training in the United States, in which the researchers aimed to change the way teachers used to interact with pre-school children by focusing on promoting language

development (Wasik, Bond & Hindman, 2006). Teachers were trained to utilise three main strategies when interacting with children including asking open-ended questions, vocabulary-building and making connections to children's lives. Teachers applied those learned strategies in classroom activities such as reading books, while being observed by a coach who provided feedback about their performance. Results showed that 70% of Head Start teachers changed significantly in their interaction with children, with evident gains in children's vocabulary compared to the control group (Wasik et al., 2006). Furthermore, the Strategic Teacher Education Program (STEP) Early Literacy Mentor-Coach initiative was another program that aimed to improve the quality of skills and knowledge in literacy development of Head Start teachers (Onchwari & Keengwe, 2008). The STEP model involved mentor-coaching principles to support the teachers' professional development in early literacy and provide guidance for advancing their teaching practices. Onchwari and Keengwe (2008) explored the impact of this mentor-coach program on 44 teachers who participated in Head Start. Findings of this study showed positive feedback from those teachers about successful implementation of specific literacy practices based on this model. Therefore, this study recommended integrating the mentor-coaching initiative model in professional development programs to guide teachers' practices. Peterson et al. (2009) stated that there is limited empirical research to prove that literacy coaching leads to students' growth linked particularly to their reading skills. Many studies lack rigorous methodologies to make a reliable connection between literacy coaching and enhanced educational achievement of students, as they were based on the perceived evaluations of teachers (Deussen, Coskie, Robinson & Autio, 2007; Yoon et al., 2007).

Jackson et al. (2006) evaluated the impact of implementing the HeadsUp! Reading program in more than 50 early childhood centres in poor communities in Nebraska. This program consisted of a 15-week literacy professional development training provided to early childhood teachers in these communities. The researchers found evident improvements in teachers' classroom practices in comparison to the control group, with linked advancements on the literacy and language of children. Despite its significance, coaching targeted toward improving the CPD of teachers lacks clear explanations about the coach's role, and how coaching interactions between teachers and coaches actually occur (Deussen et al., 2007; Peterson et al., 2009). Many teachers have identified inherent barriers to implement effective collaboration with other professionals due to time constraints and lack of training on team-work skills (Westwood & Graham, 2000). In addition, there is limited empirical research that highlights specific effective strategies to coach teachers (Stormont et al., 2015), or particular

features of effective coaching programs (Blazar & Kraft, 2015). Desimone (2009) identified some general characteristics of effective CPD programs for teachers as per consensus results from previous studies including active learning, collective participation, content focus, duration and coherence. However, Carlisle and Berebitsky (2010; 2011) indicated that much effort should be done to determine how these features may influence the outcomes of different professional development programs. Furthermore, Desimone (2009) suggested that future studies might need to include measures to capture potential change in teachers' instructional practices and attitudes. Hence, a gap in the literature still exists on how literacy coaching may lead to enhanced teachers' practices; in order to integrate effective instructional strategies into their classrooms to benefit all students.

Significance

This review revealed the critical need for improved inter-professional collaboration between teachers and SLPs/OTs to address diverse literacy needs of all children in classroom. Theoretical evidence recognises inter-professional collaboration and coaching as useful approaches to assist teachers in developing inclusive education competencies and integrating therapeutic strategies into classroom routines (Allen et al., 2011; Desimone, 2009; Neuman & Cunningham, 2009; 2008; Powell et al., 2010; Reeves et al., 2010; Sailors & Price, 2010). However, there are limited empirical studies to support the link between coaching and positive changes in teachers' practices and students' outcomes (Darling-Hammond et al., 2009; Peterson et al., 2009). TICL is a coaching program in which SLPs/OTs work collaboratively with teachers to facilitate inclusive delivery of strategies that promote interaction, communication, and literacy for all children in classroom. TICL was originally developed for a pre-school setting, then it was adapted and implemented in primary schools. Therefore, this pilot study aimed to evaluate the effectiveness of TICL for integrating speech-language strategies into classroom teaching practices at two primary schools in Sydney, and to explore the experiences of participating teachers to accommodate TICL to primary-school settings.

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Section II: Journal manuscript

Evaluating the effectiveness of the Training in Interaction, Communication and Literacy (TICL) program in primary schools: A mixed-method pilot study

Authors: Heba Alshare, Michelle Villeneuve

Email: hals0817@uni.sydney.edu.au, michelle.villeneuve@sydney.edu.au

Target journal: Child Language Teaching and Therapy

(See journal submission guidelines, Appendix D)

Evaluating the effectiveness of the Training in Interaction, Communication and Literacy (TICL) program in primary schools: A mixed-method pilot study

Abstract

Background: Training in Interaction, Communication and Literacy (TICL) is a 10-week coaching program delivered by trained coaches who are speech-language pathologists (SLPs) or occupational therapists (OTs) to support the Continuing Professional Development (CPD) of teachers in three skill areas: interaction, communication and literacy; in order to facilitate the children's learning in these areas. TICL was originally developed for a pre-school setting, but has been adapted and implemented in primary schools.

Aims: This pilot study aimed to evaluate the effectiveness of TICL for integrating speech-language strategies into classroom teaching practices at two primary schools in Sydney, Australia, and to explore the experiences of participating teachers to accommodate TICL to primary-school settings.

Methods: This study utilised a mixed-method approach. Focus group interviews were the primary data sources conducted to understand the experiences of participants, and analysed using inductive analysis. Nine teachers participated in the focus group interview at school 1, and three teachers participated in the focus group interview at school 2. The Interaction, Communication and Literacy (ICL) Skills Audit was used as a self-assessment tool to measure change in the participants' confidence across six skill areas and related 18 sub-skills through pre-post data. Descriptive analysis of this pre-post quantitative data was conducted.

Findings: Quantitative data analysis showed a statistically significant improvement in the participants' confidence in nine sub-skills of the ICL Skills Audit (P-value < 0.05). Results showed that the majority of participants across the 18 sub-skills either improved in their confidence or did not change. On very few occasions, the participants' confidence decreased. Focus group interviews revealed that (a) The relationship between participants and TICL coaches crossed over from feeling judged to reflecting on teaching practices through a collaborative approach, (b) The ICL Skills Audit was a useful reflective tool that raised the participants' awareness of their existing teaching skills, (c) TICL facilitated the participants' learning through modelling and coaching in context., (d) the need to further discuss family involvement in TICL, and (e) TICL needs to be more literacy-based to accommodate the nature of primary classes.

Conclusion: There is a critical need for improved collaboration between teachers and SLPs/OTs to address diverse literacy needs of all children in classroom. This study showed that TICL coaching could be a promising approach to incorporate therapeutic strategies into teaching practices. Future long-term research is recommended with a larger sample to evaluate the effectiveness of TICL for integrating therapeutic strategies into teaching practices in primary schools.

KEY WORDS: Interaction, communication, literacy, Training in Interaction, Communication and Literacy (TICL), coaching, mentoring, collaboration, speech-language pathology(ist), occupational therapy(ist), teacher(s), continuing professional development, teacher's professional development, primary school(s), mixed-method, pilot study.

Introduction

There has been an increasing diversity of children in today's classrooms, posing complex considerations for teachers when designing instructions to support the learning needs of all students with and without disabilities (McNamee et al., 2002; Rao and Meo, 2016). A common challenge that teachers face with inclusive classes is to develop a lesson that meets the standard curriculum while considering different learning abilities of students (Rao and Meo, 2016). Teachers in inclusive classrooms often struggle to address the individual needs of students with learning difficulties due to time constraints, the need to teach a set curriculum and the number of students in classroom (Ehren, 2000). Students with learning difficulties, communication and/or speech-language disorders often have limited peer-to-peer interaction and literacy acquisition (Cohen, 2006; McKinnon et al., 2007; Tomblin et al., 2000), which may affect successful continuation of their grade-level requirements (Gosse et al., 2012; Justice et al., 2008; Sailor, 2014, 2015). An Australian study was undertaken in 2001 in 37 primary schools in Sydney to estimate the prevalence of speech disorders among children (McKinnon et al., 2007). This study revealed that there was a high prevalence of speech disorders among children in those schools, where teachers required additional support from speech-language pathologists (SLPs) and curriculum modifications to facilitate the learning outcomes for those children. Dempsey and Davies (2013) relied on a previous longitudinal study of Australian children (Australian Institute of Family Studies, 2011) to profile the prevalence of required additional services to support the educational needs of young Australian children. Their study revealed that 399 (12.3%) of 3251 students required additional specialised school services, where the main category in need for those required services was learning difficulties in reading representing 53.7%. Despite consistent progress,

Australian teachers are challenged to provide meaningful classroom-based support, creating inequities for students with additional learning needs (Anderson and Boyle, 2015).

