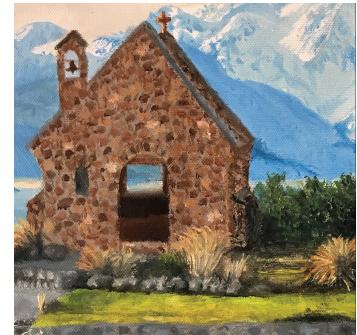


The Learning Theories Profile: A Metacognitive Tool for Reflecting on Professional Practice

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ABSTRACT

The *Learning Theories Profile* (LTP) supports professionals to locate various learning theories within four epistemological quadrants of the *Matrix of Perspectives*. Professionals can use this tool to identify some of the theories they hold and to reflect on the alignment between their espoused theories and theories-in-use. Forty-four resource teachers used the LTP and demonstrated that they were guided by a range of theories, most commonly interactive theories. A strong relationship was observed between espoused and in-use theories. Participants' responses indicated the positive value of the LTP for supporting professionals to analyse and optimise interaction occurring in complex contexts of practice.

Research paper

Key words:

learning theories, learning theories profile, matrix of perspectives, metacognitive tool, professional practice, reflection

INTRODUCTION

Perspectives on learning are central to educational practice because of the substantial role they play in guiding the actions of teachers, parents and mentors. This article begins with a description of the Matrix of Perspectives, an arrangement of various perspectives and theories of learning that differ in relation to the relative dominance of either the environment or the learner on learning (Figure 1). A brief history of commonly recognised learning theories follows, illustrating the shifting dominance of the various theoretical positions over time. The Learning Theories Profile (LTP) is then described as a tool that operationalises the Matrix of Perspectives. The LTP enables reflection on practice and identification of different perspectives that can be taken in any given scenario. The description of the LTP in action shows how it provides a framework for professionals to compare different approaches to practice in situ. The article reports and discusses

the results of a study examining, (a) the alignment of a group of educational professionals' espoused theories of learning with their reported practices, and (b) the perceived usefulness and application of the LTP for practice.

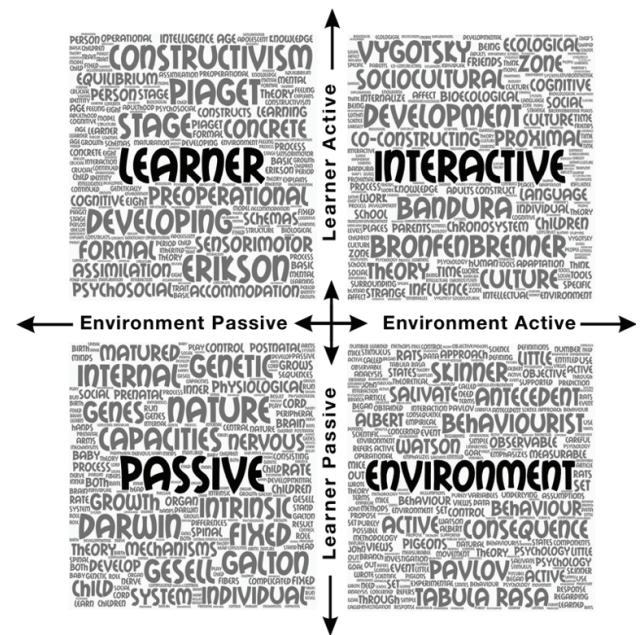


Figure 1. The matrix of perspectives.
(Adapted from Bowler, Annan & Mentis, 2007).

This article builds on earlier work by the authors, drawing attention to the contextual nature of various theories of learning within the Matrix of Perspectives, the circumstances under which professionals choose various courses of action, and the blurred boundaries between quadrants. The concept of the Matrix of Perspectives was introduced in *Understanding the Learner Environment Relationship: A Matrix of Perspectives* (Bowler, Annan & Mentis, 2007) to illustrate how different learning theories positioned the learner in relation to their learning and the role that the environment played. This concept was further elaborated in *Understanding Diversity in Educational Psychology Teams* (Annan, Bowler, Mentis & Phillipson, 2008), where the authors discussed the influence on perspective of people's current positions or investments in situations. Mentis, Annan and Bowler (2009) then followed up with a study that

examined postgraduate students' use of the Matrix of Perspectives to analyse assessment data for learners with diverse educational needs. The authors found that the Matrix of Perspectives facilitated appreciation and understanding of different theoretical orientations, enhanced collaboration and problem-solving, and encouraged professionals to challenge their own practices and underpinning beliefs. In *Between Theory and Practice Falls the Shadow: The Learning Theories Profile* (Annan, Bowler, Mentis & Somerville, 2011), the LTP, designed as a self-rating tool of the Matrix of Perspectives, was introduced and trialled. The LTP was shown to support professionals to discern and review the space between their espoused theories and those theories implicit in their reported actions in their practice. The professionals who used the tool indicated that it had helped them to critically observe the theories of learning they endorsed and the expression of these theories in their practice.

