

An ecology for learning and teaching: Niches for theories within the habitat of learning

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Abstract

Established theories of learning each address only parts of the complex landscape of learning. New ways of presenting theories of learning are needed, so that teachers can draw on the full wealth of knowledge about learning that now exists. As a contribution to responding to this need, this chapter shows how an ecological approach, using both narrative and metaphor, can bring together four existing theories of learning, celebrating the strengths of each, accepting that none of them are complete, but that each contributes important insights into the nature of learning.

Four theories (Behaviourism, Cognitivism, Constructivism, and Humanism), represent major educational traditions, and can be considered to be narratives with embedded metaphors, although some features of narrative may not be immediately apparent. A narrative approach to learning theory allows their explanatory and illustrative qualities to be seen more clearly. Each of the theories has useful insights, and together they provide a framework for understanding how people learn. The Ecological Learning Theory that is sketched in this chapter has the potential to provide a holistic framework, and to reduce the very human tendency to work only from what is familiar, while ignoring or even denigrating other theories or philosophies of learning. This framework can be developed without taking any of the different theories too far, or pushing their underlying metaphors beyond what is sensible or useful to teachers. However, they need to be recognised as partial pictures, each of them useful for parts of the pedagogical landscape, which together reveal a fuller vision for teaching and learning.

Introduction

Many problems experienced in modern education can be traced to teachers' beliefs and practices about learning being based on a limited understanding of the connections among learning theories. The traditional pedagogies based on behaviourism, cognitivism, constructivism, and humanism each address only parts of what is known to affect learning (Feldman & McPhee, 2008). Other problems related to applying learning theories stem from the changing nature of education around the world, e.g. cultural and communication mismatches between teacher and children; disaffection of colonised groups with imposed educational systems; lack of vocational prospects for children who are not from the power elite; or examination systems designed, sometimes unwittingly, to privilege some children over others. New ways of teaching and new ways of thinking about learning would be valuable, so that the needs of today's children can be met through an increasing range of pedagogical approaches that utilise all that is known from the learning sciences, both recent advances and established knowledge (Feldman & McPhee, 2008; Quantz, 2015).

There are many theories and related models of learning that help us to understand and explain what is believed to happen as people learn, and new theories often challenge perceived inadequacies or errors in previous theories. For example, cognitivism challenges the lack of attention to the brain or mind in behaviourism (Pritchard, 2018). As education research has proceeded, it has become clear that while there are valuable insights in each of these models and theories, they cannot all be fully true or universally useful, as they clash in both their assumptions about what learning is, and also in their consequences for teaching practices. For instance, behaviourism regards mental activity as unimportant, while cognitivism insists that an awareness of mental activity contributes a great deal to

understanding how learning can happen.(Dochy, 2011; Feldman & McPhee, 2008; Lefrançois, 2012).

The use of Ecology as a metaphor for learning highlights the interactions and interdependence of different ways of understanding learning processes, but also points out that while learning is a very personal process for each individual; there are broad principles of learning that apply to all humans. These principles need to be applied to each learner with regard to their particular circumstances, so that their uniqueness can be respected and their interdependence on each other can be nurtured. In this way, an ecological approach to learning might foster deeper respect for the similarities and connections between people of all cultures and beliefs.

Metaphor

Metaphors are a powerful tool for arranging thoughts and explaining ideas, so it is not surprising that each learning theory is embedded with metaphors. These illustrate the ideas and convey the messages in ways that appeal to past experiences of the readers. Each writer chooses metaphors that convey the particular meanings they intend, but metaphors reach past our cognition to our memories, setting up connections that we may not notice – that we have to work on if we are to question them (Hanne, 1999). This property of metaphors makes them both powerful and problematic. They contribute to the way that people ‘stick with’ a familiar theory despite it having limited applicability or tenuous logic. This might be particularly true of learning theories, since teachers have limited time or energy to reflect on or question their pedagogical roots or assumptions, and are eager to find plausible information to improve learning (Neville, 2012). In particular, the temptation is to apply metaphors beyond their usefulness, or to use them as descriptions of reality rather than theoretical proposals (Charteris-Black, 2004; Kovecses, 2017). This has been a feature of education over the past decades, with learning styles and brain gym just two of many ‘Neuromyths’ that might be traced to over-extensions of otherwise useful metaphors (Pasquinelli, 2012). For instance, the concept of learning styles have been used by teachers to categorise learners, but are better thought of as theoretical tools to understand them (Pashler, McDaniel, Rohrer, & Bjork, 2008).