Traditional service delivery of school-based speech-language pathology focused on providing individualised interventions for students with speech-language disorders targeted toward improving areas of deficits to meet the learning needs for each individual child (Hutchins et al., 2010). A common criticism of these traditional services is that speech-language interventions often have no or little relevance to the curriculum, and teachers are unable to observe those individualised interventions (Harn et al., 1999). A broader service-delivery model for integrating therapy support at school is based on collaborative consultation; which enables both professionals (e.g., SLPs and teachers) to bring their diverse expertise and engage in an interactive process to support children with special learning needs (Harn et al., 1999; Strickler et al., 2014; Westwood and Graham, 2000). Coaching and training on embedded instructions have been commonly used to assist teachers in developing inclusive education competencies (Rakap, 2017; Snyder et al., 2013).

Coaching in educational settings refers to tailoring knowledge and providing guidance to build on the teacher's professional skills within the classroom context (Powell and Diamond, 2013). There has been a shift toward improving the continuing professional development (CPD) of teachers through extended in-class coaching instead of short-term traditional workshops and conferences conducted outside the school context (Darling-Hammond et al., 2009; Neufeld and Roper, 2003). Literature on literacy coaching supports theoretical evidence that coaching provided to teachers can lead to a high quality professional development, improved instructional practices and student outcomes (Allen et al., 2011; Desimone, 2009; Neuman and Cunningham, 2008, 2009; Powell et al., 2010; Sailors and Price, 2010). However, coaching targeted toward improving the CPD of teachers lacks clear explanations about the coach's role, and how coaching interactions between teachers and coaches occur (Deussen et al., 2007; Peterson et al., 2009). Furthermore, there is limited empirical research that highlights specific effective strategies to coach teachers (Stormont et al., 2015), or particular features of effective coaching programs (Blazar and Kraft, 2015). There are limited empirical studies to support the link between literacy coaching and positive changes in teachers' practices and students' outcomes (Darling-Hammond et al., 2009). Hence, a gap in the literature still exists on how literacy coaching may lead to enhanced teachers' practices; in order to integrate effective instructional strategies into their classrooms so that all students may benefit.

Training in Interaction, Communication and Literacy (TICL) is a 10-week on-site coaching program delivered by trained coaches who are SLPs or occupational therapists (OTs); to support the CPD of teachers in three skill areas: interaction, communication and literacy (El-Choueifati, 2011). The aim of TICL is to facilitate the learning process of preschool-aged children in these three skill areas. The Interaction, Communication and Literacy (ICL) Skills Audit is an evidence-based assessment tool developed for use in TICL as an outcome measure to assess the CPD of teachers (El-Choueifati et al., 2011; El-Choueifati et al., 2014). The ICL Audit aims to evaluate the frequency and level of confidence of using specific instructional and interactional skills by teachers, in order to facilitate the development of language and literacy in pre-school aged children (El-Choueifati et al., 2014). The ICL Audit is designed to be used for two purposes: (a) as a self-assessment completed by teachers, and (b) as an observational assessment completed by the TICL coach. Both the TICL coach and teacher evaluate (a) the teacher's overall confidence on each skill area of the ICL Skills Audit measured on a 5-point likert scale ranging from "not at all confident" to "very confident", and (b) the frequency of the teacher's behavior to use a particular skill in their classroom measured on a 5-point likert scale ranging from "never" to "all the time".

TICL is an example of a coaching program in which SLPs/OTs work collaboratively with teachers to facilitate inclusive delivery of therapeutic strategies that promote interaction, communication, and literacy for all children in classroom. For the aim of this study, TICL coaching is defined as an in-class, appreciative, strength-based form of mentoring, in which the TICL coach observes, evaluates and provides feedback to teachers who also participate in evaluating their own teaching practices through self-reflection. Figure 1 illustrates the structure of TICL.

The TICL program was originally developed for a pre-school setting, but has been adapted and implemented recently in primary schools. This study is focused on evaluating the implementation of TICL at two primary schools in Sydney. The leadership team at one primary school expressed their interest to implement TICL at their school as it was located in a low socio-economic status community, where teachers described students coming to their school with delays in language and literacy. At another primary school, the leadership team expressed their interest to implement TICL at their school as they had a large population of culturally and linguistically diverse families and for many of their children, English was a second language. In order to facilitate the learning process for all students, the leadership team at those schools wanted to provide support for teachers to embed speech-language therapy knowledge and strategies into their classrooms.

Kick start

To present the aims of TICL

To discuss the different learning styles of teachers

Completing pre-training ICL Audits

To assess existing professional skills

Teachers' self-evaluation

Self-reflection and assessment

TICL coach's evaluation

In-class observational assessment of the teachers' professional skills

30-minute individual sessions

Discussion, reflections and feedback on the ICL Audits

Acknowledging existing professional skills

Establishing goals for areas of improvement in partnership between TICL coaches and teachers

Booster and individual sessions

Attending 6-hours group professional learning sessions (booster sessions) - 1x hour/week

Participating in 6 individual coaching sessions derived from the focus of the booster sessions - completed before/after booster sessions

Completing post-traning ICL Audits

To assess change in the professional skills of techers

30-minute individual coaching

Discussions, reflections and feedback between the TICL coach and each teacher

Teacherss self-evaluation

Self-reflection and assessment

TICL coach's evaluation

In-class observational assessment of the teachers' professional skills

Figure 1. Structure of the TICL program

Research aims and questions

Given that there is limited empirical research on how coaching may develop teaching practices to support all students (Blazar and Kraft, 2015; Darling-Hammond et al., 2009; Desimone, 2009), this study aimed to evaluate the effectiveness of TICL as a coaching program for integrating speech-language strategies into teachers' everyday practices at two primary schools in Sydney. This study focused on the teachers' self-evaluation of their confidence across the six skill categories of the ICL Skills Audit prior and post to the TICL

program. Therefore, existing pre-and-post self-ratings of confidence on the ICL Skills Audit completed by participating teachers were included in this study. This evaluation also aimed to describe the adaptations that were required to accommodate TICL to a primary-school setting, given that the TICL program was originally developed for a pre-school setting. Thus, another aim of this study was to understand the experiences of participating teachers regarding both the opportunities and challenges they experienced when applying TICL strategies in their classrooms, and to explore what improvements would be recommended to enhance future implementation of TICL in primary schools. Therefore, the research questions were: (a) Has the TICL program contributed to support the CPD of participating teachers?, (b) What were the experiences of participating teachers in TICL?, and (c) What improvements should be considered to accommodate the TICL program to primary-school settings?

Methods

A mixed-method approach was deemed most appropriate to answer the research questions of this pilot study. Combining the strengths of quantitative and qualitative data types helps the researcher to draw interpretations of the research problem and present a broader picture of the phenomenon being studied (Creswell, 2014; Denscombe, 2008). Integrating both methods can provide statistical analysis of the numeric data as well as recognising the participants' perspectives about the phenomenon (Cohen et al., 2011).

Wellington and Szczerbinski (2007) indicated that the nature of the research problem can influence the choice of methods in a study. Patton (2015) identified program evaluation as a systematic process of gathering information about the characteristics, activities and results of the program to improve its effectiveness and consider future decisions about the program implementation. The utilisation-focused program evaluation is an "evaluation done for and with specific intended primary users for specific, intended uses" (Patton, 2015, p.178). While the focus of this study was evaluating the effectiveness of the TICL program and exploring the adaptations required to accommodate TICL to the primary-school setting, the utilisation-focused program evaluation was considered as an important approach when choosing the methods for this study. Both qualitative and quantitative methods are commonly used in program evaluations (Patton, 2015). A phenomenological qualitative approach is useful for understanding a social phenomenon through the experiences of participants in their natural setting (Curry et al., 2009). This study utilised a flexible qualitative method to understand the experiences of participating teachers in TICL through focus group interviews. Focus group interviews can provide a holistic understanding of the multiple perspectives of participants

(Curry et al., 2009). Therefore, two focus group interviews were conducted to understand the perspectives of participating teachers at target schools about the opportunities and challenges they faced in TICL. A quantitative methodology was relevant for evaluating the change in confidence in six skill areas as measured by the ICL Skills Audit. Figure 2 illustrates the study design.
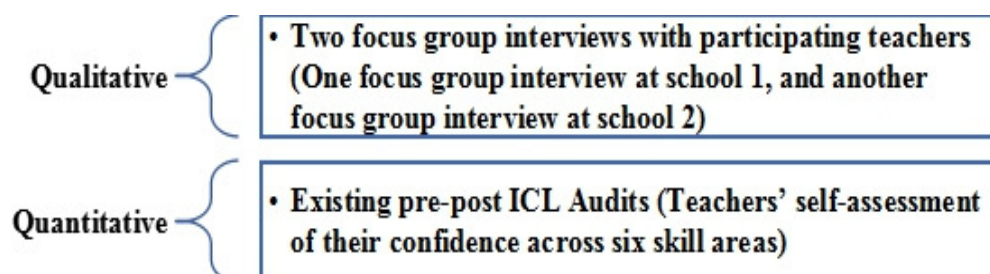
Figure 2. Study design: A mixed-method pilot study

Participants

Ethical approval for this study was granted by the University of Sydney Human Research Ethics Committee (project No.: 2014/635). As this study had an evaluative purpose, purposive sampling was used to invite teachers who participated in TICL at two different primary schools in Sydney. Purposive sampling is a non-random strategy that researchers use when they include a target group of participants for a purpose who may have important or unique perspectives on a certain phenomenon (Robinson, 2014). Initially, there were 17 teachers who participated in TICL at one school (school 1), and four teachers at the other school (school 2). The total number of teachers who participated in TICL from both schools was 21. Teachers who participated in TICL were invited to participate in the evaluation. The researchers contacted teachers who expressed their interest to participate in this study at both schools.