THE MATRIX OF PERSPECTIVES

The Matrix of Perspectives (Bowler, Annan & Mentis, 2007) was originally created to represent educators' thoughts about the complexity of practice and to understand the relative roles of learners and environment on learning. It was designed to examine the location of various theories of learning in relation to both the environment and the learner.

The matrix is formed by two intersecting continua, one representing the learner and the other the environment. Each continuum extends from 'active' at one end to 'passive' at the other (see Figure 1). The intersecting continua form four quadrants: **Learner Active**, where the learner determines their learning; **Environment Active**, in which the environment is seen as a greater determinant of learning than the learner; **Interactive**, with both learner and environment active; and **Passive**, a quadrant representing notions of learning that view neither learner or environment as active. Each of the many and various theories of learning can be placed in one of the four quadrants. In essence, placement of theories varies also within quadrants, the position reflecting the relative emphasis on learner and environment. For example, theories of cognitive development fall mainly into the learner active quadrant but, where a cognitive theorist recognises the role of outside influences, the theory is located close to the environment active axis. In summary, the four quadrants enable a comparison of different learning theories, which foreground either the environment as active, the learner as active, both passive or both actively interactive.

The following section provides a brief history of some well-known theories of learning and illustrates the shifts across the Matrix of Perspectives that have occurred over time.

THEORIES OF LEARNING IN HISTORY

Theories work to explain learning in meaningful ways and represent hypotheses that are refutable, testable and based on observed events concerning particular phenomena. Although in the first instance they are supported by observation, their longevity depends on subsequent evidence in situ and continuing support for their validity. Not all theories are equal in their scope. Some are broad and comprehensive, proposing an explanation of learning in general, for example, Situated Learning Theory (Lave & Wenger, 1991; Wenger, 1998). Others, such as Integrated Information Theory (Tononi, 2001), are more domain-specific, focusing on particular elements of learning.

Early Theories of Learning

Educational works by early philosophers illustrate the fluctuating popularity of particular learning theories reflecting prevailing or radical societal ideologies throughout history. More than two thousand years ago, Plato (2011, original 360 BC) suggested that learning was a social activity involving dialogue and action. He considered the impact of the relationship between teacher and learner on the nature of learning and suggested that environments be adapted to suit the needs of particular learners. Similarly, in the sixteenth century, Vives (1913) talked about individual differences amongst learners and the need to adjust educational activity accordingly.

At the turn of the 20th century, William James, considered to be the founder of educational psychology in America, viewed that a nurturing environment supported the plastic nervous systems of young learners. James argued that knowing was personal, determined by one's subjective view and that deciding whether or not an approach was functional, required the input of the individual. He rejected an overwhelming belief in the science of the time with its isolation of particular variables. James viewed learning as a complex process that could not be understood, "by measuring any one mental faculty taken apart from its consensus in the working whole" (James, 1899/1983, p. 82-84, as cited in Berliner, 1993). He suggested that teaching was primarily an ethical, concrete activity involving the whole child in context. However, James viewed that science had a place in understanding specific developmental components of broader activity. At around the same time, Dewey (1916) supported an holistic view of learning, arguing that children's

responses to stimuli implied their interpretations and that they involved their will and motivation. Dewey considered that focusing only on stimulus and response ignored the learning context as a whole. The debate about learning and teaching was not restricted to the defence of either reductionist science or holistic psychology. Others proposed that neither of these views were supported and that learning was largely predetermined. For example, Gesell (1933) suggested that learning reflected a process of maturation and that all children progressed through the same stages, albeit at different rates.

Environment Active Theories

The drive for a science that isolated stimulus and response from context was, in the short-term, successful, as demonstrated by the predominance of the behavioural sciences through the middle years of the 20th century. It was during this time that Pavlov's (1927) classical conditioning experiment, in which reflexive behaviours were linked to antecedent events, profoundly influenced the direction of educational thought. Alongside classical conditioning was the more learner-active operant conditioning proposed by Skinner (1938). In simple terms, Skinner's principle of reinforcement predicted that, when consequences of behaviour were experienced as adverse, the likelihood of performance was reduced. On the other hand, where the consequences of actions were perceived as pleasurable or desirable, performance of these actions would be increased. A basic premise of behaviourism is that actions occur as a function of the reinforcements they incur. Antecedent stimuli with consequent responses are reflected in teaching and learning practices such as deliberate classroom seating arrangements, predictable schedules and the delivery of positive or negative consequences for school work or behaviour. To some extent, deliberate attention to antecedent setting events and consequences continue to play a role in today's modern learning environments.