Narrative

In this essay, learning theories are taken as a type of narrative, since such theories describe how people learn and are typically supported by the stories of individuals and groups that illustrate the processes being described. Theories can be seen as a type of non-fiction narrative or meta-narrative that is strong on theme, agency, sequence and structure, while the ideas proposed by the theory can be thought of as the characters (Gergen, 1985; Larsen, 1999). They are socially constructed within philosophical and social circumstances, and reflect both the society and the life-experiences of their writers. Theories invite the reader to position themselves within the story, and to apply it to their own circumstances, and contain broad metaphors that appeal to the experiences and memories of the reader, adding to the process of personalising the theory.

Indeed, theories act as organising narratives that have become accepted for purposes of predicting how people and events might play out (Gergen, 1985; Gergen & Gergen, 2008; Sparkes & Smith, 2008). They report on observed events to propose causality, and to predict how later events might occur. For instance, cognitivist researchers observed brain activations following sensory inputs, and inferred from these an organisation of memory processes (Woolfolk Hoy, 2014). These features have strong parallels to modern historical narratives (White, 1984). Different theorists try to explain and predict the same events from different points of view, emphasising different parts of the evidence. The various theories in this chapter have different explanations for how stories of learning might occur, because they focus on different parts of an overall story. Ecological Learning Theory suggests

that learning can be seen in a holistic way, and that an over-arching ecological narrative of learning might organise and structure the field.

Combining the narratives

Four main theories that have been proposed to explain learning are behaviourism, cognitivism, constructivism and humanism. Each of these theory /narratives and their associated models of learning have some explanatory value, as they refer to parts of the complexities that accompany learning (Illeris, 2009). Each one describes and explains learning in a way that is a theoretical response to some part of human experience, and is therefore taken to represent a possible reality or 'truth' about learning. Also, each narrative contains one or more metaphors that serve to carry and illustrate those suggested truths. For example, behaviourism uses the metaphor of people as machines, following instructions and rules; while constructivism imagines them as builders of their individual understanding and knowledge. These embedded metaphors can be very powerful, since narratives of all types invite people to temporarily suspend judgement about embedded assertions and implications. Theories, however, need to be examined carefully for the range of their application, and evidence should be sought that challenges their conclusions. (Drunkenmölle, 2012; McCandless, 2012).

The existence of separate theory narratives for learning tends to invite people to choose and follow one or more of them, as they appeal to a reader's current levels of understanding, and to take less notice of unfamiliar narratives. This is also characteristic of how people read narratives (Larsen, 1999; White, 1985). This reduces people's repertoire of teaching approaches and perhaps the learning of their students. It would be more useful if there were a narrative for learning that offered a holistic view of the whole field, and celebrated all of what leads to effective teaching practice. Such a narrative would have a place for all the approaches to learning that have been shown to be effective in various learning environments. Each of the current theories of learning would be valued for its contribution to the field, without being regarded unrealistically as either complete or of little value, as some of their proponents/ opponents might be inclined to do (Feldman & McPhee, 2008).

A more holistic narrative could provide a vehicle for deeper understanding of the complexities of learning, and might encourage the development of better teaching practices by enabling teachers to choose methods more appropriate to a given situation. It is now a given that different learners respond to different teaching approaches at different times, and teachers therefore need to be able to draw on a wide range of skills and theoretical ideas when they are planning and enacting their pedagogies (Cozolino, 2014). An ecological approach could therefore illustrate the connections and inter-relationships between the contributing theory narratives.

An ecological narrative for learning

There needs to be some way of testing the assumptions and pedagogical recommendations of each established narrative /theory, to prevent any excesses of pedagogical enthusiasm that might result from carrying a metaphor too far or insisting on the application of theory to practice when there may be evidence that it is of limited value, or that it actually harms student learning. Thankfully, there are many resources available which together set out both principles of learning and practices of teaching that support learning (Aitken & Sinnema, 2008; Alton-Lee, 2003; Anthony, 2007; Biddulph, Biddulph, & Biddulph, 2003; Hattie, 2009; Mackenzie, 2012; Timperley, Wilson, Barrar, & Fung, 2007; Tokuhamma-Espinosa, 2008, 2011). These are all meta-studies that have surveyed the literature on learning, have gleaned their common features, and have been widely cited. These therefore constitute the resources that may be consulted when deciding whether a given teaching practice or belief is likely to be helpful in some learning situation.