Data collection

Focus group interviews

Focus groups are useful data collection methods to gain a collective view from a group of participants that is relevant to the research aims (Gill et al., 2008). Moreover, focus groups are commonly used in program evaluations to provide a deeper understanding about the program's process, outcomes, and recommendations for future implementation from the participants' perspectives (Ansay, Perkins & Nelson, 2004). Therefore, two focus group interviews were conducted with teachers from both schools; to gain a holistic understanding

of their experiences in TICL. Focus group interviews were chosen to allow for ease of participation and time convenience for teachers to participate in this study given their structured teaching routine and duties. Nine teachers participated in the focus group interview at school 1, and three teachers participated in the focus group interview at school 2. Both target schools and participants were de-identified and given random numbers to ensure confidentiality.

Tools and materials

The researchers developed an open-ended interview guide for the focus group interviews to assure a collaborative critical review for the qualitative questions (Appendix A). This interview guide provided the researchers with a flexible format to explore the key concepts related to the participants' experiences in TICL. It was also a useful reminder for the researchers to probe relevant questions to elicit responses of participants.

Both focus group interviews were audio-recorded using a digital audio-recorder and later transcribed verbatim. The researchers used a field-diary to capture key ideas during the interviews. Each interview took approximately 60-90 minutes to complete. The focus group interviews were conducted at the schools to allow for ease of participation and time convenience for teachers.

The Interaction, Communication and Literacy (ICL) Skills Audit is a valid, reliable and evidence-based assessment tool developed for use in the TICL program as an outcome measure to assess the CPD of teachers (El-Choueifati et al, 2011; El-Choueifati et al, 2014). A systematic review was conducted to determine key CPD skill areas to be included in the ICL Skills Audit (El-Choueifati et al, 2012). The ICL Skills Audit was further developed with input pre-school teachers resulting in a self-assessment tool covering six skill areas and underwent reliability testing. The ICL Audit is designed to be used for two purposes: (a) as a self-assessment completed by teachers, and (b) as an observational assessment completed by the TICL coach. Both the TICL coach use the ICL Skills Audit to evaluate (a) the teacher's overall confidence on each skill area of the ICL Skills Audit measured on a five-point likert scale ranging from "not at all confident" to "very confident", and (b) the frequency of the teacher's behavior to use a particular skill in their classroom measured on a five-point likert scale ranging from "never" to "all the time".

The ICL Audit aims to evaluate the frequency and level of confidence of using specific instructional and interactional skills by teachers. The ICL Audit is one step in enabling

individualised coaching support for teachers and customisation of the TICL program for shared learning with groups of teachers. The ultimate aim of TICL is to enable teachers to integrate interaction, communication and literacy strategies into classroom programming and everyday school routines to impact language and literacy in pre-school aged children (El-Choueifati et al, 2014). The ICL Skills Audit has excellent intra-rater reliability of the with an average of 92. Inter-rater reliability was fair-to-good with an average of 75 (El-Choueifati et al, 2014).

Data analysis

Analysis of quantitative data

The TICL program generated a number of ICL Skills Audits completed by participating teachers from both schools and TICL coaches. However, this study is focused on the teachers' self-evaluation of their confidence across six skill areas and related sub-skills of the ICL Skills Audit. The total number of pre-post ICL Skill Audits included in this study was 24 (completed by 12 teachers from both schools). There were 16 pre-post ICL Skills Audits completed by 8 teachers from school 1, and 8 pre-post ICL Skills Audits completed by 4 teachers from school 2. Some ICL Audits were excluded due to the following reasons: (a) ICL Audits completed by pre-school teachers; as the focus of this study is on primary school teachers, (b) ICL Audits that the researchers were unable to match pre-post versions completed by the same teacher (unknown forms), (c) Single ICL Audits (when only pre or post forms were available, so that it was not possible to compare pre-post ratings). Therefore, the researchers analysed existing pre-post data of the ICL Audits completed by 12 participating teachers from both primary schools using descriptive analysis.

Descriptive analysis can help the researcher to summarise variables using visual displays such as charts or graphs (Campbell et al., 2005). SPSS software was used for analysing this data. Two external students entered the data into SPSS spreadsheet and double-checked 20% of each other's data-entry randomly to minimise potential errors and maximise validity. The

researchers coded the participants' responses using an ordinal scale; to fit them into differentiated categories. The following values were given to the confidence ratings on an ordinal scale: 0= No answer (missing value), 1= Not at all confident, 2= A little confident, 3= Moderately confident, 4= Quite confident, 5= Very confident. Whenever there was a confidence rating marked between two categories, the lower category was considered the rating; in order to keep a consistent strategy during data entry. For example, if a teacher marked herself in between moderately confident and quite confident, the rating was considered moderately confident. There were 38 variables coded as per the following:

- **IDNO:** Random identification number given for participants (scale measure).

- **School:** school 1= 1, school 2= 2 (nominal measure).

- **36 other variables:** Pre-post ratings of confidence across the six skill areas of the ICL Skills Audit (ordinal measure). In total, there were 18 sub-skills in the ICL Skills Audit. Table 1 represents how these sub-skills were coded.

Table 1

Coding of the 18 Sub-Skills of the ICL Skills Audit and Related Variables

Main skill area	Sub-skill #	Sub-skill area	Related variables #
Skill area 1: Developing positive and responsive adult and child interactions	1.1	Observe the child's interest/focus to encourage the child to start an interaction.	**#3: Pre-rating** **#4: Post-rating**
	1.2	Respond verbally to the child's topic of interest.	**#5: Pre-rating** **#6: Post-rating**

	1.3	Respond to the child in a way that engages children in extended conversations and turn-taking.	#7: Pre-rating #8: Post-rating
	1.4	Expand on what children say.	#9: Pre-rating #10: Post-rating
	1.5	Extend the topic by providing information that relates or adds information to the child's topic.	#11: Pre-rating #12: Post-rating
	1.6	Develop vocabulary by introducing and exposing children to new and unfamiliar words.	#13: Pre-rating #14: Post-rating
Skill area 2: Explicit literacy instruction	2.1	Encourage awareness of print.	#15: Pre-rating #16: Post-rating
	2.2	Encourage play with words.	#17: Pre-rating #18: Post-rating
	2.3	Create a print environment.	#19: Pre-rating #20: Post rating
Skill area 3: Developing story-telling skills	3.1	Encourage children to listen to different stories.	#21: Pre-rating #22: Post-rating
	3.2	Encourage children to tell their own stories.	#23: Pre-rating #24: Post-rating
	3.3	Use questions or comments to help children understand parts of a story.	#25: Pre-rating #26: Post-rating
Skill area 4: Encouraging all children in a group to participate	4.1	Observe and use prompts to encourage children's attention, interaction and participation in a group.	#27: Pre-rating #28: Post-rating
	4.2	Use at least four types of questions that can be answered verbally and non-verbally so all children can be involved.	#29: Pre-rating #30: Post-rating

Skill area 5: Fostering peer to peer interactions	5.1	Use verbal prompts that encourage peer to peer interaction.	#31: Pre-rating #32: Post rating
Skill area 6: Developing responsive family involvement in language and literacy	6.1	Use a variety of strategies for learning about family strengths and needs related to their child's language and literacy.	#33: Pre-rating #34: Post-rating
	6.2	Communicate positively with families about their child's language and literacy skills.	#35: Pre-rating #36: Post-rating
	6.3	Provide a range of ways in which families can be involved in supporting their child's language and literacy at home.	#37: Pre-rating #38: Post-rating

A non-parametric test (Wilcoxon signed-rank test) was used to compare the two related samples of the same participants pre and post the TICL program. The null hypothesis was assumed that the participants' pre-median is the same as the participants' post-median, that is, there was no change/difference in the participants' confidence ratings pre-post the TICL program.