Behavioural learning theories are readily endorsed by researchers as they provide methods to isolate variables and offer licence for researchers and educators to gain some insight into learning environments through consideration of only those features that are observable and measurable. The appeal of behaviourism lies in its simplicity, the abundance of everyday examples that serve to support these theories, and the straightforward justification of action based on analyses of observable and measurable variables. Skinner, who had acknowledged that development included a wider context, may not have anticipated the extent to

which operant conditioning became separated from context.

Learner Active Theories

While a behavioural understanding implies a dominantly active environment as the key influence on learning, other theorists have viewed the impetus as emanating primarily from the learner. For example, Piaget (1952) considered that the learning developed through a sequence of four qualitatively different stages; sensorimotor, pre-operational, operational and formal operational. Piaget's cognitive theory implied that learning involved a restructuring of mental processes through which children actively constructed their understandings of their world. Learning occurred through an ongoing process of assimilation and accommodation, where new information was compared with what they already know. Although initially assigning ages for each stage, Piaget later acknowledged that environmental factors had an influence on the rate but not the direction of development.

Passive Theories

Passive learning theories are those that consider neither the learner nor the environment to be appreciably active in determining learning. These theories, such as maturational theory (Gesell, 1933), assume that learning is largely predetermined and that neither the efforts of the learner or modifications to the environment significantly change the course of maturation. The passive view of learning in the Matrix of Perspectives is different from a blank slate view of passive learning where the learner is seen to absorb information simply by participating in an active environment charged with purposeful stimuli. Proponents of passive learning assume that there is little reason to enrich the environment because the path of learning is already genetically pre-determined and predictable.

Interactive Theories

In the latter half of the 20th century, a range of interactive learning theories emerged that were reminiscent of the views earlier expressed by James and Dewey. These interactive theories situated learning in the context of people's lives and included models of learning and well-being from outside the Western European perspective. They included models such as Bronfenbrenner's Ecological Theory (1979), Lave and Wenger's (1991) Situated Learning Theory, Vygotsky's Socio-cultural Approach (1978), and Engeström's Cultural Historical Activity Theory (1987). The socio-cultural view of development proposed by Vygotsky resonates with that of

New Zealand Māori frameworks of understanding education and health systems (Macfarlane, 2015). Interactive, holistic models of well-being and learning such as Durie's 'Te Whare Tapa Wha' and Pere's 'Te Wheke' foreground the inter-connectedness of all dimensions of an individual's life. The Hikairo Schema (Macfarlane, 2000) is a similar recent framework for teaching and learning that outlines seven dimensions for culturally affirming teaching and learning in Aotearoa/New Zealand.

Interactive models provide frames for understanding the dynamic interactions among the varying social and cultural systems operating on individuals' and groups' learning. Common across these is the active rejection of contextually isolated, reflexive action as sufficient to explain learning. Desautels and McKnight (2016) suggest that previous views of learning have been too mechanistic, involving 'finding and fixing deficits' and pursuing predictable and manageable learning environments. They argue that such notions have not sufficiently accounted for the dynamic nature of learning or the powerful role of emotional, social, historical and cultural connection. New pedagogies reflecting the interactive perspective encourage education professionals to take account of children's physical and psychological well-being as well as their academic social and cultural dimensions (Anderson & Graham, 2016; Domitrovich, Moore & Greenberg, 2012; Larkin, Finger & Thompson, 2010; Lee, 2008, 2010; OECD, 2013). The perspective is positively skewed to ensure that foundations of prior learning and strength are taken into account and used to support progress forward (Seligman, Ernst, Gillham & Linkins, 2009). Teachers are encouraged to create learning spaces that generate positive emotions such as hope and desire in order to nurture deep and lifelong learning (Desautels & McKnight, 2016). New pedagogies also emphasise the place of education professionals' learning, well-being and opportunities to exercise agency in their work (Renshaw et al., Sadeghi, 2014; Long & Cook, 2015). Contexts of learning are viewed as living systems, the quality of which being functions of the relationships and interactions among learners, teachers and the wider systems that impact on learning.

