Demonstrations of adaptive expertise: a student teacher's innovative use of remote technologies during the pandemic.

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Following an urgently implemented Covid lockdown that took many in the sector by surprise, students enrolled in initial teaching education programs were challenged to complete practicum placements. With early childhood centres forced to close, the teaching and learning environment for teachers, children and their families shifted to the online space. This narrative demonstrates how a Field Practice course from an initial teacher education provider in early childhood education was reimagined to acknowledge the innovative care and pedagogical practices that student teachers stepped into to meet course outcomes in a radically different teaching and learning environment. Making connections to current discourse on adaptive expertise as a desirable quality for student teachers to develop, this article describes the teaching experiences of one student during lockdown and how changes in the teaching and learning context, prompted a shift in her professional identity. Through working closely with the Associate Teacher and lecturer, the student was encouraged to collaborate with families from diverse communities to foster their participation in literacy activities in the new teaching environment. In meeting the Field Practice outcomes, the student teacher was able to realise opportunities for deep professional learning. The example is taken from New Zealand Tertiary College (NZTC), which has student teachers providing support for children and whānau throughout New Zealand.

Introduction

In August 2020, New Zealand entered into the highest zone of the Alert Level system for Covid-19, meaning a complete lockdown of all but the most essential services. Travel was only allowed for specified activities such as essential work, food collection, medical appointments or shared childcare between household bubbles. All public venues, non-essential workplaces, schools and early childhood centres were closed. While early childhood centres doors remained physically shut to stop the spread of the virus (Russell et al., 2021), teachers were encouraged to continue teaching through the use of remote technologies (Education Review Office [ERO], 2021). Lockdown in Auckland, New Zealand's largest city remained in place for almost four months from August to December, 2021.

To support student teachers to complete Field Practice placements, learning outcomes that previously would have been realised through the application of teaching practices in early childhood settings, were resituated to the online environment. In this highly dynamic and fluid context, student teachers were required to respond to unique

Demonstrations of adaptive expertise: a student teacher's innovative use of remote technologies during the pandemic
– Dolan | *Volume 7 Number 1 – April 2022*

35

situations involving the interaction of multiple factors. Students were supported to be creative and innovative in their thinking and to be open to learning new skills.

During the pandemic, working from the safety of their own homes, student teachers engaged with a range of remote technologies to teach the curriculum, including the uploading of digital content, hosting synchronous conferencing sessions and creating videos to share on digital platforms. This article looks at demonstrations of adaptive expertise employed by one student teacher during lockdown and the support she was able to provide for the children and whānau in her centre during these unparalleled times.

Early childhood as an essential service

High-quality educational experiences that commence at the very beginning of children's lives represent an irreplaceable opportunity for growth, development and learning. Such experiences are formative and exert an influence across the lifespan of children (World Health Organisation, 2020). The closure of many schools and early childhood settings during lockdowns negatively impacted children's health, development and learning, with young children expressing feelings of anxiety, fear and isolation (Duran, 2020; Hobbs & Bernard, 2021). In early childhood settings, young children's development is contingent on learning from nurturing, responsive, stimulating interactions with teachers and peers (see *Te Whāriki: He Whāriki Mātauranga mō ngā Mokopuna o Aotearoa: Early Childhood Curriculum (Te Whāriki)* (Ministry of Education [MoE], 2017). Learning through social interaction is key to the development of empathy, mutual trust, reciprocity, and solidarity among children (MoE, 2019). Without experiential and physical interaction among kaiako (teachers) and other children, these objectives are considered difficult to achieve (Cano-Hila & Argemi-Baldich, 2021).

However, in an online environment, early childhood student teachers can address these concerns through the application of pedagogical knowledge and winning the trust of the children's families. During the pandemic, early childhood teachers, who have professional knowledge and skills, can optimise young children's development and learning at an early age to enhance lifetime outcomes (Manning et al., 2017; Murray, 2020). Through the affordances of remote technologies, kaiako (teachers) and parents can share responsibilities to promote children's learning and development and create further synergies between home and centre settings (ERO, 2021). Through showing competence and winning the trust of the families, teachers could rely on parents to support their children accessing the online resources and joining in their learning. Therefore, it is imperative that students in initial teacher education are supported to develop teaching practices using remote technology to overcome physical distancing regulations in case of future lockdowns.

