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- book reviews.

Publisher: The Technology, Environmental, Mathematics and Science (TEMS) Education Research Centre, which is part of the Faculty of Education, The University of Waikato, publishes the journal.

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Cover Design: Roger Joyce

This journal provides immediate open access to its content on the principle that making research freely availble to the public supports a greater global exchange of knowledge.

ISSN: 2382-2007

australasian journal of
TECHNOLOGY EDUCATION

Volume 1, 2014

Images of Technology and Sustainable Development in Swedish Children's Literature
Cecilia Axell, Jonas Hallström, Jan-Erik Hagberg 1–8

Comparative Analysis of Research Priorities for Technology Education
Gene Martin 9–17

Theoretical Implications of Gender for Technology Education
Vicki Knopke 19–28

STEM Education: Authentic Projects which embrace an Integrated Approach
Coral Campbell, Wendy Jobling 29–38

Intervention through Design: Encouraging a creative approach to learning in Technology
Ann Mc Glashan 39–48

Exploring the Relationship between Science and Technology in the Curriculum
Abbad Almutairi, John Everatt, Paul Snape, & Wendy Fox-Turnbull 49–63

Initial Teacher Education PCK Development - Knowledge of Learners: A beginning technology teacher's journey
John Lockley, Michaela Nicholas 65–75

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Initial Teacher Education PCK Development - Knowledge of Learners: A beginning technology teacher's journey

John Lockley and Michaela Nicholas

Abstract

Initial teacher education is guided by understandings of what makes a good teacher. Through programmes, teacher educators bring theory and practice together to speed the development of teachers' pedagogical content knowledge (PCK). PCK development occurs intensely over the first few years and continues over a teacher's career. A teacher's PCK is specific and contextual, addressing issues of their own classroom practice.

This paper adds to the literature by recounting the PCK development of a beginning food technology teacher in the area of understanding learners. It identifies the affordances that supported her development in line with current literature. In addition, it identifies the influence of theoretical models on teacher professional development and learning, in this case Choice Theory. The paper documents examples of specific pedagogies developed by the beginning teacher to address identified student learning needs in New Zealand. It also raises implications for initial teacher education preparation practices.

Key words: Choice theory, pedagogical content knowledge, learners, pedagogy, technology education

Introduction

When I began my initial teacher education, a university tutor once said 'We must be aware of whom we are teaching at secondary school. They are teenagers and come with all that that involves." Another wise speaker said that "Unless we meet their needs of love and belonging, survival, power, fun and freedom in the classroom, we stand as gladiators between their needs and their learning." Suddenly this idea of teaching became a whole lot more complex than I initially thought. Did I want to spend my years of teaching building armour as a gladiator trying to survive? To manage my classroom in amongst teenage hormones and relationship issues with the hope the students might learn, day after day? Was this what I had signed on for as a new teacher? (Monica, anonymous teacher)

Initial teacher education is based on the premise that teaching is a professional practice that can be learned, and moreover, this practice can be understood and improved upon by a theoretical understanding of what makes a good teacher. Shulman (1987) proposed a framework of teacher knowledge consisting of subject matter knowledge, curricular knowledge and pedagogical content knowledge (PCK). He described pedagogical content knowledge as "that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding" (p. 8). In early articulations of teacher knowledge, PCK was seen as one of seven knowledge bases for teaching alongside content knowledge, general pedagogical knowledge, curricular knowledge, knowledge of learners, knowledge of educational contexts, and knowledge of the philosophical and historical aims of education (Shulman, 1987).

As research and thinking on the role of PCK in teacher knowledge has developed (Berry, Loughran, & van Driel, 2008; Cochran, DeRuiter, & King, 1993; Driel & Berry, 2012; Gess-Newsome & Lederman, 1999; Grossman, 1990), the boundaries of these different knowledge bases have been debated with teacher education currently recognising four general areas of teacher knowledge: general pedagogical knowledge, subject matter knowledge, pedagogical content knowledge and knowledge of context (Grossman, 1990). In this model, the place of teachers' understanding of their students is situated within knowledge of context, alongside teachers' understanding of the community, school and district. In more specific models of teacher knowledge, the knowledge of students and their requirements for learning, as well as understanding the difficulties they may have with learning in any particular domain, are subsumed within PCK (Magnusson, Krajcik, & Borko, 1999).