Analysis of qualitative data

Both focus group interviews were transcribed then analysed using inductive thematic analysis. Thematic analysis is a useful approach to interpret qualitative data using key themes of words and phrases (Guest et al., 2012). The following steps as per Green et al. (2007) were applied to maintain a systematic approach during the analysis process:

   (a) Data immersion, in which the researchers familiarised themselves with the collected data by listening to the audio-recordings, reading their field notes, transcribing the interviews and identifying irrelevant texts.

(b) Line by line coding to allow for data reduction and generating meaning of certain phrases and words through 2-3 coding cycles. The researchers used Nvivo software for data coding.

(c) Developing categories of data that have similar/related meaning using initial codes, then refined/reduced codes.

(d) Identifying themes to help the researchers in interpreting data and answer the research questions.

To avoid potential bias in analysing data, the researchers who were not involved in implementing TICL double-checked themes of coding and categories; to assure consensus coding and increase the validity of data interpretation (Guest et al., 2012).

Quantitative results

Appendix B represents the frequencies/percentages of the participants' pre-post ratings of confidence for each sub-skill of the ICL Skills Audit. Results showed that pre-post ratings of confidence ranged from:

(a) moderately confident to very confident in sub-skills 1.1, 1.2, 2.1

(b) a little confident to quite confident in sub-skills 1.3, 1.4, 1.5, 2.2, 3.2, 4.2, 6.3

(c) moderately confident to quite confident in sub-skills 1.6, 2.3, 3.1, 3.3, 4.1, 5.1

(d) not at all confident to very confident in sub-skill 6.1

and (e) a little confident to very confident in sub-skill 6.2

Statistical correlations of pre-post ratings including means, medians, modes, standard deviations (SD), minimum and maximum ratings are listed in Appendix C.

Table 2 represents Wilcoxon Signed Ranks Test which includes positive and negative ranks and ties. Positive ranks represent improved confidence as they result in positive values when subtracting pre-ratings from post-ratings (i.e. post confidence > pre confidence). Negative ranks represent decreased confidence as they result in negative values when subtracting pre-ratings from post-ratings (i.e. post confidence < pre confidence). Ties refer to no change in confidence ratings (i.e. post confidence = pre confidence). Table 3 shows the *P*-

value (Asymp. Sig.) which tests the null hypothesis, that is, how likely is it that the participants' pre-post medians in each sub-skill are the same? In other words, how likely is it that the participants' confidence has not changed. A statistically significant improvement in the participants' confidence was considered whenever P-values were below 0.05 (P-values <0.05).

Results showed that P-value of the participants' pre-post medians was lower than 0.05 in nine sub-skills: 1.1, 1.3, 1.4, 1.6, 2.2, 4.1, 4.2, 6.1, 6.2; indicating a statistically significant improvement in the participants' confidence in these sub-skills. Conversely, there was no statistically significant improvement in the participants' confidence (P-value > 0.05) in the following sub-skills: 1.2, 1.5, 2.1, 2.3, 3.1, 3.2, 3.3, 5.1, 6.3.

Positive ranks and ties showed that the majority of participants across the 18 sub-skills of the ICL Skills Audits either improved in their confidence or did not change. On very few occasions, the participants' confidence decreased. Negative ranks indicated that there was only one participant in each of the following sub-skills: 1.5, 2.1, 3.1, 3.2, 3.3, 6.1, 6.3 whom their confidence decreased, whereas there were two participants whom their confidence decreased in sub-skill 5.1.

Statistically, the probability of type 1 error (alpha) related to possible random fluctuation in the data was high as there were several statistical tests made simultaneously on the data set. However, Bonferroni adjustment was not made as the sample size is too small. Increase in the alpha level is possible given the number of comparisons made. Therefore, the quantitative results should be interpreted with caution.

Table 2

Wilcoxon Signed Ranks Test: Ranks

		N	Mean Rank	Sum of Ranks
POST-rating of CONFIDENCE for skill 1.1 - PRE-rating of CONFIDENCE for skill 1.1	Negative Ranks	0	.00	.00
	Positive Ranks	6	3.50	21.00
	Ties	5		
	Total	11		
POST-rating of CONFIDENCE for skill 1.2 -	Negative Ranks	0	.00	.00
	Positive Ranks	2	1.50	3.00

		N	Mean Rank	Sum of Ranks
PRE-rating of CONFIDENCE for skill 1.2	Ties	7		
	Total	9		
POST-rating of CONFIDENCE for skill 1.3 - PRE-rating of CONFIDENCE for skill 1.3	Negative Ranks	0	.00	.00
	Positive Ranks	4	2.50	10.00
	Ties	7		
	Total	11		
POST-rating of CONFIDENCE for skill 1.4 - PRE-rating of CONFIDENCE for skill 1.4	Negative Ranks	0	.00	.00
	Positive Ranks	4	2.50	10.00
	Ties	7		
	Total	11		
POST-rating of CONFIDENCE for skill 1.5 - PRE-rating of CONFIDENCE for skill 1.5	Negative Ranks	1	2.50	2.50
	Positive Ranks	4	3.13	12.50
	Ties	5		
	Total	10		
POST-rating of CONFIDENCE for skill 1.6 - PRE-rating of CONFIDENCE for skill 1.6	Negative Ranks	0	.00	.00
	Positive Ranks	4	2.50	10.00
	Ties	7		
	Total	11		
POST-rating of CONFIDENCE for skill 2.1 - PRE-rating of CONFIDENCE for skill 2.1	Negative Ranks	1	3.00	3.00
	Positive Ranks	4	3.00	12.00
	Ties	5		
	Total	10		
POST-rating of CONFIDENCE for skill 2.2 - PRE-rating of CONFIDENCE for skill 2.2	Negative Ranks	0	.00	.00
	Positive Ranks	6	3.50	21.00
	Ties	5		
	Total	11		
POST-rating of CONFIDENCE for skill 2.3 - PRE-rating of CONFIDENCE for skill 2.3	Negative Ranks	0	.00	.00
	Positive Ranks	3	2.00	6.00
	Ties	5		
	Total	8		
POST-rating of CONFIDENCE for skill 3.1 - PRE-rating of CONFIDENCE for skill 3.1	Negative Ranks	1	3.00	3.00
	Positive Ranks	4	3.00	12.00
	Ties	6		
	Total	11		
POST-rating of CONFIDENCE for skill 3.2 - PRE-rating of CONFIDENCE for skill 3.2	Negative Ranks	1	3.00	3.00
	Positive Ranks	4	3.00	12.00
	Ties	6		
	Total	11		
POST-rating of CONFIDENCE for skill 3.3 - PRE-rating of CONFIDENCE for skill 3.3	Negative Ranks	1	2.50	2.50
	Positive Ranks	3	2.50	7.50
	Ties	6		
	Total	10		

POST-rating of CONFIDENCE for skill 4.1 - PRE-rating of CONFIDENCE for skill 4.1	Negative Ranks	0	.00	.00
	Positive Ranks	4	2.50	10.00
	Ties	6		
	Total	10		
POST-rating of CONFIDENCE for skill 4.2 - PRE-rating of CONFIDENCE for skill 4.2	Negative Ranks	0	.00	.00
	Positive Ranks	4	2.50	10.00
	Ties	7		
	Total	11		
POST-rating of CONFIDENCE for skill 5.1 - PRE-rating of CONFIDENCE for skill 5.1	Negative Ranks	2	3.50	7.00
	Positive Ranks	4	3.50	14.00
	Ties	5		
	Total	11		
POST-rating of CONFIDENCE for skill 6.1 - PRE-rating of CONFIDENCE for skill 6.1	Negative Ranks	1	2.50	2.50
	Positive Ranks	6	4.25	25.50
	Ties	2		
	Total	9		
POST-rating of CONFIDENCE for skill 6.2 - PRE-rating of CONFIDENCE for skill 6.2	Negative Ranks	0	.00	.00
	Positive Ranks	5	3.00	15.00
	Ties	3		
	Total	8		
POST-rating of CONFIDENCE for skill 6.3 - PRE-rating of CONFIDENCE for skill 6.3	Negative Ranks	1	2.00	2.00
	Positive Ranks	3	2.67	8.00
	Ties	4		
	Total	8		

Table 3

Test Statistics

	POST-rating of CONFIDENCE for skill 1.1 - PRE-rating of CONFIDENCE for skill 1.1	POST-rating of CONFIDENCE for skill 1.2 - PRE-rating of CONFIDENCE for skill 1.2	POST-rating of CONFIDENCE for skill 1.3 - PRE-rating of CONFIDENCE for skill 1.3	POST-rating of CONFIDENCE for skill 1.4 - PRE-rating of CONFIDENCE for skill 1.4
Z	-2.333[b]	-1.342[b]	-2.000[b]	-2.000[b]

| | Asymp. Sig. (2-tailed) | .020 | .180 | .046 | .046 |

	POST-rating of CONFIDENCE for skill 1.5 - PRE-rating of CONFIDENCE for skill 1.5	POST-rating of CONFIDENCE for skill 1.6 - PRE-rating of CONFIDENCE for skill 1.6	POST-rating of CONFIDENCE for skill 2.1 - PRE-rating of CONFIDENCE for skill 2.1	POST-rating of CONFIDENCE for skill 2.2 - PRE-rating of CONFIDENCE for skill 2.2
Z	-1.414^b	-2.000^b	-1.342^b	-2.333^b
Asymp. Sig. (2-tailed)	.157	.046	.180	.020