Developing adaptive expertise

Initially developed to explain variations in learning and development, the notion of adaptive expertise differs from normal or routine expertise in that it supposes a deeper conceptual understanding that allows for greater capacity to invent solutions to novel problems (Hatano & Ingaki, 1984). Recent discourse in Aotearoa New Zealand frames adaptive expertise as an essential component of teacher identity and professionalism (Aitken et al., 2013; Anthony et al., 2015; Anthony et al., 2018; Timperley, 2013) and adaptive expertise has been woven through recent reforms in the requirements for providers of initial teacher education (Gunn & Trevethan, 2019). Actively promoted to counter

Demonstrations of adaptive expertise: a student teacher's innovative use of remote technologies during the pandemic
– Dolan | *Volume 7 Number 1 – April 2022*

36

teaching pedagogies that depend on the transmission of pre-determined knowledge (Timperley, 2013), adaptive expertise reflects both a growing appreciation of the role of the teacher as an informed and inquiring practitioner and the complexity of their teaching and learning contexts (Cherrington & Dalli, 2018; Timperley et al., 2014).

Adaptive expertise has also been understood as finding a balance between teacher efficiency and innovation (Schwartz et al., 2005). Whereas a routine expert will show high levels of efficiency from being able to draw on the specific knowledge and skills learned over time, to be innovative would involve the learner moving away from an efficiency model and the letting go of previously well-established patterns or modes of behaviour (Hatano & Inagaki, 1984). In a dynamic and fluid environment that may challenge the routine expert's flexibility; innovation and problem solving are highly valued (De Arment et al., 2013). This capacity to strike a balance between efficiency and innovation in order to be responsive to the changing realities of practice has been described as the "gold standard for becoming a professional" (Hamerness et al,. 2005, p. 360). Aitken et al. (2013) have also suggested being flexible and responsive to the contextual demands of effective teaching as being "the hallmark of a professional teacher" (p. 4). In a review of New Zealand literature and policy initiatives on adaptive expertise, Gunn and Trevethan (2019) summarise that adaptive expertise places an emphasis on "teachers (and student teachers) making pedagogical choices, informed by their knowledge of learners in context, including the ability to evaluate the impact of their teaching decisions and to learn from their experiences" (p. 14).

In efforts to raise the levels of teaching in New Zealand and the profile of practice, the notion of adaptive expertise has also been introduced into recent initial teacher education reforms in New Zealand stating that;

> "Programmes should explicitly model the principles and practices of effective and adaptive teaching in a range of contexts. An adaptive teaching approach is one where the situation and the routine response is constantly evaluated and not just assumed to be appropriate until proven otherwise (Teaching Council New Zealand Aotearoa, 2019, p. 20)."

The reform guidelines also add that initial teacher education providers must be able to demonstrate that "student teachers are suitably prepared for their professional experience placements, and willing and able to take agency and to develop adaptive expertise with support" (Teaching Council New Zealand Aotearoa, 2019, p. 21).

To identify adaptive expertise in novice student teachers, it is expected that the student would experience significant shifts both in their understanding of the role of the professional teacher and in how they construct knowledge of the learner and their needs (Timperley, 2013). This first shift in identity happens with a change in focus of the student teacher, from being concerned with their own survival in the classroom, to teaching that focuses on supporting learners to achieve valued outcomes. The second shift happens in terms of the student teacher's relationship with knowledge, relationships and location of learning (Timperley, 2013). In these shifts, the student is positioned to be agentic in developing relationships with learners and their families. An adaptive expert is informed through the practice of assessment and self-evaluation and understands the value of the children's home environment and heritage language and culture (Timperley, 2013). The shifts in agency and cultural responsiveness are not just intellectual but attitudinal. In applying the adaptive expert framework to an inquiry-based mathematics class for

Demonstrations of adaptive expertise: a student teacher's innovative use of remote technologies during the pandemic
– Dolan | *Volume 7 Number 1 – April 2022*

37

student teachers, Anthony et al., (2015) suggest that the optimal conditions for developing adaptive expertise is to provide the student teacher with a practice-based focus in authentic settings.

Adaptive expertise is therefore more than just the balance between efficiency and innovation but is also characterised by shifts in the student teachers' thinking, behaviour and commitment that serve to promote the engagement, learning and wellbeing of each of their learners (Timperley, 2013). The following vignette captures how one student was able to demonstrate many of the characteristics of an adaptive expertise through her ability to change, adjust and modify her practice in response to the uncertainty of the pandemic.

Innovative practices that demonstrate adaptive expertise

Shifts in teaching practice and beliefs about children's learning that eventuated through being responsive to the learning context is shown in the vignette of Lily, a Graduate Diploma student teacher originally from China on the second of four placements, with a focus on teaching literacy to infants and toddlers. One of the key outcomes for Lily was to design and plan a series of learning activities to promote literacy among the under twos. Using the Zoom platform to host a live mat-time, the student teacher set about to engage children in their story time. Recognising the importance of introducing elements of stability and consistency into the routines, the student had set up her living space to resemble the early childhood centre.