Magnusson et al. (1999) propose that a teacher's PCK is made up of five definable components:

1. Orientation towards teaching (knowledge of and about their subject and beliefs about it, and how to teach it).
2. Knowledge of curriculum (what and when to teach).
3. Knowledge of assessment (why, what and how to assess).
4. Knowledge of instructional strategies.
5. Knowledge of students, and their understanding of the subject.

This fifth component of PCK, a teacher's knowledge of their students, seems particularly difficult to address in university/school shared experiences of initial teacher education programmes. In these programmes, the first phase of initial teacher education is university based with initial teachers working on university studies punctuated with in-school practicum experiences. These practicum sessions (e.g., between 5 to 10 weeks) give initial teachers an opportunity to begin to understand school students. One could argue that these simply do not allow enough student contact time for this to happen to any great extent. The second phase of initial teacher education is where initial teachers take up a position in a school and are provisionally registered and have a reduced workload, being mentored and supported within the school with further professional development and learning opportunities.

Research on teachers' PCK development suggests that PCK, including understanding of students, is enhanced when a teacher spends prolonged periods of time working with students with opportunity and encouragement for professional reflection (Hallim, Meerah, & Buang, 2010), conditions it seems that are difficult to achieve in initial teacher education programmes. This finding is consistent with Driel and Berry's (2012) assertion that PCK as a form of teacher's professional knowledge is highly topic, person, and situation specific and, as such, is developed through an individual's experiences and reflections on those experiences. Other studies of teacher PCK development also indicate that an initial teacher's PCK development is particularly intense over the first few years of their teaching practice and that they may often not appreciate the demands that this on-going learning will make of them (Cowie, Moreland, Jones, & Otrel-Cass, 2008; Loughran, Mulhall, & Berry, 2008).

PCK development is a lengthy process with beginning teachers taking time to acquire the bank of skills and new knowledge needed to become professional teachers who are proficient in their field (Kind, 2009; Rohaan, Taconis, & Jochems, 2010). The process has, however, been shown to be supported by three common factors that contribute to the growth of PCK in early career teachers (Kind, 2009). The first factor is the possession of good subject matter knowledge; the second is on-going classroom experience; and the third is the possession of emotional attributes like personal self-confidence and the provision of supportive working atmospheres in which collaboration is encouraged.

This paper reports upon the experiences of a secondary technology education initial teacher and the development of her knowledge of students over her first three years of teaching.

Monica's Story

Monica is a beginning secondary school, food technology teacher who was a successful chef and then operator of her own interior and event design businesses. As a mature adult she chose to use her previous training and apply it to teaching.

> Six years ago I was fortunate to be the recipient of a Teach New Zealand scholarship for Food Technology, so I started teaching later in life than some. I have two children who have taught me a great deal about being a teacher. My daughter simply because she is a teenager herself and my son by helping me understand the struggles of learning with dyslexia. However, nothing had prepared me for the challenges and complexities I would face in the classroom and with teaching as a job. Not even the managing behaviour paper I completed at university. Initially I felt as if I could only just manage to keep my head above water. There were so many strings to becoming a teacher that only really became evident as I started in the classroom. It was not just subject content knowledge; it was how to fit it into a unit that was to be assessed and still be suitable for the students I was teaching. How the school ran, the hierarchy, the computer systems, who all the staff were, interactions with parents and many more things. In my third year of teaching I began to form my own ideas as to what were the most important things to focus on in the classroom. I repeatedly came back to relationships. I kept thinking to myself, it doesn't matter how competent I am in my subject knowledge, or how good my pedagogy was unless I had formed good relationships with my students. They would seldom care. They had to want to be in my class. They had to want to know what I had to share with them. (Monica)

Monica's comments on her first few years of teaching express the intensity and the complexity of the development of her PCK through this period. Much of her PCK development occurred through personal professional practice but was supported with planned professional development and reflection opportunities. In the area of understanding students and their learning, one such opportunity[i] struck a chord with the way Monica had begun to understand students. This, along with her own professional reading, (Erwin, 2004; Glasser, 1986, 2000, 2002) helped her develop her understanding of Choice Theory, which is based on the idea of minimising fear and coercion for students in the classroom, with its aim of observed human behaviour to meet one or more of our innate basic human needs (Erwin, 2004). According to Glasser:

> When we are born we are coded with a genetic task that, although [it] may not be as urgent as breathing, must be performed if we want to be happy; and we must figure out a way to accomplish it. At the core of that task are these five basic needs built into our genetic structure. If we can learn to satisfy those needs and not frustrate others in the attempt, we will be happy. The better we satisfy them the happier we will be. (2002, p. 17)

According to Choice Theory, the fundamental human needs are love and belonging, power, freedom, fun, and survival. Choice theory suggests that we strive to have all these needs met in our lives: however, for each individual, one need may be more important to be met than others. The application of choice theory to teaching and learning in the classroom is to understand that unless we identify these needs in our students, as teachers, we can become the barrier standing between them and their needs. Erwin (2004) expands on Glasser's notion by explaining that:

> Students' genetic instructions are to seek a safe, orderly environment (survival), feel a sense of belonging, be successful and have a sense of importance (power), experience a sense of independence, and have fun. If we do not provide opportunities for students to meet these needs in our classrooms, the genetic instructions do not go away. (p. 19)

In her development as an initial teacher, Monica found Choice Theory to be a useful scaffold in better understanding her students and their learning behaviours. Though she had completed her formal initial

teacher education programme, Monica was motivated enough to continue her own professional development in the area and begin applying the principles to her classroom practice.

Monica found the principles of Choice Theory highly applicable when working with students in her area of classroom practice, food technology. The group-based culture of student work in food technology mirrors closely the group-based learning strategies inherent in the theory. The opportunity to understand her students and their motivations towards learning in technology better was appealing as she had come to understand the differentiated nature of her classes. Monica had noted that, "Even if you teach several classes of the same year group, the make-up of each class is not the same. What works for one class may not work for another". Erwin (2004) explains this observation by arguing that a student who has a high 'love and belonging' need seeks opportunities to work in partnership, to share, to form and maintain relationships. On the other hand, a student with a high 'power' need may seek opportunities to be listened to, be challenged, and gain recognition for their successes. Students with high 'freedom' needs crave choices, movement, and novelty. Students with a high 'fun' need enjoy learning through games, role-playing, and humour. Likewise, a student with a high 'survival' need values attention to safety, predictable procedures, and a sense of order.

Over the period of her first three years of teaching, Monica applied her developing understanding of choice theory (Glasser, 1986) and the identification and acknowledgement of Erwin's five basic needs (Erwin, 2004) in her classroom practice in the context of food technology. The following section explores her experiences through the lens of choice theory.

Findings

The need for love and belonging

For many teenagers, their peer group has the greatest influence on them as they have an innate need to feel that they belong (Glasser, 2002). Teenagers meet this need through many groupings: families, friends, sports teams, social groups and youth groups. In the school setting, students who have a high need for love and belonging seek out opportunities to work together in consistent teams - to share, and to form and maintain relationships. Monica found that this need could be catered to through the practical nature of classroom practices found in food technology, as students work together in groups. She found that this group work practice also gave opportunities for her to develop an understanding and caring for her students as she worked alongside them during practical sessions.

> In our junior food technology programme, students work in kitchen groups of four and have to learn to work as a team, particularly when cleaning up. As pairs they design, trial and evaluate their products together. This allows for closer relationships to form in a variety of ways, not just teacher to student, although this is also important. For example, I have a student I think of as 'Daisy', as she is like a flower requiring love and care to bloom. I taught Daisy last year and initially she was a challenge, always loud, wanting to be the centre of attention, or sulky and did little work. I began to look at the situation using my research and suspected she had a 'love and belonging' need. In light of this, I tried to acknowledge her positively each lesson, be it a smile, a comment, positive feedback on a dish she had cooked, or on written work produced. A change didn't happen instantly, but slowly I began to see a change in her behaviour. She looked for the contact with me each lesson and I found when it was given, she appeared happier, worked better and actually the class did too as she drew less attention to herself. I am teaching Daisy again this year and found that from the start of the year she would announce her arrival in my class, so I would notice her. Although I had already decided that she responded well to the love and belonging techniques, I did not realise how significant my relationship was until one day I somehow had not acknowledged Daisy as usual. Part way through the lesson she came and sat on the set of drawers at the front of my class. She would not move and her partner was quite concerned telling me she had tried to get Daisy to come and sit