	POST-rating of CONFIDENCE for skill 2.3 - PRE-rating of CONFIDENCE for skill 2.3	POST-rating of CONFIDENCE for skill 3.1 - PRE-rating of CONFIDENCE for skill 3.1	POST-rating of CONFIDENCE for skill 3.2 - PRE-rating of CONFIDENCE for skill 3.2	POST-rating of CONFIDENCE for skill 3.3 - PRE-rating of CONFIDENCE for skill 3.3
Z	-1.732^b	-1.342^b	-1.342^b	-1.000^b
Asymp. Sig. (2-tailed)	.083	.180	.180	.317

	POST-rating of CONFIDENCE for skill 4.1 - PRE-rating of CONFIDENCE for skill 4.1	POST-rating of CONFIDENCE for skill 4.2 - PRE-rating of CONFIDENCE for skill 4.2	POST-rating of CONFIDENCE for skill 5.1 - PRE-rating of CONFIDENCE for skill 5.1	POST-rating of CONFIDENCE for skill 6.1 - PRE-rating of CONFIDENCE for skill 6.1
Z	-2.000^b	-2.000^b	$-.816^b$	-1.994^b
Asymp. Sig. (2-tailed)	.046	.046	.414	.046

	POST-rating of CONFIDENCE for skill 6.2 - PRE-rating of CONFIDENCE for skill 6.2	POST-rating of CONFIDENCE for skill 6.3 - PRE-rating of CONFIDENCE for skill 6.3
Z	-2.070^b	-1.134^b
Asymp. Sig. (2-tailed)	.038	.257

a. Wilcoxon Signed Ranks Test, b. Based on negative ranks.

Qualitative findings

Findings of the focus group interviews were organised according to identified TICL outcomes as reflected by participants. Figure 3 illustrates the organisation of themes. The followings represent the identified themes.
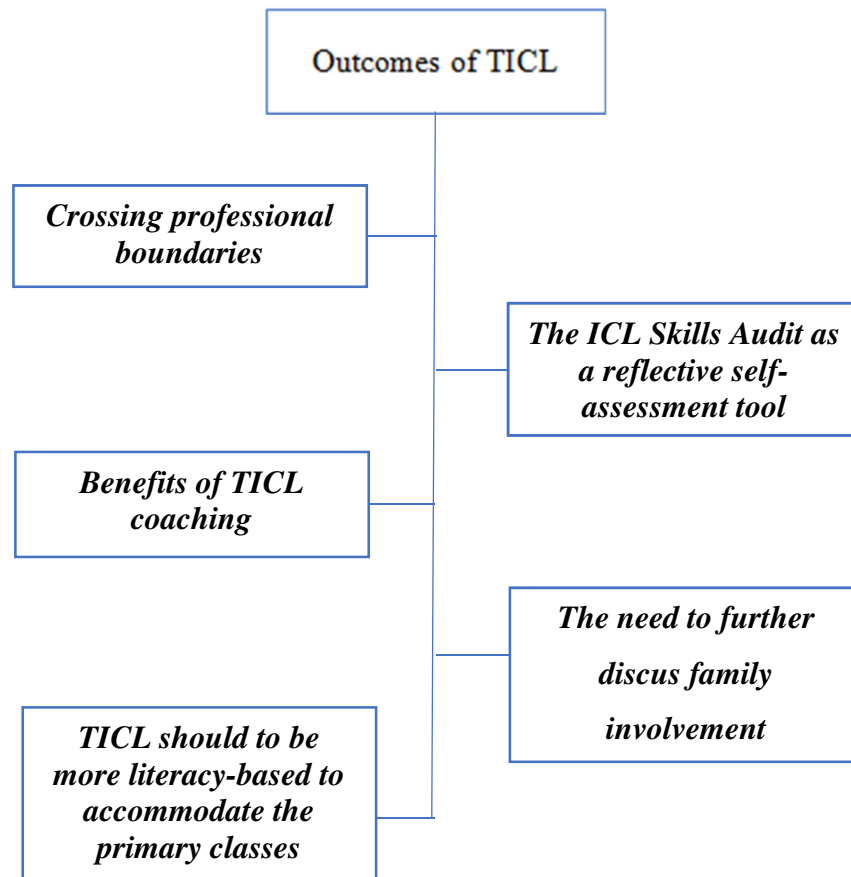
Figure 3. Themes

Theme 1: *Crossing professional boundaries*

The majority of teachers reported that their relationships with the TICL coach crossed over from feeling judged to reflecting on teaching practices through a collaborative approach. When the TICL coach observed the teachers in their classrooms and evaluated their skills using the ICL Skills Audit, teachers initially felt exposed and critically assessed. Reflecting on their experiences throughout the TICL program, teachers simultaneously discussed their

feelings of being judged while also reassuring each other about the importance of being open to additional information that can support their teaching.

"And I think it's just reminding teachers when you go into places that when people come and they've got ideas and suggestions for staff and how they can improve that for kids in the classroom, not to take it personally." Teacher 1, school 1.

Teachers at school 1 viewed the TICL coach as a learner in their classrooms. Watching the TICL coach try things that didn't work in the classroom was influential in supporting the learning partnership with the teachers because it helped to break down professional boundaries needed for everyone to profit from shared learning.

"[the TICL coach] came into my class a few times and she was a bit stumped, she said. It was hard. She had a lot of really great ideas, but things like [student] loves the iPad and he'll film himself doing things. She said, 'Well can you get down with another iPad with him and...' Yeah, that's a great idea but to take a whole teacher out... A lot of the stuff that she was suggesting wasn't practical". Teacher 1, school 1.

At school 2, teachers agreed that time was an essential factor in building a good relationship with the TICL coach. One teacher expressed that she perceived the TICL experience more naturally and positively as the time passed:

"Because we were meeting at the same session every day and as [the TICL coach] got to know the kids in the class a lot better I feel like that became much more fluid and a much more positive experience. I feel like it started to come more naturally to me as we progressed." Teacher 1, school 2.

Theme 2: *The ICL Skills Audit enables reflection on teaching practice*

As a reflective tool, the ICL guided teachers to: (a) appraise the process of completing the ICL and identify their strengths in supporting language and literacy of their students; (b) critique their knowledge and application of skills in their teaching practices; and (c) plan individual and classroom strategies to develop skills for teaching interaction and communication. Taking the time to reflect on each skill area was daunting and not necessarily embraced by all teachers. The majority of teachers from both schools agreed that the ICL Skills Audit allowed them to engage in self-reflection on their practice.

"I think it made us more aware. When you go to classes, you think 'Well, I hope I do that. I'm sure I do that.' We don't often get the chance to formally assess ourselves. I found that hard" Teacher 1, school 1.

"I think being self-reflective right at the beginning, made me aware of what I was or was not doing and immediately caused some change in my practice" Teacher 1, school 2.

Theme 3: *Benefits of TICL coaching*

TICL facilitated the teachers' learning through modelling and coaching in context. The followings represent the teachers' reflections about how they perceived the benefits of TICL.

Incorporating TICL strategies in everyday teaching practices:

The majority of teachers from both schools agreed that incorporating TICL strategies into their teaching practices was an important outcome from the TICL program.

"I definitely think that going through those skills and having to really reflect and think and analyse your own communication strategies especially with regard to literacy was very beneficial. I became aware of my communication which I think benefitted my children exponentially. Especially some of those who I was probably struggling with slightly." Teacher 2, school 2.

"I asked our coach a couple of questions like when I do you know the frequency of my language that I am introducing like the tier two level words (…) And she [TICL coach] did give me a strategy to try in the classroom, so that was good." Teacher 1, school 2.

Having the TICL coach in the classroom provided the teachers with an opportunity to "see what was going on" and "learn just by watching." As the TICL coach modelled strategies for interaction and communication, it prompted the teachers to reflect on their own teaching:

"I'd be talking to the kids about something and [the TICL coach] would sit next to [student] and listen to what he was trying to communicate and she would just quietly sit there

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and write down and draw pictures of what she thought he was saying. I guess the model that she used instead of saying, "try this, do this for everyone" she just naturally went in and did it and then afterwards I said, I didn't even think to do that (…) That was the most valuable thing for me". Teacher 3, school 1.