Multiple Theories in Complex Environments

Variation among perspectives suggests that learning is a complex phenomenon involving the active involvement of both learner and environment. Learning reflects what a person has experienced in the world as well as predispositions at birth. It is influenced by the histories and perspectives of those around them and the social, cultural and political environments they experience. Findings from research have, now and then, challenged

or supported the various theories of learning. For example, neuroscience has demonstrated that learning involves socially-constructed and shared cognitions, underscoring the influence of culture and context (see Lacoboni, 2009). The observation of shared cognitions supports interactive, socio-cultural theories and their related practices such as narrative, dynamic and positive approaches. At the same time, this observation sheds doubt on other theories, such as those assuming a behavioural or maturational perspective. Greater acknowledgement has been given in recent years to the complexity of learning, demonstrated in the rise of modern learning environments and connected pedagogies (see Fullan & Langworthy, 2014). However, the continuing influence of environmental theories of learning poses a challenge to this transition. Pinker (2016) lamented an enduring prevalence of the behavioural assumption of the 'blank slate'. He argued that the behavioural, environment-active view was no longer defendable and cautioned against adhering too strongly to any single perspective on learning and human nature.

THE LEARNING THEORIES PROFILE

The Learning Theories Profile (Annan, Bowler, Mentis & Somerville, 2011) operationalises the Matrix of Perspectives, facilitating reflection on the relationship between theory and action. The tool is based on the assumption that, if professionals recognise their own theories of learning, they are better positioned to reflect on and understand their professional practice. Practitioners' work is unlikely to be enhanced by learning about or instituting proven practices alone; successful professional practice requires that new learning be complemented by deliberate reflection (see Lefstein & Snell, 2014). Accordingly, the LTP supports professionals to take active roles in developing their practice by examining the relationships between their mental maps and the actions they take. Through this process of informed reflection they come to understand their governing theories, values and beliefs, and the actions associated with their professional practice.

The LTP extends beyond isolated teacher practice to deep understanding of complex teaching and learning interaction. Learning experiences are interpreted by professionals in different ways depending on the learning theories with which they align and where these theories are located on the four quadrants. As noted earlier, the interpretation of learning experience is also influenced by a professional's position or investment in a particular situation, suggesting that they select from a range of theories and responses in relation to context. This observation suggests that a professional's perspective takes in a spectrum of

theories that may not be restricted to one quadrant. Interpretation is less a matter of applying a single theory and more of a fit between the position of the perceiver, the breadth of theoretical understanding

or belief, and the situation itself. Professionals' responses will be dependent on this alignment, as indicated in the scenario below (Table 1).

Table 1
Multiple Interpretations and Responses to One Situation

Scenario: Liam is an 8 year-old-boy in Michelle Bruno's classroom. This morning Liam was not pleased with the writing work he had done. He threw his iPad on the sofa in the quiet area of the classroom and ran into the playground.

	Teacher Interpretation	Teacher Response
Interactive	<p>Liam is frustrated that he cannot perform or had to do the writing task.</p> <p>"I wonder why Liam is frustrated? Could it be something upsetting him, or was the task/setting/technology a poor match?"</p>	<p>Talk with Liam about his interests as preferred writing topics. Find out about his preferred process and method for writing.. Ask Liam what type of help would be useful to him and what he could do alone or with others or using a different modality or technology</p>
Learner Active	<p>Liam has not persevered with the task.</p> <p>"I wonder why he is less motivated to persevere with this task?" Does he lack grit and determination? Are his writing skills poor?</p>	<p>Ask Liam to complete the task when he returns. Remind him of the need to practise to improve. Give him writing homework</p>
Environment Active	<p>Liam was not supported or compelled to complete his work.</p> <p>"How can I change this task to better engage Liam?"</p>	<p>Offer Liam a reward for work completion. Check that the equipment is functioning adequately.</p>
Passive	<p>Liam cannot do that task. It is too difficult.</p> <p>"What can I give Liam to do instead?"</p>	<p>Assign an easier task. There is nothing to gain by asking Liam to complete a difficult task. Note Liam's low-level ability for future planning.</p>

The Alignment of Espoused Theories and Theories-in-use

Thinking and acting are inextricably linked with a change in one prompting adjustment in the other. However, theories and actions are not necessarily always aligned (see Argyris & Schön, 1974). Even when exposure to new information results in new learning, a person's actions may continue, at least for some time, to reflect their previous actions. Previous actions reflect long-standing memories about the best way to do things and repeated rehearsal of new information is required before newly established actions can be performed with automaticity. However, discrepancies between one's theories and actions, or between theories and values, create opportunities for reflection and enhancement of practice.