> back down. As I explained to Daisy I needed her to return to her seat in the next 30 seconds for the next task, I began to realise my error. Sure enough she did return to her seat but two minutes later called out, "Miss, you have not told me you love me today." I was slightly embarrassed by this and said, "Daisy, the class and I do love you.' She replied, 'No miss; I want you to love me." (Monica)

As teachers, we can become a significant adult in the world of teenagers, particularly where they have a strong need for love and belonging, and they do not have other adults who fulfil that need. Monica became aware that Daisy had lost both of her parents in traumatic circumstances when she was very young.

Monica has been challenged through her experiences with Daisy and has stopped and considered the difference that she can make in the lives of her students with just a little understanding. She acknowledged that even in Daisy's case, she knows very little about her background, her life experiences, apart from what she was told by the Dean, but she is convinced that by understanding and acting upon Daisy's fundamental need to feel loved and belonging, through personal actions and through arranging classroom activities that meet her needs, she can improve Daisy's learning and that of the rest of the students in the class. More importantly, perhaps, she can make a difference in her life.

The need for power

A student who exhibits a need for power can have that need met in one of three ways. The first is connected to the need for love and belonging and it is met through a sense of *power with*. It is achieved most easily with students when they work co-operatively with others in groups.

The second way a need for power can be met for students is by them being put into situations where they have *power over* that situation. The need for power over can be fulfilled positively by students having influence over some part of the operation of the classroom, or if not, may be expressed negatively where that need for influence is directed at controlling someone else.

The third way that the need for power can be met is through students developing a sense of *power within*. This need can be met through the student developing new knowledge and skills, thereby increasing their abilities and sense of agency. Power within is about students developing personal empowerment which comes from learning, accomplishing goals and achieving competence or excellence in something. A growing sense of power, particularly within, should be experienced by all students. As Erwin (2004) points out:

> The purpose of education is to provide children with knowledge and skills – in other words, the power – to live healthy, successful lives, power should be the need that schools most effectively address. Ironically, power is the need that many students find most difficult to meet in school (p. 99).

Monica found that in her food technology classes, students with a high power need enjoyed being listened to, being challenged, and gaining recognition for their successes. This need can be particularly met during the product development stage of technology when her students have opportunities to work in groups, share their ideas, are challenged by the problem solving aspect of their designs, and gain recognition by developing novel products that meet an authentic need or opportunity.

> The interesting thing about their need of being listened to is that when you actually think about it, it can be easy to do. In my Year 9 technology programme, as a class we write a guide of what makes a good teacher. We list what they feel they need from me, the teacher. We also write about what makes a good student, listing what they need from each other to successfully learn. Then I get them to rate themselves from 1 to 5, 1 being really good at it and 5 requiring work. I also get them to rate me, and yes, it is a heart in mouth moment. However, it gives me an opportunity to discuss things like what might make a teacher grumpy if they identified they wanted a teacher who was

> not grumpy. This is a great teaching tool that I can refer students to, for example, when students talk over one another. I can ask 'Didn't we list respecting each person when talking by listening was key to being a good student?' It is also an empowering moment, especially when reviewed after a length of time and they find they have improved in some of those areas requiring work. Ultimately class expectations are clear. (Monica)

Another way Monica has found to address this need for power in a technology classroom is to find jobs for particular students to do. The management of physical resources in the classroom is a popular tool, with her entrusting a student to, for example, count and put away the biscuit cutters at the end of the lesson. Another example is where she selects particular students to be the scribe in a class brainstorm and write on the whiteboard while she directs the discussion. Her choice of students for these tasks is directed by her acknowledgement of their need for power.