Strategies learned from TICL:

The majority of teachers from both schools found that the implementation of TICL strategies were more applicable during developmental play sessions compared to structured lessons where the teacher was required to follow the curriculum requirements. Teachers reported learning strategies for:

- Peer-to-peer interaction and turn-taking conversations.
- Introducing new vocabulary (language).

"A lot of our sessions were during developmental play sessions so there were really good opportunities for turn taking conversations (…) or, introducing new vocabulary, and it was good to have our coach there as a bit of a support for that, even that we could kind of model the turn taking and try and bring the kids into that interaction." Teacher 1, school 2.

"So, I took different things away like more trying to get some of the kids that don't become as involved with their peer interaction" Teacher 2, school 1.

Another learned strategy from TICL reported by the majority of teachers was commenting instead of questioning, and following the children's interests:

"Often teachers think, "Well if I'm using that questioning and trying to get that higher order thinking," it's got to be a question (…) Whereas now we might think a little bit more about 'Well what else could we do other than' – or how do we – if that question doesn't get a

response straight away, how could we do it so that we're not just questioning." Exchange among teachers at school 1.

Theme 4: *The need to further discus family involvement*

The interaction between teachers and families was not directly covered in the adapted TICL program at these primary schools. However, teachers perceived engagement with families as a very important topic to include because it was something that consistently challenged them, especially with parents with low literacy or those from non-English speaking backgrounds. The teachers suggested including this module in TICL group discussions to expand their knowledge and confidence for interaction and communication with the family regarding the child's academic performance:

"When we did the pre-assessment one of the skills areas was about parents and communicating with parents, and that was for me one of the biggest goals, which we didn't do any session on. And for me that has been one of the things that I tried very hard to improve. I have a lot of children that speak English only at school and they have a home language and I have other parents that are illiterate or that sort of stuff." Teacher 1, school 2.

Theme 5: *TICL should to be more literacy-based to accommodate the primary classes*

Teachers from school 2 agreed that the focus of the TICL program was more directed toward communication, while it would be more accommodating for the primary-school context if it was more literacy-based. The teachers recommended focusing on strategies such as pronunciation, phonics and articulation that would help them enhance the learning outcomes of children in mainstream classes in literacy skills including reading, listening and speaking:

"I found that it wasn't that literacy based. It was everything communication which is a huge aspect of it, but I would have liked to have known more about pronunciation and sounds and phonics and things from a speech pathologist point of view because I have many kids in my mainstream, typical class who could do with more specific work and those kinds of things and maybe if I was transferred some of those skills even in a small way. That would change their ability to be literate in terms of reading and pronunciation, and speaking and listening and those kinds of things." Teacher 1, school 2.

The teachers noticed that the TICL focus on language and communication was more relevant to younger children in the pre-school setting.

"I thought if I had a mainstream class and I was doing this I would have thought that a lot of the thing we did were very early intervention focused and relevant to the childcare setting. But I think if those kids have developed those skills and reached those milestones then I think that we didn't seem to get to the next point." Teacher 1, school 2

Discussion

This study sought to evaluate the effectiveness of the TICL program for integrating speech-language strategies into teachers' practices at two primary schools in Sydney, and to explore the experiences of participants to accommodate TICL to primary-school settings. The findings revealed that TICL offered tools and processes for inter-professional collaboration as a means of integrating SLP and teacher expertise to embed interaction and communication strategies into everyday teaching practices. The following section explains the findings in relation to the research questions.

Research question 1: Has the TICL program contributed to support the CPD of participating teachers?

A key theme of this study was that TICL had facilitated the participants' learning through modelling and coaching in context. Coaching and training on embedded instruction have been commonly used in professional development programs to assist teachers in developing inclusive education competencies and assure the learning gains for all students (Rakap, 2017; Snyder et al., 2013). Coaching is defined as an ongoing process that involves direct observation, modelling and role-playing by an individual who provides instruction and feedback to another individual on certain skills (Stormont et al., 2015). Findings of this study revealed that participating teachers benefited from the TICL program as it prompted them to reflect on their teaching practices and elicited professional development goals derived from what they want/need to learn. The ICL Skills Audit offered a way of measuring existing skills of the participants through self-assessment of teachers' confidence to demonstrate skills within the areas of interaction, communication and literacy. The participants found that the different professional skills highlighted in the ICL Skills Audit were very beneficial in providing teachers with the opportunity to think, analyse and reflect on their teaching

strategies used in class. This awareness of teaching practices has guided teachers to recognise and evaluate their existing skills, and set goals to change their practices when required. Consulting the TICL coach helped the teachers in identifying recommended strategies that they could apply in class to facilitate the children's interaction and language acquisition.

Quantitative data analysis showed a statistically significant improvement in the participants' confidence in nine sub-skills of the ICL Skills Audit including 1.1 (observing the child's interest/encouraging interaction), 1.3 (engaging children in extended conversations and turn-taking), 1.4 (expanding on what children say), 1.6 (developing vocabulary), 2.2 (encouraging play with words), 4.1 (encouraging children's interaction in a group), 4.2 (using questions that encourages children's involvement), 6.1 (learning about family strengths and needs related to their child's language and literacy), 6.2 (communicating positively with families about their child's language and literacy). These results were consistent with the qualitative findings as reflected by participants. Teachers found the TICL program beneficial in providing them with strategies to the facilitate children's language and communication. Both, the quantitative and qualitative findings revealed that teachers learned to integrate TICL strategies into their teaching practices to facilitate communication, peer-to-peer interactions, turn-taking, developing vocabulary and involving families, which raised their confidence in performing these skills. Although there was no statistical significance in the rest of sub-skills, results showed that the majority of participants across the 18 sub-skills either improved in their confidence or did not change. On very few occasions, the participants' confidence decreased. However, the quantitative results should be interpreted with caution as the sample size was too small.

These findings were consistent with previous literature, which supports theoretical evidence that coaching provided to teachers can enhance their CPD and improve their instructional practices to benefit all students (Allen et al., 2011; Desimone, 2009; Neuman and Cunningham, 2008; 2009; Powell et al., 2010; Sailors and Price, 2010). This study showed a preliminary empirical evidence that TICL coaching could be a promising approach to incorporate speech-language therapeutic strategies into teachers' practices through a collaborative approach with SLPs. Future research with a larger sample is recommended to further evaluate the effectiveness of TICL in primary schools.

Research question 2: What were the experiences of participating teachers in TICL?

Findings of this study revealed a transformation in the relationship between the participants and TICL coach from power differentials toward mutual learning and inter-professional collaboration. Through this collaborative process, the majority of teachers overcame feelings of being judged, professional boundaries were broken down and teachers experienced the working relationship as collaborative. The coach-teacher relationship has been recognised as a significant element to achieve effective coaching in the literature (Dominguez and Hager, 2013). Principles of the transformative learning theory can be linked with the relationship nature between the coach/mentor and teachers as adult learners. When the coach/mentor engage with the adult learner in a mutual learning relationship that involves critical thinking, reflections, analysing and brainstorming ideas, this can lead to changing perspectives and/or work-related practices (Dominguez and Hager, 2013). Hence, the relationship-building between coaches/mentors and teachers enables a comfortable zone for teachers to critically reflect on their skills and practices, so that coaches/mentors can understand the teachers' perceived areas of improvement and identify relevant goals (Onchwari and Keengwe, 2008). TICL included individual coaching sessions with each participating teacher; encouraging them to reflect on their interaction and communication practices with all children in their classroom. This coaching session provided an opportunity for teachers to discuss their ICL self-assessment and to receive feedback from the TICL coach in a way that reinforced their individual strengths. The outcome of the coaching session included teacher-identified goals for developing their teaching practices to improve interaction and communication of all children. Participants recognised that this strengths-based focus for learning together provided an opportunity to establish rapport and develop trust for the emergence of a working relationship between the SLP/OTs and teachers.

Furthermore, findings revealed a unique experience of teachers at school 1, who viewed the TICL coach as a learner in their classrooms. Teachers at this school became more comfortable in their relationship with the TICL when they observed the TICL coach trying things that didn't work in their classrooms. Hence, the TICL coach may have experienced the reality of what may/may not work in the classroom, and attempted to learn from teachers who are more knowledgeable about the classroom context. This mutual learning helped to break down professional boundaries and may had facilitated a more positive relationship between teachers and the TICL coach.

Research question 3: What improvements should be considered to accommodate the TICL program to primary-school settings?

Findings of this study revealed important recommendations for future implementation of the TICL program in primary schools. First, TICL should be more literacy-based to accommodate the primary classes, as it was more based to suit the early childhood context. The teachers advised that more focus in content of the TICL program should be placed on speech-language strategies such as pronunciation, phonics and articulation. As reflected by teachers, this would help them enhance the learning outcomes of children in primary classes in literacy skills including reading, listening and speaking. Second, participating teachers found that there is a significant need to further discuss family involvement in TICL group discussions. Findings revealed that participating teachers consistently found communicating with the children's families a challenging barrier, especially with parents who are illiterate and/or from a non-English speaking background. Therefore, teachers recommended further discussion of this module in TICL to expand their knowledge about proper interaction and communication with families about the children's academic performance. As the TICL program was originally developed for a pre-school setting, these findings contribute to suggest improvements in the content and focus of the TICL program for future implementation in primary-schools.