An 'ecological narrative' is itself a powerful metaphor, since the notion of an 'ecology of learning' brings to mind ideas from natural ecologies, and their counterparts in education: social, emotional and practical inter-relationships between teachers, learners and other people; adaptations of learners and teachers to the learning environment; pedagogical niches where different learners and learning styles might find ideal conditions; growth of knowledge and understanding over time; and webs of interactions between influences that might range from synergistic to antagonistic to learning. These metaphors will be returned to after those in the various theories have been surveyed.

From an ecological viewpoint, learning is the result of a coming together of many factors at a variety of levels. Personal factors affect how a learner takes advantage of opportunities to learn (e.g. prior knowledge; interest, motivation and engagement; cultural, physical and emotional safety; physical skills); immediate relational factors affect the opportunities themselves (e.g. teachers; teaching; peers; families and their cultural practices; equipment; a congenial environment); community level factors (e.g. the neighbourhood; clubs; religious groups; school; local politics); and more distant structural factors that nevertheless can affect how teaching and learning take place (regional and national politics and policies; curriculum; and assessments). Bronfenbrenner, (1976, 1986, 1994, 2001; Bronfenbrenner & Morris, 2006) called these levels micro, meso, exo and macro respectively, while I suggest that the personal level might be termed 'endo', to accommodate internal influences on learning that Bronfenbrenner did not consider.

Several other authors have promoted an ecological approach to learning. E. Johnson (2008) calls for a holistic approach to learning and assessment using both Bronfenbrenner's ecological theory and complexity theory, to combat a tendency in schools to see learning as a linear process, as perhaps supported by Information Processing models. Butter (2011) points out that ecological perspectives can encourage educators to take a broad view of learning, choosing interventions from a range of theories, and accepting that their inter-relations are perhaps more important than their differences. G.M. Johnson (2014) calls for the adoption of an ecological approach to learning, pointing out that while behaviourism may be called a theory of learning, constructivism is perhaps a theory of cognitive development (see also McPhail, 2017) and cognitivism is best considered as a theory of brain functions during learning.

Feldman and McPhee (2008) suggest that the art of teaching needs to call on any useful educational ideas as needed, and that good teaching should use whatever conceptual and practical tools that might help a given learner to make progress. They add Humanism to G.M. Johnson's (2014) list of major theories, writing that it adds a much needed social and ethical viewpoint to the functional approaches to learning found in Behaviourism, Cognitivism, and Constructivism. All these writers agree that there is overlap between the theories, that they form a continuum, and that each one can be usefully applied within limited contexts. This chapter builds on the base established by those writers. It then suggests ways that teachers might inform their practice using these theories inside an ecological explanatory narrative.

The four current theories: their narratives and metaphors

Four theories have dominated education discourses for several decades, and although in the past they have competed for attention, between them they provide considerable explanatory power and a useful vocabulary for teaching and learning, as long as they are used as components of a holistic theory. Some components of each clash with those of the others, and there are some recommendations for practice that also clash. As a result, they should be regarded as offering limited truths, and their embedded metaphors as having restricted informative power. In this chapter, each of these narratives has been developed from the seminal literature of the theory, and shows the main

features of the narrative, the embedded metaphors, and some implications for teaching practice. In the narratives that follow, the *embedded metaphors* are shown in italics.

Behaviourism

This theory became popular from the early 1900's, when thinking and mind were seen as too nebulous as concepts, and too hard to investigate, while behaviour could be seen and experimented on. Behaviourism was built on Structuralist and Functionalist ideas and emphasised automatic or learned responses to environmental stimuli (Feldman & McPhee, 2008). Therefore, Behaviourist narratives are about what people do – being agents in the world. The narratives of strict behaviourism tell of animals and humans being trained to respond to subtle or deliberate stimuli and automatically presenting the behaviour when presented with the stimuli (Pritchard, 2018). Thought and free-will had no place in that story! Later behaviourists like Skinner accepted that there were limits to this narrative, and that controls over behaviour were contingent on controlling the factors that led to the behaviour (Skinner, 1976). Since it is now known that for even simple behaviours, there are many contributing factors, and that their interactions add layers of complexity, behaviourism is now of limited, but still definite, value. Skinner noted that who we are and what we become are the results of our behaviours being reinforced for culturally acceptable responses in our childhood. “The nomad on horseback in Outer Mongolia and the astronaut in outer space are different people, but, as far as we know, if they had been exchanged at birth, they could have taken each other's place” (Skinner, 1971, p. 185). His use of examples like this illustrate some of the narrative quality of his theory, and also point to the usefulness of behaviourism in education – we learn to do what we are reinforced for doing.