Another method that Monica has found to be successful with students with a high power need is to give specific feedback:

> Each time students cook, they have to bring their dish to the front of the class for a photo. Before cooking, I tell them what the skill focus is and while the photo is being taken I give each student feedback, on how they have gone, and feed forward about possible improvements. At the same time, we can also address any problems that occurred. Erwin (2004) supports the importance of helping students evaluate what they have done well and again this is part of the technological process. (Monica)

Monica has found that sometimes her students can have their need for power met simply by listening to them.

> I have a Year 9 student who is perhaps a little unique. He does not blend in with the other students and is often a loner, yet has a most considerate heart that many in class benefit from. At the end of each lesson, he will find a way to hover, often by just doing a little extra cleaning or slowly packing up. At first I found this frustrating and wanted him to hurry, so I could start the next class. However, very soon I realised that this was his way of meeting the need for power in class. A 1-2 minute conversation, one on one, seems to make a difference to him giving him *power with* by connecting with me and power *within* by clarifying any questions he had but could not ask during the lesson. (Monica)

The need for freedom

Similar to the need for power, the need for freedom comes in two forms. '*Freedom to'* involves choice and '*freedom from'* involves being apart from things that cause us discomfort, fear and stress.

Students with high freedom to needs, often crave choice, movement and novelty. Monica has found that these needs can be easily met in the technology classroom. She has found that in her food technology programme, these students thrive given the freedom to design within the guidelines of a design brief where they can express their creativity. Their prior knowledge and culture are valued and often allow for uniqueness in design. Furthermore, the practical nature of the classroom practice meets these students' need for movement.

Where the need is for freedom from fear or stress, Monica has found that she can help these students most by developing their practical and problem solving skills. In the food technology context, this can be achieved through helping students develop their problem solving and prioritisation skills. It may also be through students learning to operate equipment they are unfamiliar with and apprehensive about using. Although initially scared, with teacher support, they learn to operate safely to produce their own outcomes, thus increasing their sense of power within.

> Some examples of 'freedom to' I have found are when students need to be able to move after a period of time particularly a theory lesson. Another example of 'freedom to' is to have their friend as a work partner, maybe due to lack of confidence when cooking, or simply to help with time management. For example, I had 2 students this week who asked to make their dough recipe together so they could have longer to work on their design.
>
> I have a student, John, who has a need of freedom from failure. He comes every so often at lunchtime for extra tutorials to help achieve credits. Another example regarding freedom from failure would be my Year 9, Tony, who had little cooking skills and did not want to be seen as failing when he cooked by his peers. He had an image to keep. By working alongside him, like a partner, he experienced success and his confidence grew to where eventually he could work with another student and at times, even direct them. Or Andrew, he needed to shift kitchens because one of the other people in his kitchen had bullied him in the past and he still felt uncomfortable. (Monica)

The need for fun

It should come as no surprise that we need fun in our lives. As well as being a great motivator, in the classroom setting, it can make those difficult or monotonous jobs or topics appear less so. Erwin (2004) argues that "If we want students to be motivated to learn, fun must be a regular part of the classroom" (p. 162). As a teacher, how often do we get lost in the list of what must be taught to meet this or that requirement and we forget to take time to have fun and enjoy working with our students? Erwin contends that "A student who has laughed with you will rarely give you a hard time" (p. 159). Moreover, he advocates for teachers to have and use a sense of humour in their teaching suggesting that "Students are the best audience in the world; they are desperate to laugh…. The more they see you enjoying yourself, the more they'll enjoy themselves as well" (p. 60). When fun is a part of the classroom, Glasser (1986) suggests "What you remember is the fun, and in doing so, seem not to be able to forget the learning that was part of it" (p. 32).

Students with a high need for fun enjoy learning through games, role-playing, and humour. Monica has found that in food technology she can meet this need for her students by developing their understanding of the context of their technological developments through role-playing the technological practice setting. Here the students identify how their product should perform in its intended environment, what the societal needs are and the potential impact of their design in the future. As well as this, she has found that short fun activities often pay great dividends for student learning.

> I have found playing the game food safety bingo with my junior classes as a good way to broaden their understanding of this important area. Fun can also be used for a five minute break when things are not going so well. For example, students are looking sleepy. This is a tip I have learned from Driessen (2014) in his 'seven ways to improve boy's education in your school' seminar. According to Driessen, as soon as a boy *sits down* his testosterone level drops and he does actually become sleepy. I had often seen boys with their heads down on the tables in class. He explained that boys cannot help it, but as teachers, we can counter this by providing small adrenaline rushes. Simply getting the students to stand and participate in an activity helps.