Working to align theories and practice or theories and values appears to be a natural human process. Grawe (2007) suggested that people seek 'incongruence signals' by continuously examining their actions in relation to their goals and considering the compatibility among the goals they hold. Where there is mis-alignment between two or more motivational goals (e.g. theories and values) or theories and actions, feelings of discordance result. Discordance may be consciously recognised

but is most often experienced implicitly. In either case, people are driven to resolve discordance in order to regulate their brains as this incongruence is associated with high levels of anxiety and other negative mental states. New responses are developed to match new theories and theories are revised to align with the actions performed. Through this process, incongruence between theory and action is reduced. Argyris and Schön (1974) also recognised people's ongoing challenge in establishing coherence across their sets of governing theories, viewing these as mental maps. They considered that people's actual actions (**theories-in-use**) were better reflections of their most deeply-held theories than were the theories that people believed at a superficial level to guide their actions (espoused theories).

The LTP Online

The observed efficacy of the Matrix of Perspectives framework to support reflection on practice gave rise to the Learning Theories Profile.

Findings from a previous study that considered the potential of the Matrix of Perspectives concept to support reflective practice showed that practitioners

working in the field of inclusive education valued using the framework to solve complex problems and resolve differences through the acknowledgement and validation of the diversity of views (Mentis, Annan & Bowler, 2009). They found that the Matrix of Perspectives reinforced the orientation that there was no single way of interpreting casework and therefore there was no single solution in problem-solving. The practitioners were empowered to choose and change their actions to align with their evolving thinking, using 'fight back' strategies to (re)create their environments in ways that allowed them to more fully enact their espoused practices (Collin, Paloniemi, Virtanen & Etelapento, 2008).

The Learning Theories Profile can be found at <http://www.learningtheoriesprofile.com/>. This tool for reflection presents two education-based scenarios and asks responders to indicate their agreement with a series of statements. The LTP online tool generates two graphs indicating the relative emphasis the users placed on each quadrant of the Matrix of Perspectives for their espoused theories and theories-in-use (Figure 2). Through comparison of the two graphs, the alignment can be examined and interpreted by the user. The LTP was designed only to assist practitioners and professionals reflect on their practice and not to provide a formalised assessment of beliefs or practice. Items were selected on the basis of their capacity to encourage reflection and discussion and have not been subjected to statistical procedures such as confirmatory factor analysis.

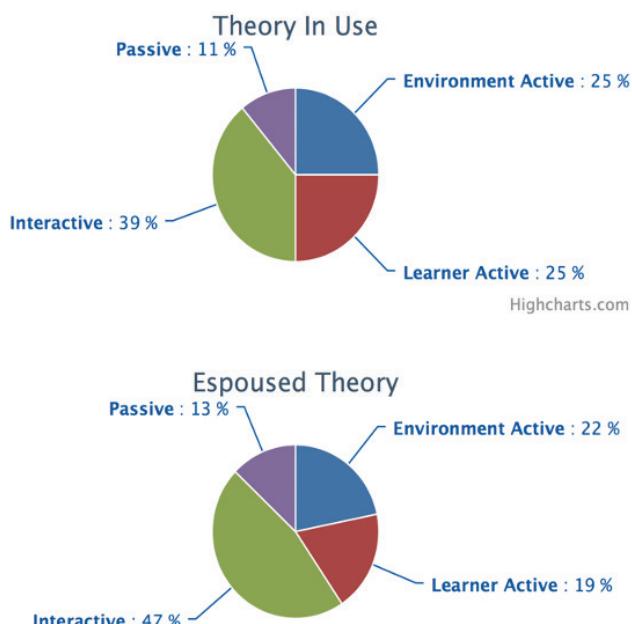


Figure 2 Graphs showing relative emphases placed on each quadrant of the Matrix of Perspectives.

Your Results

The following section reports a study designed to examine, through the lens of the LTP, the relationship between the espoused theories and reported actions of a group of inter-professional resource teachers. The researchers recognised the range of perspectives to which the resource teachers had been exposed, their unique professional and personal experiences, and the interactive, dynamic environments in which they worked. With these complex contexts in sight, they anticipated that, for at least some participants, reported thoughts and actions would represent multiple theories and that espoused theories and theories-in-use would not necessarily be aligned. The researchers were interested to learn about the resource teachers' views of the usefulness of the LTP for observing the space between theory and practice and the implications of new understandings for practice.

METHOD

The study took place in the context of a postgraduate programme taught through a partnership between two universities in Aotearoa/New Zealand. The programme is a national, inter-professional course for experienced teachers to qualify as resource teachers. The course is typically completed through four courses over two years using a blend of face-to-face and online learning, alongside full-time work in educational settings,

In the resource teacher programme, participants have the opportunity to develop practices that align with the social and cultural perspectives of those with whom they work. Teachers are encouraged to be aware of the effects of their own actions in the dynamic systems of others. They assess their current knowledge, skills and dispositions in relation to the professional and inter-professional competencies of the programme. Each teacher develops personalised learning goals, which shape bespoke activities designed to stretch their confidence and competence. Assessment is largely portfolio-based, which allows for authentic practice-based evidence of professional growth and relies heavily on reflective practice. As one tool for reflective practice, the LTP, and the Matrix of Perspectives on which it is based, is introduced to teachers in their first course of the programme.