Limitations

As this was a pilot study with a small sample size, generalising the results regarding the effectiveness of TICL on the CPD of primary-school teachers was not anticipated. It is noted that the pre-post test design used in this study demonstrated changes in the participants' confidence over time, but it did not necessarily demonstrate that the coaching caused this change. However, this study suggested preliminary results about the TICL effectiveness in primary schools, which could be investigated in a future research with a larger sample. Another limitation was related to the feasibility of evaluating the TICL effectiveness on students' outcomes; as this requires a relatively long period to measure change in their educational achievement. Therefore, a long-term future study is recommended to investigate this aspect.

Conclusion

Previous studies showed that there is a critical need for improved collaboration between teachers and SLPs to address diverse literacy needs of children in classrooms and facilitate inclusive education practices (Strickler et al., 2014; Westwood and Graham, 2000). However, there is limited empirical research on how coaching may develop teaching practices to support all students (Blazar and Kraft, 2015; Darling-Hammond et al., 2009). This preliminary study showed that TICL coaching could be a promising approach to incorporate speech-language therapeutic strategies into teachers' practices through a collaborative approach with SLPs/OTs. This inter-professional collaboration can be a practical service-delivery approach of indirect speech-language interventions, given the increasing prevalence of learning disorders among children in primary schools in Australia, and current expectations of teachers' competencies to support the learning diversity of all students. Future research with a larger sample is recommended to evaluate the effectiveness of TICL to integrate speech-language strategies into teaching routines in primary schools.

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Appendices

Appendix A- Focus group interview guide

SYDNEY
THE UNIVERSITY OF

Discipline of Speech Pathology
Faculty of Health Sciences

Title: Using the TICL program in primary schools: A Health PiPS project.

Focus Group regarding participation in a program conducted collaboratively between teacher participants and researchers at the University of Sydney.

1. TICL began with a self-assessment, observation, and discussion with the TICL staff about your teaching practice. What was most useful about the self-assessment process?

2. Group discussion was used to identify TICL modules that would be most relevant/useful at your school (for this group of teacher participants). How would you describe the focus of the TICL program at your school? Which TICL modules were most helpful in your teaching practice (from your perspective)? Why? How did these modules address your learning needs?

3. How did you apply TICL strategies in your classroom? What tools/strategies/approaches did you use?

4. Who was involved in the implementation of the TICL program in your classroom?; How was work shared to support your implementation of TICL strategies (among the TICL staff and teaching staff; among teachers and teaching assistants; others)?

5. What specific goal or outcome were you trying to achieve for your student(s) when you applied TICL tools/strategies/approaches in your classroom?

6. What supported or constrained your ability to implement TICL strategies in your daily classroom practices?

7. TICL provided classroom focus for collaboration and consultation with Speech Language Pathologists and Occupational Therapists. This approach may be different that prior approaches used by allied health practitioners to provide services at your school. Discuss any similarities or differences you experienced with this approach to SLP and OT services at school. In your view, what were the strengths and/or limitations of this approach? Do you have any suggestions for future development of the approach?

8. Is there anything else you would like to share about your participation in the TICL program?

Appendix B – SPSS exported Frequencies and percentages of pre-post ratings of participants' confidence across 18 sub-skills

PRE-rating of CONFIDENCE for skill 1.1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	7	58.3	58.3	58.3
	Quite confident	5	41.7	41.7	100.0
	Total	12	100.0	100.0	

POST-rating of CONFIDENCE for skill 1.1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Quite confident	10	83.3	90.9	90.9
	Very confident	1	8.3	9.1	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 1.2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	5	41.7	55.6	55.6
	Quite confident	4	33.3	44.4	100.0
	Total	9	75.0	100.0	
Missing	No answer	3	25.0		
Total		12	100.0		

POST-rating of CONFIDENCE for skill 1.2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	5	41.7	45.5	45.5
	Quite confident	4	33.3	36.4	81.8
	Very confident	2	16.7	18.2	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 1.3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A little confident	1	8.3	8.3	8.3
	Moderately confident	7	58.3	58.3	66.7
	Quite confident	4	33.3	33.3	100.0
	Total	12	100.0	100.0	

POST-rating of CONFIDENCE for skill 1.3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	4	33.3	36.4	36.4
	Quite confident	7	58.3	63.6	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 1.4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A little confident	1	8.3	8.3	8.3
	Moderately confident	6	50.0	50.0	58.3
	Quite confident	5	41.7	41.7	100.0
	Total	12	100.0	100.0	

POST-rating of CONFIDENCE for skill 1.4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	2	16.7	18.2	18.2
	Quite confident	9	75.0	81.8	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 1.5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A little confident	1	8.3	9.1	9.1
	Moderately confident	5	41.7	45.5	54.5
	Quite confident	5	41.7	45.5	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

POST-rating of CONFIDENCE for skill 1.5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	3	25.0	30.0	30.0
	Quite confident	7	58.3	70.0	100.0
	Total	10	83.3	100.0	
Missing	No answer	2	16.7		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 1.6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	7	58.3	58.3	58.3
	Quite confident	5	41.7	41.7	100.0
	Total	12	100.0	100.0	

POST-rating of CONFIDENCE for skill 1.6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	3	25.0	27.3	27.3
	Quite confident	8	66.7	72.7	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 2.1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	7	58.3	58.3	58.3
	Quite confident	4	33.3	33.3	91.7
	Very confident	1	8.3	8.3	100.0
	Total	12	100.0	100.0	

POST-rating of CONFIDENCE for skill 2.1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	2	16.7	20.0	20.0
	Quite confident	7	58.3	70.0	90.0
	Very confident	1	8.3	10.0	100.0
	Total	10	83.3	100.0	
Missing	No answer	2	16.7		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 2.2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A little confident	2	16.7	16.7	16.7
	Moderately confident	6	50.0	50.0	66.7
	Quite confident	4	33.3	33.3	100.0
	Total	12	100.0	100.0	

POST-rating of CONFIDENCE for skill 2.2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	1	8.3	9.1	9.1
	Quite confident	10	83.3	90.9	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 2.3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	6	50.0	54.5	54.5
	Quite confident	5	41.7	45.5	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

POST-rating of CONFIDENCE for skill 2.3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	2	16.7	25.0	25.0
	Quite confident	6	50.0	75.0	100.0
	Total	8	66.7	100.0	
Missing	No answer	4	33.3		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 3.1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	7	58.3	58.3	58.3
	Quite confident	5	41.7	41.7	100.0
	Total	12	100.0	100.0	

POST-rating of CONFIDENCE for skill 3.1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	4	33.3	36.4	36.4
	Quite confident	7	58.3	63.6	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 3.2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A little confident	3	25.0	25.0	25.0
	Moderately confident	5	41.7	41.7	66.7
	Quite confident	4	33.3	33.3	100.0
	Total	12	100.0	100.0	

POST-rating of CONFIDENCE for skill 3.2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	6	50.0	54.5	54.5
	Quite confident	5	41.7	45.5	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 3.3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	5	41.7	45.5	45.5
	Quite confident	6	50.0	54.5	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

POST-rating of CONFIDENCE for skill 3.3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	2	16.7	18.2	18.2
	Quite confident	9	75.0	81.8	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 4.1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	5	41.7	41.7	41.7
	Quite confident	7	58.3	58.3	100.0
	Total	12	100.0	100.0	

POST-rating of CONFIDENCE for skill 4.1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	1	8.3	10.0	10.0
	Quite confident	9	75.0	90.0	100.0
	Total	10	83.3	100.0	
Missing	No answer	2	16.7		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 4.2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A little confident	1	8.3	8.3	8.3
	Moderately confident	7	58.3	58.3	66.7
	Quite confident	4	33.3	33.3	100.0
	Total	12	100.0	100.0	

POST-rating of CONFIDENCE for skill 4.2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	3	25.0	27.3	27.3
	Quite confident	8	66.7	72.7	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 5.1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	6	50.0	50.0	50.0
	Quite confident	5	41.7	41.7	91.7
	Very confident	1	8.3	8.3	100.0
	Total	12	100.0	100.0	

POST-rating of CONFIDENCE for skill 5.1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	3	25.0	27.3	27.3
	Quite confident	8	66.7	72.7	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 6.1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all confident	1	8.3	8.3	8.3
	A little confident	1	8.3	8.3	16.7
	Moderately confident	6	50.0	50.0	66.7
	Quite confident	4	33.3	33.3	100.0
	Total	12	100.0	100.0	