The metaphors offered by behaviourism are of people as *living machines*, *acting out* the behaviours they have learnt and needing regular *reinforcements* when *stimuli* are applied, to continue with desirable actions. The over-arching concept of *shaping* of behaviour happens to all of us, every day, as we respond to other people and to our environment. As Skinner wrote about training pigeons: ‘a *stimulus* (the light) is the occasion upon which a *response* (stretching the neck) is followed by *reinforcement* (with food)’ (Skinner, 1953, p. 107) (*italics in the original*). Learning is seen in changes in behaviour.

Pedagogical implications of Behaviourism lie in areas where behaviour can be shaped: classroom management and developing social skills. Behaviourism can also help to design a classroom environment for motivation and engagement, by using regular cues that signal an expectation that the students will focus on particular matters. The choices and manner of the teacher make a large difference in the classroom narratives that are perceived by the students. Do teachers use aversive or positive control, or intermittent reinforcement, and pay attention to different types of rewards that might motivate different students? Do teachers pay attention to desired behaviours and ignore others? Many of these choices are ethical in nature, but behaviourism takes no position on ethics. In modern applications of behaviourism, both the teacher and the student have agency – both affect the learning and behaviour of each other, and the actions of both can be shaped by their deliberate or their automatic behaviours (Jarvis & Parker, 2005).

Cognitivism

Cognitivism is more a theory of knowledge and understanding than of learning. It is concerned with what happens within a learner and says little about external effects. Cognitivist narratives are about what people think: mental processes of knowing and learning; intelligence (systems and behaviour); and mind (Pritchard, 2018).

Cognitivism developed as the limitations of behaviourism became apparent in the 1950's and 60's, and psychologists and sociologists turned to a narrative that allowed for the action of the mind and brain in directing behaviour and learning (LeFrancois, 2012). The Cognitive narrative is of *computer-like* human actions – information processing. Operations within the body and brain *take in* sensations, *process* them as perceptions and memories, and direct the body to *perform* behaviours. Concepts *form* in the brain to make sense of the world and experiences, and these are remembered and later used, along with facts and skills. Memories are *stored* and *accessed* as needed for thought or reactions. For example, Hebb writes that “Cell-assemblies that are active at the same time become interconnected. Common events in a child’s environment establish assemblies, and then when these events occur together the assemblies become connected (because they are active together)” (Hebb, 1972, p. 67)

Cognitivist learning entails processing, remembering and storing concepts, facts, and skills. Thinking leads to problem-solving and decision-making, while meaning-making is an active process that depends very much on the environment and previous history of the learner, so that different learners will learn different things in the same environment, and from very similar experiences. (Cozolino, 2013; Woolfolk Hoy, 2014; Woolfolk Hoy, Hughes, & Walkup, 2008). In this narrative, learning agency lies primarily with the learner. The teacher provides the environment for learning, but the work is done by the learner.

Pedagogically, cognitivism is very useful for understanding the mechanics of learning. Many teachers find it empowering to understand what happens in the brain as learning happens. However, the theory has limitations, in that it says little about behaviour, and less about the social environment of learning. Emotions play only a small part in cognitive theory, and cultural matters even less. The implications for teaching are therefore best restricted to pedagogies for learning content. Recent advances in Neuroscience and Educational psychology can help teachers to make good use of cognitive principles to enhance classroom learning, when taken as parts of a holistic approach (ref).

Constructivism

Constructivism, and its offspring Social Constructivism /Constructionism, are theories of knowledge, and of how learning develops. The constructivist /constructionist narratives are of people *building* their own realities, understanding, and memories. These may not be the same as those of others, because they have been built individually, with social input. (McPhail, 2016, 2017; Nuthall, 2002).

The central metaphors of Constructivism are of *building knowledge*, but also of *constructing relationships* that support learning. Vygotsky (1978) contributed the *zone of proximal development* and *scaffolding* – two very influential metaphors that are central to constructivism. *Schema* theory sets out how concepts and knowledge are thought to be organised in the brain; “The mind builds on what it knows in an organic and subjective fashion to create meaning from experience through the interpretation of this experience” (Feldman & McPhee, 2008, p. 53). Knowledge and understanding are formed by the addition of new knowledge to previous memories, by either assimilation or accommodation. Cultural matters are also very important for learning, since what a learner can take in is limited by the concepts and cultural practices that have surrounded them as they develop. These factors form their background beliefs, and anything that is too far from their previous experience and expectations may be ignored, or be a source of worry and frustration. Context is also a key concept in constructivism. All learning is *situated* in the context it is learnt in, and *transfer* to other areas of knowledge is not automatic. Metacognition is also a powerful aid to learning. Awareness of ones thinking and of how one is learning can be very effective in *accelerating* learning (Pritchard, 2018).