Two hundred resource teachers were invited to participate in a study about their experience of using the LTP. Forty-four of the resource teachers elected to participate by allowing access to their LTP scores and sharing their reflections about the implications of LTP use for their practice. Data were mined from the resource teachers' portfolios and were analysed using a mixed methods approach.

RESULTS

In this section we present findings related to (a) the alignment of espoused theories and theories-in-use and (b) the use of the LTP as a reflective tool.

(a) Espoused theory and theories-in-use

LTP Scores were calculated for the 44 participants. The data included both an espoused theory score and a theory-in-use score for each of four quadrants (interactive, learner active, environment active and passive). Mean percentage scores and standard deviations were calculated and are presented in Table 2.

Table 2
Mean Scores for the LTP Quadrants

Passive		Learner Active		Environment Active		Interactive	
Espoused Theory (%)	Theory-in-use (%)						
Mean	13.7	11.7	26.4	25.9	25.3	25.8	34.9
SD	5.0	5.4	6.1	5.2	4.5	4.1	6.7

The interactive quadrant showed the highest mean scores for both types of question (Espoused Theory and Theory-in-use) and the passive quadrant showed the lowest. Learner Active and Environment Active scores fell between these two extremes.

A correlational analysis was carried out for each individual participant to examine the association between their espoused scores and theory-in-use scores. The median correlation was high, $r = .90$, indicating that the teachers' reported actions typically corresponded with their espoused views on learning.

(b) LTP as a reflective tool

Resource teachers' views on the value of the LTP as a reflective tool were coded according to themes, these themes being further refined through repeated analyses. The themes showed a clear progression from understanding and appreciation of learning theories, to application in practice, through to critical evaluation across different inter-professional contexts. The themes are presented and discussed according to this continuum of complexity and insight.

(i) Resource Teachers' Knowledge and Understanding

The first theme relates to resource teachers' knowledge and understanding as they constructed meaning around the different theories of learning. They reported being reminded of, or introduced to, different theories, and noted that the LTP had provided motivation to investigate learning theories

of which they were unaware, particularly if their LTP scores implied alignment with these. Many comments related to the first level of reflection which involves knowing about, naming and understanding, different learning theories:

Whilst studying I was introduced to the theories of Pavlov, Skinner, Piaget and Vygotsky, Skinner and Bandura.

I have always been aware of the concepts and theories of Vygotsky and Piaget and to apply their theories to my practice was a good way of cementing my beliefs about learning and how

these theories apply no matter where children sit academically.

[My scores fell] mainly in the interactive quadrant for both the espoused theory and the theory-in-use which led me to find out about Bandura, Bronfenbrenner and Vygotsky.

(ii) Theory to Practice

The second theme relates to resource teachers' use of the LTP to apply different learning theories to their practice and consider the implications of these. For many, their practice was affirmed, deepened and challenged as they strengthened their understanding of the links between theories and their practices. The resource teachers said they recognised alignment or misalignment between these. They were prompted to interrogate the space between their Espoused Theory and Theory-in-use and consider its implications. Wenger (1998) posits that professional identities are formed when professionals 'become' who they are and 'belong' to a community of practice. The LTP provides resource teachers with a framework against which they can evaluate the extent to which they identify as belonging to a particular domain of practice and become a particular kind of practitioner in different contexts. "Identity and practice are mirror images of each other. What we do, what we engage in, and the range of communities of practice in which we can fully participate all define who we are" (Glynn, 2015, p. 171).

The LTP enabled resource teachers to develop and strengthen their professional identity as evidenced by the following reflections:

I felt that my espoused theory and my theory-in-use lined up reasonably well.

The LTP has provided me a way to understand what and who I believe in and that it does indeed fit with where I work.

I found completing the LTP very helpful for me. The theory-in-use graph almost exactly mirrors the espoused theory graph. I wonder how that influences my use of the practice sequence.

Within this theme was insight relating to embodying a wide range of theories and using more than single, discrete approaches in practice. This suggests that the LTP allows for more nuanced and deeper reflection than merely categorising practice within siloed boxes. In reality, practice is messy and the contexts in which theory is enacted in practice are rarely static, often shaped as much by the environment as our values. Reflections on simultaneously appreciating multiple theoretical approaches in practice is evidenced in the following statements:

I also sit evenly on the quadrant - practising a number of theories in parts rather than an over-emphasis on one - not necessarily a bad thing.