POST-rating of CONFIDENCE for skill 6.1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	3	25.0	33.3	33.3
	Quite confident	3	25.0	33.3	66.7
	Very confident	3	25.0	33.3	100.0
	Total	9	75.0	100.0	
Missing	No answer	3	25.0		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 6.2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A little confident	2	16.7	16.7	16.7
	Moderately confident	6	50.0	50.0	66.7
	Quite confident	4	33.3	33.3	100.0
	Total	12	100.0	100.0	

POST-rating of CONFIDENCE for skill 6.2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately confident	1	8.3	12.5	12.5
	Quite confident	5	41.7	62.5	75.0
	Very confident	2	16.7	25.0	100.0
	Total	8	66.7	100.0	
Missing	No answer	4	33.3		
Total		12	100.0		

PRE-rating of CONFIDENCE for skill 6.3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A little confident	3	25.0	27.3	27.3
	Moderately confident	5	41.7	45.5	72.7
	Quite confident	3	25.0	27.3	100.0
	Total	11	91.7	100.0	
Missing	No answer	1	8.3		
Total		12	100.0		

POST-rating of CONFIDENCE for skill 6.3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A little confident	1	8.3	11.1	11.1
	Moderately confident	3	25.0	33.3	44.4
	Quite confident	5	41.7	55.6	100.0
	Total	9	75.0	100.0	
Missing	No answer	3	25.0		
Total		12	100.0		

Appendix C– SPSS exported Statistical correlations

		PRE-rating of CONFIDENCE for skill 1.1	POST-rating of CONFIDENCE for skill 1.1	PRE-rating of CONFIDENCE for skill 1.2	POST-rating of CONFIDENCE for skill 1.2
N	Valid	12	11	9	11
	Missing	0	1	3	1
Mean		3.42	4.09	3.44	3.73
Median		3.00	4.00	3.00	4.00
Mode		3	4	3	3
Std. Deviation		.515	.302	.527	.786
Minimum		3	4	3	3
Maximum		4	5	4	5

		PRE-rating of CONFIDENCE for skill 1.3	POST-rating of CONFIDENCE for skill 1.3	PRE-rating of CONFIDENCE for skill 1.4	POST-rating of CONFIDENCE for skill 1.4
N	Valid	12	11	12	11
	Missing	0	1	0	1
Mean		3.25	3.64	3.33	3.82
Median		3.00	4.00	3.00	4.00
Mode		3	4	3	4
Std. Deviation		.622	.505	.651	.405
Minimum		2	3	2	3
Maximum		4	4	4	4

		PRE-rating of CONFIDENCE for skill 1.5	POST-rating of CONFIDENCE for skill 1.5	PRE-rating of CONFIDENCE for skill 1.6	POST-rating of CONFIDENCE for skill 1.6
N	Valid	11	10	12	11
	Missing	1	2	0	1
Mean		3.36	3.70	3.42	3.73
Median		3.00	4.00	3.00	4.00
Mode		3[a]	4	3	4
Std. Deviation		.674	.483	.515	.467
Minimum		2	3	3	3
Maximum		4	4	4	4

		PRE-rating of CONFIDENCE for skill 2.1	POST-rating of CONFIDENCE for skill 2.1	PRE-rating of CONFIDENCE for skill 2.2	POST-rating of CONFIDENCE for skill 2.2
N	Valid	12	10	12	11
	Missing	0	2	0	1
Mean		3.50	3.90	3.17	3.91
Median		3.00	4.00	3.00	4.00
Mode		3	4	3	4
Std. Deviation		.674	.568	.718	.302
Minimum		3	3	2	3
Maximum		5	5	4	4

		PRE-rating of CONFIDENCE for skill 2.3	POST-rating of CONFIDENCE for skill 2.3	PRE-rating of CONFIDENCE for skill 3.1	POST-rating of CONFIDENCE for skill 3.1
N	Valid	11	8	12	11
	Missing	1	4	0	1
Mean		3.45	3.75	3.42	3.64
Median		3.00	4.00	3.00	4.00
Mode		3	4	3	4
Std. Deviation		.522	.463	.515	.505
Minimum		3	3	3	3
Maximum		4	4	4	4

		PRE-rating of CONFIDENCE for skill 3.2	POST-rating of CONFIDENCE for skill 3.2	PRE-rating of CONFIDENCE for skill 3.3	POST-rating of CONFIDENCE for skill 3.3
N	Valid	12	11	11	11
	Missing	0	1	1	1
Mean		3.08	3.45	3.55	3.82
Median		3.00	3.00	4.00	4.00
Mode		3	3	4	4
Std. Deviation		.793	.522	.522	.405
Minimum		2	3	3	3
Maximum		4	4	4	4

		PRE-rating of CONFIDENCE for skill 4.1	POST-rating of CONFIDENCE for skill 4.1	PRE-rating of CONFIDENCE for skill 4.2	POST-rating of CONFIDENCE for skill 4.2
N	Valid	12	10	12	11
	Missing	0	2	0	1
Mean		3.58	3.90	3.25	3.73
Median		4.00	4.00	3.00	4.00
Mode		4	4	3	4
Std. Deviation		.515	.316	.622	.467
Minimum		3	3	2	3
Maximum		4	4	4	4

		PRE-rating of CONFIDENCE for skill 5.1	POST-rating of CONFIDENCE for skill 5.1	PRE-rating of CONFIDENCE for skill 6.1	POST-rating of CONFIDENCE for skill 6.1
N	Valid	12	11	12	9
	Missing	0	1	0	3
Mean		3.58	3.73	3.08	4.00
Median		3.50	4.00	3.00	4.00
Mode		3	4	3	3[a]
Std. Deviation		.669	.467	.900	.866
Minimum		3	3	1	3
Maximum		5	4	4	5

		PRE-rating of CONFIDENCE for skill 6.2	POST-rating of CONFIDENCE for skill 6.2	PRE-rating of CONFIDENCE for skill 6.3	POST-rating of CONFIDENCE for skill 6.3
N	Valid	12	8	11	9
	Missing	0	4	1	3
Mean		3.17	4.13	3.00	3.44
Median		3.00	4.00	3.00	4.00
Mode		3	4	3	4
Std. Deviation		.718	.641	.775	.726
Minimum		2	3	2	2
Maximum		4	5	4	4

a. Multiple modes exist. The smallest value is shown

Appendix D - Journal submission guidelines

Child Language Teaching and Therapy

2016 Impact Factor: 0.978

2016 Ranking: 62/180 in Linguistics | 26/38 in Education, Special

Source: 2016 Journal Citation Reports® (Clarivate Analytics, 2017)

Journal website: https://au.sagepub.com/en-gb/oce/journal/child-language-teaching-and-therapy#WritingYourPaper

This Journal is a member of the Committee on Publication Ethics

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John Parrot, Education Consultant,

29 Franklands Drive,

Addlestone,

Surrey, KT15 1EG.

johnsparrott@aol.com

Book reviews

While book reviews will normally be commissioned by editors, offers to review recent publications will also be welcome. All reviews should include a full specification of book details, e.g. Inside Language. Vivian J. Cook. London: Arnold, 320p. 40 HB, 14.99 PB, ISBN: 0 340 69270 7 HB, 0 340 60761 0 PB.

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7. Further information

Any correspondence, queries or additional requests for information on the manuscript submission process should be sent to the Child Language Teaching and Therapy editorial office as follows:

Dr Judy Clegg and Professor Victoria Joffe
Department of Human Communication Sciences
University of Sheffield
31 Claremont Crescent
Sheffield S102TA
UK
j.clegg@sheffield.ac.uk
V.Joffe@city.ac.uk

Appendix E - Ethics clearance and relevant communication

THE UNIVERSITY OF SYDNEY

Research Integrity & Ethics Administration
Human Research Ethics Committee

Friday, 11 November 2016

Prof Anita Bundy
Health Systems and Global Populations; Faculty of Health Sciences
Email: anita.bundy@sydney.edu.au

Dear Anita

Your request to modify this project, which was submitted on 30/08/2016, has been considered.

After consideration of your response to the comments raised the project has been approved to proceed with the proposed amendments.

Details of the approval are as follows:

Project Title: Using the TICL program in primary schools: A HealthPIPS project

Project No.: 2014/635

New Approved Documents:

Date	Type	Document
30/08/2016	Participant Info Statement	Version 3 Participant Information Statement Consent And Withdrawal Of Consent Form

Special Condition/s of Approval

- It will be a condition of approval that permission to recruit staff at Victoria Avenue Public School is obtained from SERAP before recruitment can commence. SERAP approval needs to be kept on file but does not need to be submitted to the Ethics Office.

Please contact the Ethics Office should you require further information or clarification.

Sincerely

Associate Professor Stephen Fuller
Chair
Deputy Chair Review Committee (DCRC 3)

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