Social constructivism promotes the effects of the social contexts of learning. *Collective* agency, shared by teachers, other students, and the learner, refers to the ways that learning is enhanced by social interaction and the sharing of ideas and skills. Social constructionism (Holstein & Gubrium, 2008, 2013) looks beyond small groups or the classroom, considering in detail how knowledge and understanding are *built* in social situations, and the implications of that for a wide variety of fields of study.

Pedagogically, there are limitations to constructivist narratives both in what they do not consider and the philosophical assumptions that they carry under the surface. As a theory of learning constructivism contributes useful ideas about developing strong understanding of the perceived world, but as a theory of what should be taught it falls short (McPhail, 2016; 2017). The constructivist belief that children should be guided to discover knowledge for themselves can lead to a reduced emphasis on teaching content, which leads to children missing out on important social knowledge. Teachers need to provide the knowledge of the world so that children can build it into their own schemata (McPhail, 2017).

Humanism

Humanism is based on a belief that people are more than advanced animals, and that purpose, values, and ethics are as important as biology. The mind is “the *seat of identity*” (Feldman & McPhee, 2008, p. 64), and doesn’t have an existence independent of the body, but is an active part of being human. Personal *growth* is the prime goal of a humanist. *Processes of becoming* more ethical and responsible in interactions with the world are key humanist ideas. Emotions and feelings are respected and learning is seen as having cognitive, affective, environmental, and social aspects. Knowledge is real and can be *discovered* or *shared*.

Humanist narratives say that learning is the result of interactions with others and with the world, but humanism has little to say about any internal mechanisms of learning. It concentrates on the circumstances needed for the development of personal responsibility. It regards learning as ideally self-discovered, since only such learning can significantly change a person’s beliefs and values (Feldman & McPhee, 2008). The curriculum is child-centered so that each learner grows towards ‘self-actualisation’ from reflection on their experiences, and subject matter is a tool for the development of the person. Learning agency lies squarely with the learner. The teacher is a provider of resources and opportunities.

There are several areas of learning that are not addressed by Humanism. Motivation is assumed to be internal and the responsibility of the learner, so the teacher has to provide opportunities to learn, watch carefully to see what the child is interested in, and then provide appropriate opportunities. Also, humanism does not specifically address learning difficulties or the diversity of cultural experience as it affects learning.

Pedagogically, the interest in classroom climate and teacher nurturing are useful when making students feel safe and valued – which promotes learning; assessment is entirely formative; and student interest guides the choice of topics and learning environments (ref). Humanism is individual at its core and has little to say about social or cultural matters, and may not make a great deal of sense in non-western cultures.

Ecological Learning Theory (ELT)

Bringing the four theories under the umbrella of ecological learning involves using several related metaphors: the ecosystem of a learner; weaving a *web of connections* between their useful ideas; and *locating* similar influences on learning together. (Bronfenbrenner, 1976, 1994; Bronfenbrenner &

Morris, 2006). ELT suggests that no one theory or philosophy is always helpful, especially extreme or exclusive versions. Theories and their narratives have their limits, as do the metaphors they use.

Looking first at the endo (personal) level of a learning ecosystem – the learner and what they bring to learning – the theory of cognitivism provides a useful framework for considering the mental and physical brain processes that contribute to learning: neuroscience, genetics, and psychology. In the endo narrative, information is *collected* by the senses and *processed* in the brain, before being *discarded* or *stored* in memory. Social constructivism contributes a view of affect – the emotions strongly affect whether a learner is able to *access* learning opportunities, and feelings about cultural, physical and emotional *safety* mediate learning (Cozolino, 2013). Genetic information affects how each learner *approaches* learning, and the expression of this is in turn affected by the environment, both in real time and historically. Patterns of *infant attachment* continue to affect each person's ability to *access learning opportunities* for many years, perhaps for life (Murray, 2014; Woolfolk Hoy, 2014). Humanism here insists on the *agency of the individual* over their own life, and points out how that needs to be *located* within the cultural, economic and social environment of the learner. Ecological theory contributes several ideas: that every learner *occupies their own niche* within the classroom ecosystem; that they *adapt to the environment* of the classroom as they *take on* the mores, values and practices that are common there; and that *growth* in understanding and knowledge depends on them *using the resources* available to them.