I saw that in my espoused theory graph I had 3 sections all roughly the same. I took this to mean I had a balanced view of education and could draw on the strengths of all three but reverted to one in practice.

A potential limitation of the LTP was illustrated when respondents fixed on any single approach, reifying it as the 'right' approach without justifying this in practice.

I am excited by the results of my LTP which shows I am on the right track within my own learning environment.

The capacity of the LTP to enhance inter-professional discussions was indicated. Resource teachers said that they could suggest practices to teachers and link these to theories as an evidence base. This facility was demonstrated by the resource teachers in the following comments:

Knowing about the learning theorists has enabled me to recognise the evidence base of my practice. I will be able to reference the theories to justify the interventions and resources that I suggest to teachers.

It was interesting to try and match up the theories with the behaviours/difficulties my case referrals show. I will refer back to the various theorists now when I can plan my interventions and doing my data analysis.

(iii) Critical reflection to action

The third theme related to the LTP providing opportunities for critical reflection, reconciling differences between Espoused Theory and Theory-in-use, and revisiting practice as a result of these insights and reconciliation. Resource teachers also commented on the value of using the LTP as a way to open discussions with other professionals and co-construct meaning around practice. The LTP was seen to enable inter-professional reflection, collaboration and discussion, as well as opportunity to reflect on differences in approaches. Resource teachers commented that it fostered mutual respect for this difference. Respondents comments included:

As I work with a wide range of different people, all from different backgrounds, training, disciplines and ages, I thought it would be an interesting exercise to compare where we all sit within the profile and if the xx Centre had influenced our personal and professional lives so that we were all coming from roughly the same point. The results that stood out for me most were those from the music therapist. She works in a very different way to the rest of us, she is totally child-led and follows their lead completely.

I then applied the Matrix of Perspectives to three recent scenarios at school, each involving an intervention to address student behaviour. selected theories of learning and development (in their matrix 'quadrants') align with statements selected from the curriculum guidelines and became a resource I shared with colleagues.

DISCUSSION

We have proposed that the boundaries of the Matrix of Perspectives are at times blurred in relation to an educational professional's practice, each thought and action simultaneously representing a range of theoretical perspectives and the contexts in which actions occur. We expected that espoused theories

of learning and theories-in-use would be positively related but this correlation would not always be reflected in the professional actions taken. The findings of the study have supported this proposition, indicating that while alignment was positive and high, professionals' reported actions did not always match their espoused theories. The study also explored the perceived value of the LTP for participants. Results demonstrated that use of the LTP had generated new knowledge and understandings about theories of learning, informed practice and supported critical reflection on the professionals' actions.

Espoused Theories and Theories-in-Use

The relationship between the resource teachers' Espoused Theory and Theory-in-use scores was strong but the former did not fully predict the latter. This finding is not surprising. The strong alignment reflects the notion of thought and action remaining within comfortable limits of one another while the incompleteness implies that action has been informed also by unrecognised governing thoughts (see Argyris & Schön, 1974).

It appears that the interactive theoretical perspective that dominates contemporary educational discourse has influenced the thought and action of the resource teachers. The highest scores for both Espoused Theory and Theory-in-use fell in the 'Interactive' quadrant (Espoused theory, 34.9%, Theory-in-use, 36.6%) in which learner and environment are assumed to influence learning together. The perspective is likely to have greater appeal for the participants as it represents those theories that currently dominate in professional courses, academic literature and employment protocols. In addition, this quadrant is most closely aligned with more culturally-relevant models of practice for those working in Aotearoa/New Zealand. However, as Pinker (2016) observed, other theoretical perspectives, such as environment active, continue to permeate thinking in education and the wider community. The persistent role of learner active (Espoused theory, 26.4%, Theory-in-use, 25.9%) and environment active perspectives (Espoused theory, 25.3%, Theory-in-use, 25.8%) in guiding practice was demonstrated in the results of this study. Some resource teachers indicated a passive espoused theory, and theory-in-use (Espoused theory, 13.7%, Theory-in-use, 11.7%). While this might appear surprising given that the resource teachers' roles involve facilitating change in contexts of learning, it may reflect occasions when circumstances have proved overwhelmingly challenging. Clearly, a degree of optimism would be required within any perspective were change to be supported.

The Value of the LTP

The positive value of the LTP as a tool for reflection on practice was supported by the findings. The resource teachers found the tool helpful in increasing their knowledge and understanding of the diverse theories of learning to which they were either introduced or reminded. They found the tool useful for identifying and interrogating the space between theory and practice and for raising awareness of the relationship between thought and action. Perhaps the most sophisticated use of the tool involved critical reflection to action. The resource teachers used the tool to analyse and reflect on their own practice as well as the actions of inter-professional colleagues. They identified the theories implied in individual and collective actions in relation to context. A deeper understanding of theories enabled an appreciation of the differences, the ability to evaluate appropriate use, and to shift to alternative ways of practising.