Monica has found that her students are aware of their need to have fun and has developed a classroom environment where they are confident to express this need to her if they feel it is not being met. Likewise, her students also understand that Monica, as a person, also has a need to experience fun in her work in the classroom.

> The other day my Year 10 class said to me, 'Miss we need some fun.' It was 1st period on a Friday morning and they were all feeling flat for one reason or another. So we negotiated. I explained what had to be done and said that if we all worked together

> and achieved this then we could have a game for the remaining time. It was a good 'carrot' to use to keep them on task and we managed to complete all the work I had planned. Without this positive approach they may have looked like they were doing the work but I doubt any learning would have stayed with them into the following week.
>
> At other times when I am feeling tired I often have trouble getting my words to come out right and my patience can be low. It may have been after a huge night of marking or meetings. I have learned that to laugh with my class and simply say 'I have my tired eyes on today because…' is a far better way to get through a lesson and the kids understand. It is almost like they listen more to hear what I will say wrong when they know so they can have another laugh. Whatever the reason, it works better for me.

The need for survival

The need for survival includes our immediate needs, such as food, shelter, physical comfort and safety, as well as our future needs. As adults, we have considerable resources and usually have these immediate needs met. Some also apply our resources independently to ensure we have our future needs covered through actions such as savings, investment, and insurance. For teenagers, meeting survival needs is more corporate than individual, relying on others to have these needs met. Their feeling of survival is interlinked with the adults in their lives and they are in many ways reliant on how well those people cater to this need. For some teenagers, the very issue of shelter, for example, can become a dominant question in their life. If their family is divided the adults in their life may be more focussed on sorting their own issues than considering the physical and emotional needs of their teenagers.

Monica has found that when her students are feeling vulnerable they become highly stressed and their ability to learn is affected.

> The survival 'fight, flight, or freeze' default kicks in. It does not matter how exciting the lesson is, or how critical to their learning and achievement the work is. Survival and the real or perceived danger is where they are focussed.

Monica has found that in these situations her most effective strategy is to listen and identify the perceived threat, with the key being the word *perceived*. She has learned that it is tempting to interpret the student's situation through adult eyes and therefore determine the real level of danger and react accordingly. However, experience has helped Monica see the situation through her teenager's eyes and appreciate their emotional, often hormonal, position and interpret the events from their perspectives. She has found that listening builds relationship with her students and that as her relationship builds, her students are more likely to share the issues that threaten them. She has found that a minute or two taken to listen and acknowledge the problem with a student can make a big difference. Listening, and thereby acknowledging the student's problem, may allow the student to re-engage in the lesson or be enough for Monica to accept that when things are better they can catch up.

> I had a student start late in my class this year. He met me at the door before entering the room and said 'I don't want to be in your class, I've been put here.' So I greeted him and said I was glad to have him anyway, giving him a sense of welcome. By listening further, he explained 'Things are not so good for me at the moment, I've run away from my uncles and am living with mates.' I explained how my subject just might be able to meet his needs by teaching him how to cook and suggested that if he was living with mates for a length of time, these skills could be useful. Suddenly a subject that he was negative about, had some positive aspects. I was careful to see it through teenage eyes and appreciate the uncertainty of his situation. This was the start of me understanding him. I am thankful I took the time as his life continues to be complicated and it does affect his learning.

Students with high survival needs can have these met in the context of food technology though aspects of classroom practice such as attention to safety, the establishment of predictable procedures and the sense of order that occurs with these practical routines.

> The start and end of every practical cooking lesson is always the same. Hat and apron on, clean the kitchen tables, wash hands, take the roll and give instructions, through to gathering their ingredients. The end always finishes with washing and drying dishes, each kitchen unit is checked to see all items are where they should be for the next class, then hats and aprons off and sitting quietly. It is the same with safety procedures such as using knives. It is explained thoroughly and all students follow the same procedures. This familiar routine allows students to focus on the lesson ahead.