At the micro level (teaching; teacher-student relationships; family and friends; the learning environment) behavioural theory comes into its own. Classroom management would be very difficult without recourse to *shaping* and *reinforcement* of behaviour. However, ethical, social and cultural matters need to be considered when choosing how to *apply* those powerful techniques, so humanism and social constructivism should affect the teacher's choices. Cognitivist *transmission* of knowledge has a place in *developing* the knowledge base for thinking; the constructivist narratives listed above are all appropriate to this level; social constructionism speaks about motivation and engagement and the conditions the teacher can offer for these; humanism *tempers* over-attention to content with its emphasis on personal agency and self-worth; and tells the teacher that the knowledge and understanding they are encouraging will be used for both social and personal purposes in the student's future life - individualism is not all there is to life. Ecologically, the micro level is about *inter-relationships*; *adapting* material to the class; helping learners to realise their talents, hopes, and aspirations, and to find their *vocational niches*; and the teacher being aware of (and using) *ecological levels* and the *web of learning*.

The meso level contains relationships and influences that do not immediately impinge on a learner – relationships and events away from the learner but still affecting schooling. Cognitivism and behaviourism have little to say here, or further out, except as they affect the home and social environments of the learner, and the considerations of teachers as they plan their lessons. Sociological approaches are more useful at these levels. Constructivism and its social version should perhaps also be considered as the teacher plans their work, since it is then that *reflection* on past lessons occurs. How to build better relationships among various children; how to provide more effective learning environments for variously able students; what the effect of school-wide initiatives might be; how and when to make or continue *contacts* with homes and families; how out-of-school activities might be affecting the social and emotional lives of their students. Social constructionism and humanism speak to the meso level: how to encourage students to see themselves as *actors* with *agency* in areas outside the classroom; how to offer *visions* of future actions and vocations to motivate and engage students; how to encourage community involvement and social responsibility. Ecologically, wider *inter-relationships* and influences affect learners and the classroom.

The exo and macro levels of the learning ecosystem (regional and national) draw on narratives of power, politics, and economics. Curriculum and assessments often have hidden philosophical agendas that can have strong effects on what and how teachers teach, and there are close connections between constructivism in learning and neo-liberalism in politics and economics. Behaviourism has a say here, as media, marketing, and spending have influence on the beliefs and values of students and teachers. Students are often unaware of how they might be *manipulated* by the media, politicians, and businesses, and many school subjects uncritically draw on these worlds to construct so-called *authentic tasks* for learning. A socially responsible approach by teachers to the location of their subject matter in the world can contribute to a fuller education than advocated by theories that concentrate on the mechanics of learning. Ecologically, the influences come from wider areas still, and have less and less direct effect on individual students, until they sit examinations!

Conclusions

The four theories and their narratives of learning that are discussed here are not the only theories that are utilised in the world of teaching and learning, but are used to introduce and illustrate the principles of Ecological Learning theory. In the introduction I pointed out that separate theories invite teachers to limit their pedagogies to only part of what is known about learning. However, teachers might be able to extend their pedagogies and perhaps their pedagogical identities if they had access to an ecological approach to learning theory. They might also be moved to examine the past experiences of learning that have affected their later teaching styles (Quantz, 2015) and to make a deliberate effort to examine their practice and the motivations behind it. Surely this critical approach should be an integral part of every teacher education programme. An ecological approach to learning could therefore be a valuable development of teacher training, helping to structure and organise a wider and more reflective understanding of both learning and teaching.

On the wider stage, blending the theories and gaining an understanding of the metaphors and narrative of ecological learning theory might encourage educators to see themselves, their students and the school as mutually interdependent parts of an ecology of learning in their educational habitat. There, each student is the centre of their own learning ecosystem, and the teacher, other students, the classroom, family, school, community and culture are all interacting components of that ecosystem. Ecological learning theory could be a step towards a time when each learner might be valued for their unique qualities, and education might be designed to optimise the learning of all students, rather than imposing the same standards on everyone regardless of their abilities or strengths.

It is hoped that the opportunity for teachers to ‘see themselves’ in the narratives and metaphors provided here might encourage some steps along that pathway to change. For those teachers who read this essay and reach the end satisfied with their pedagogies and content with themselves – you must be one of the most effective teachers in your school!

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