The resource teachers taking part in the present study have demonstrated that the LTP can support critical reflection, deduction of governing theories and analysis of associated practices. Critical reflection has deep implications for the nature and quality of professionals' subsequent practice and the outcomes they achieve. The process of examining outcomes, actions and theories underpinning actions offers opportunities for professionals to identify the most effective courses of action in specific contexts and the ways in which environments and practice may change to achieve better outcomes. In future research, extended reflection may be examined to discover how the LTP might support professionals to identify theories that are not overtly recognised but are nevertheless implicit in their actions. Implicit theories, active in guiding action, might be examined in relation to actions and outcomes.

Professional Identity

Several professionals commented on the use of the LTP and its contribution to their notions of self, helping them to observe who they were 'right now' as professionals. Clearly, the LTP can play a helpful role in informing professionals' stories about their practice and the approaches that characterise it. However, it is important to note that the Matrix of Perspectives, and consequently the LTP, represent thoughts and actions, not people. The Matrix of Perspective comprises theories, not entirely static, and their associated actions. People are positioned outside of these structures but use the LTP to chart their thinking and actions at given times in particular circumstances. This LTP process is intended, as it has done for the resource teachers, to be a useful reflective tool for examining and changing thinking and practice.

A Language for Discussing Theory and Practice

The LTP has served, in this study, as a tool for dialogical interaction among professionals within and beyond discipline boundaries. It has provided a framework to help professionals identify, position and articulate the theories to which they most strongly subscribe. As noted, the resource teachers used the LTP to understand and articulate the rationale for reported practice, indicating through their responses that they were aware of the indistinctness of the boundaries between quadrants. While naming and categorising had helped the participants understand the extreme points of each quadrant, resource teachers' working models involved conceptualising the Matrix of Perspectives as a fluid structure. Distinctions between the four quadrants provided a shared language for the inter-professional resource teachers to discuss practice but did not obscure their sight of the fluidity among theories of learning or the contextual nature of practice.

Deliberating on and transforming practice calls for active and open reflection on underlying theories. Reflection is supported when theories are named because the process of naming concretises abstract beliefs and values and engenders mutual interpretation among those participating. Concepts, brought into being by naming, become the topics of dialogical interaction among professionals who engage to revise theory through creation of new meaning and culturally-situated practices (see Bohm, 1996; Freire, 1972; Isaacs, 1993; 1999). Observations from the present study suggest that the LTP provides a language to use in dialogical interactions with peers and supports reflection not only on individual professionals' practice but also the collective practice of professional and cross-professional groups.

Limitations of the Study

The results of the present study indicate that the LTP made a positive contribution to the reflection and practice of educational professionals, evidence for this being retrieved from practitioner's professional portfolios. Data included practitioners' comments on the reflective process, which were necessarily subjective, and their views about the effect on practice. However, in educational work, the practitioner is only one party in the context of practice. We do not question the authenticity of the participants' portfolio entries but wonder if measurement of the effect of reflection on practice may have been strengthened with added input from other parties involved. In addition, a limited number of specific theories were presented within the LTP.

While the broad approach within each quadrant was explored, only a few of the more traditional theories were used to illustrate each of these. Providing extended examples of more contemporary and situated theories and approaches would enable the LTP to be used more widely.

CONCLUSIONS

This study set out to explore the relationship between resource teachers' espoused theories and theories-in-use through use of the LTP, a reflective tool derived from the Matrix of Perspectives. The findings indicated that the relationship between the resource teachers' espoused theories and theories-in-use was positive and high but not identical. The most popular quadrant was 'Interactive', indicating heavy subscription to this perspective. The 'Environment Active' and 'Learner Active' quadrants both represented approximately one quarter of the participants' perspectives, while the 'Passive' quadrant was least popular. The observed weighting was seen to reflect the emphasis and credence currently assigned to the various theories of learning in many parts of the world.

The LTP supported resource teachers' acquisition of knowledge and understanding of theories of learning and helped them to identify and interrogate the space between their espoused theories and theories-in-use. Use of this tool catalysed critical reflection on resource teachers' practice and the shared activity of their inter-professional group. The participants appreciated the efficacy of the LTP to provide a language for shared professional discussion and reflection while acknowledging the fluid boundaries of the Matrix of Perspectives and the multiple views professionals may choose to take in various learning contexts. The resource teachers found that locating their practice within the Matrix of Perspectives theoretical framework helped to shape their professional identity and steer their ongoing professional learning journeys.

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