In the first scheduled session after the lockdown, the student noted an absence of some of the Chinese children during their morning story time and discussed the problem with her Associate Teacher. In response, the student was invited to translate the invitation to the story time into the children's home language. After this was posted on the centre's online platform, the student reported an immediate uptake in the families' responses. However, during the livestream Lily noticed some of the children's grandparents struggling to follow the instructions and noted the language barrier was still preventing their full participation.

The Associate Teacher and student teacher communicated with all the centres' families to see whether there was a demand to set up the story time in the families' heritage languages. The student reported that during the pandemic, the children's grandparents, many of whom were unable to speak English, were the children's primary caregivers during the day. This was reflected in the whānau response to the inquiry which resulted in a separate story time in Chinese for the under twos. This was later extended to other classes with the same student teacher taking on the responsibility for preparing the story telling sessions. Telling the stories in Chinese and translating into English where the student felt it added, the student was able to demonstrate inclusivity and culturally sensitivity to support parents and whānau to join in with their children's learning.

> *"To make the activity meaningful and attractive to the children, I searched books and stories I could tell in Chinese that also had an English translation, I prepared the teaching resources in advanced and the parents and grandparents really loved these sessions. Our online story time has been hosted successfully. Children enjoyed joining in and learning from it."*

Demonstrations of adaptive expertise: a student teacher's innovative use of remote technologies during the pandemic
– Dolan | *Volume 7 Number 1 – April 2022*

38

By viewing the parents' and grandparents' interactions with the children, the student teacher was able to adopt cultural practices respectful of the families' cultural heritage, whilst also having her own culture valued. By providing tailored support, the student teacher was able to localise the curriculum to the immediate needs and competencies of both children and whānau.

Fox (2020) reminds us that purposefully designed early childhood teaching that uses remote technologies to promote engagement with the families is often bidirectional with teachers gaining information about families' funds of knowledge (Fox, 2020; Moll et al., 1992). Through the reciprocal use of remote technologies, Lily was able to learn more about the children's family and how family members interact and support children's learning in their heritage language. In this situation, with the supervision of her Associate Teacher, the student teacher was agentic and inquisitive about the impact of her teaching and following feedback from parents, was able to pivot and reimagine her teaching practices to be more inclusive.

Reflection on adaptive practice

Adaptive expertise was evident in the pedagogical choices made by Lily in her response to the changes to the teaching context prompted by the lockdown. As suggested in the move from novice to adaptive expert there is a shift in disposition of the teacher away from the self to the learners and helping them to achieve valued outcomes (Timperley, 2013). This was evident in the way that Lily sought to include all learners and tailored the curriculum to reflect the needs and the competencies of the community. Noticing the challenges of many of the whānau with following the story time instructions in English, Lily was able to draw upon an array of knowledge resources, including knowledge about the learners, the discipline and the community to devise a solution. Freed from traditional behaviours and routines, Lily and her Associate Teacher were able to experiment with the new practice of the story time in Chinese. Knowing that the significance of securing partnerships with the families, particularly when wholly reliant on families for facilitating online learning, Lily was able to work collaboratively with the families to support their participation in the story times. The period of the pandemic brought about a substantial restructuring of every aspect of early childhood education, including the Field Practice placements, and through this challenge Lily and her Associate Teacher were able to navigate through change while refining and adding to her professional learning and growth.

Conclusion

The pandemic and the disruption to normal teaching practices afforded many students the opportunities to delve deeper into their own teaching and develop characteristics of an adaptive expert. The use of remote technologies through the pandemic enabled learning and provided opportunities for young children and their parents to connect to their curriculum, teachers and peers whilst confined to their homes. Given the feelings of isolation and disconnection that are a consequence of social distancing, early childhood education fulfilled a significant role in supporting the wellbeing of children and whānau during the pandemic. To overcome challenges of physical distance, student teachers demonstrated aspects of adaptive expertise where they were able to reimagine current practices to an online platform and be more agentic in their collaboration with families. The notion of adaptive expertise carries with it the image of a highly collaborative, culturally sensitive and contextually aware teacher.

Demonstrations of adaptive expertise: a student teacher's innovative use of remote technologies during the pandemic
– Dolan | *Volume 7 Number 1 – April 2022*

39

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Demonstrations of adaptive expertise: a student teacher's innovative use of remote technologies during the pandemic
– Dolan | *Volume 7 Number 1 – April 2022*

40

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Demonstrations of adaptive expertise: a student teacher's innovative use of remote technologies during the pandemic
– Dolan | *Volume 7 Number 1 – April 2022*

41