Discussion and Implications

Teaching is a practice that can be understood and improved upon by a theoretical understanding of what makes a good teacher. It is pedagogical content knowledge (PCK), as outlined by Schulman (1987) and others (De Miranda, 2008; Driel & Berry, 2012; Gess-Newsome & Lederman, 1999; Gess-Newsome, 1999a, 1999b; Grossman, 1990; Kind, 2009). Initial teacher education programmes speed the development of a teacher's PCK, though some aspects of PCK are more difficult to deal with than others and can take years to develop, and one can argue that a teacher's PCK never stops developing throughout their career.

Knowledge of learners, a part of PCK, is particularly difficult to address in initial teacher education programmes but nevertheless occurs in context as beginning teachers gain experience, particularly over the first few years of teaching practice. Monica's story, which plays out in the context of the food technology classroom, provides a window into this development, giving a glimpse into the process that she went through developing her PCK within which we can identify the factors that support this development earlier identified by Kind (2009). Monica has a strong background knowledge of her subject, being a professional chef with years of industry experience. She is self-confident and a self-directed learner taking control of her own professional development and learning, and furthermore, she is supported in an environment where teacher professional development and learning is valued.

As Monica recounts the development of her understanding of her learners over the first few years of her classroom teaching career, the influence of her theoretical understanding of student behaviour becomes clear. When she first entered the classroom she was aware of the need to understand her learners but she self-identified that this was a problematic area in her teacher education. Monica seized upon Choice Theory, as a way of interpreting and understanding the student behaviours that she was experiencing in her classroom. Moreover, Monica has herself theorised, using Choice Theory as a framework, ways of addressing the learning needs of her students, in the context of her classroom practice in food technology. She has developed her own understanding of what interventions meet the various needs of her students and what can be done in the context of her classroom and learning area. Monica has made sense of the complexity of her classroom through the lens of, in her case, Choice Theory, interpreting the patterns of behaviours presented to her and, more importantly, developing pedagogy with specific students in mind to improve their learning.

Monica's PCK development has been specific, personal and grounded in her own classroom experiences. This development has been aided by her clear theoretical understanding of the issues, from which she has been able to develop pedagogy to apply in her classroom. Her understanding, however, has also been enabling in her personal life with the learning difficulties experienced by her own son. Speaking about this, she explains:

> If a student has a learning difficulty such as dyslexia, often their power within is challenged and finding recognition for success becomes a distant dream. I have at times, found my son crying in his room saying, 'I am dumb,' or at other times frustrated at how hard things are compared to other students. In time, this lack of

> power mixed with a strong need for love and belonging due to never really feeling accepted in class, often leads to misbehaviour as a cover, especially in teenagers who need to appear cool in front of their peers. In one student I believe it has also led to depression. (Monica)

A teacher's PCK development, such as in Monica's case, occurs intensively over the first few years of their teaching practice. As has been shown here and in the literature (Kind, 2009) this development is aided by factors such as possession of good subject matter knowledge, on-going classroom experience and the teacher's possession of emotional attributes like self-confidence and the provision of a supportive working atmosphere in which collaboration is encouraged. Monica's experience, however, shows that a significant factor in supporting her PCK development was a clear conceptual understanding of a model of student behavioural needs, which in her case was Choice Theory. This may suggest that another enabler of PCK development is the presence of a theoretical understanding of what pedagogical content knowledge is being developed, in this case, knowledge of learners.

This finding has implications for developments in initial teacher education. The findings suggest that the current mix of theory and practice models of university-based teacher education, supplemented with periods of in-school practicum, and then initial teacher registration leading to predominantly classroom practice-based experience may not meet initial teachers' needs. It appears that the use of a conceptual theoretical framework can be important in guiding the interpretation of classroom behaviours and, in this case, importantly guide decision-making to address student learning needs.

Improvements in initial teacher education may be facilitated where teachers are encouraged, and provided with, ongoing opportunities to reflect on classroom experiences in a supportive professional development and learning environment that is informed by educational research and theory. As in Monica's case, making sense of observed student behaviour can be informed by theory which then informs the development of specific and context-bound classroom pedagogies. This ongoing dialogue between theory and practice enhances the development of the teacher's pedagogical content knowledge.

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