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# **An Ecological Perspective of Teacher Professional Learning: Principles, Processes and Practice**

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Executive Summary

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# **An Ecological Perspective of Teacher Professional Learning: Principles, Processes and Practice**

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## **EXECUTIVE SUMMARY**

### **Background and Objective**

The purpose of this Working Paper(WP) is to provide insights from literature relating to an ecological perspective of professional learning to enable the re-imagining of teacher professional learning in Singapore's context. The WP provides the rationale for examining an ecological perspective of teacher professional learning, explains key principles in an ecological perspective and discusses implications for existing processes and practices based on key principles elucidated.

### **Rationale for an Ecological Perspective**

An ecological perspective is valuable because it focuses on the teacher as a learner and reminds us that learning ecologies across ecological levels are interconnected. Learning ecologies or ecosystems refer to contexts, relationships and interactions that provide opportunities and resources for teacher learning and development. An ecological perspective provides insights into the roles of governance and leadership in providing coherence and support for teacher learning while minimising top-down control and supporting diversity.

The ecological perspective aligns with the Academy of Singapore Teachers' (AST) philosophy of "Teacher Ownership, Teacher Leadership" in teacher professional learning. The ecological perspective supports the AST's and the Singapore Ministry of Education's (MOE) efforts in supporting teacher learning across ecological levels spanning individual teacher, school, zone and cluster, as well as national levels.

The ecological perspective also aligns with MOE's cross-cutting priority research theme of ecosystem development in the MOE-wide Education Research Agenda (MERA) (Corporate Research Office, 2023). Furthermore, the ecological perspective is consistent with MERA's research agenda on the optimal development of Singaporeans from early childhood to adulthood.

## **Key Findings**

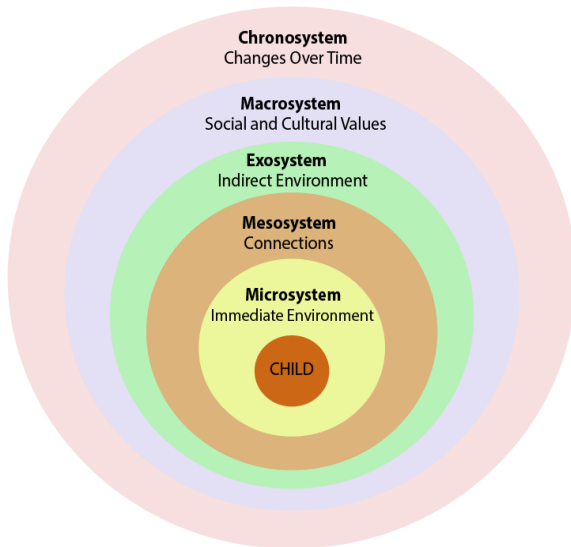
### ***Theoretical Foundations for an Ecological Perspective***

In Bronfenbrenner's seminal work (1979), "The Ecology of Human Development", Bronfenbrenner proposed that human development is a product of interactions between the growing human organism and its environment. Bronfenbrenner's seminal work (1979) on child development has been adapted by various researchers to understand, support and influence research on adult and teacher learning. Bronfenbrenner (1979) defined an ecological environment as a set of nested structures, like a set of Russian dolls, with the individual at the centre. Figure 1 displays the various systems and shows how the environment which is relevant to development processes is not confined to a single setting but incorporates interconnections between settings. Table 1 provides examples that are adapted from Bronfenbrenner's (1979, 1986) ecological system layers to illustrate various levels of the ecological environment.

## Figure 1

Bronfenbrenner's Ecological Systems Theory. Image is extracted from The Psychology Notes HQ (2019, May 3)

### Bronfenbrenner's Ecological Systems Theory



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Table 1 provides some examples that Bronfenbrenner used to illustrate the various layers of the ecological environment (Bronfenbrenner, 1979, 1986).

**Table 1**

Adapted from Bronfenbrenner's ecological system layers

<b>Ecological layers</b>	<b>Examples</b>
Microsystem: immediate setting that directly impacts the developing person, the child in Bronfenbrenner's original conception of the learner.	Parents, siblings, day care, peers.
Mesosystem: the interrelations among two or more settings in which the developing person actively participates.	Events at home can affect the child's progress in school while what happens in school can affect the child's mood or learning at home, so in this sense the different settings are interconnected.
Exosystem: settings that may not involve the developing person as an active participant, but which still affects or is affected by what happens in the setting containing the developing person.	Settings in which their parents live their lives, such as their world of work and their parents' social networks.
Macrosystem: This is at the cultural level, involving belief systems or ideologies which exist at the lower-order systems.	Public policies, one's social class position, society's ideological differences such as between a Communist authoritarian and a Western democratic society, an upheaval such as the Great Depression of 1929.
Chronosystem: relates to changes and evolutions over time.	Changes over time in public policies and societal values.

## Adapting the Ecological Perspective to the Singapore Context

In adapting the ecological perspective to the Singapore education system, the tight coupling of the system suggests that what happens at the policy level (higher-order macrosystem) greatly impacts the school level (lower-order microsystem system). The centralised-decentralisation strategy adopted by the system can give rise to tensions when teachers feel they must adhere to a national curriculum and examinations while striving at the school level to develop every student holistically. Figure 2 shows an adapted conceptualisation of Bronfenbrenner's ecological environment for Singapore's education context to illustrate the various systems: microsystem (school/classroom), mesosystem (organisation structures as well as cross-school and professional collaborations), exosystem (stakeholder partnerships to encourage innovations, such as with academic researchers and the Ministry of Education) and macrosystem (educational system policies) and chronosystem (focuses on changes or evolutions over time).

### Figure 2

Bronfenbrenner's model as adapted by Hung and colleagues (2016). With permission from Hung to reproduce the model in this Working Paper

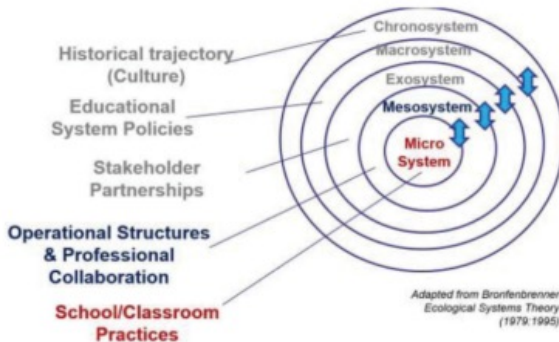


Figure 1. Ecological layer extrapolations of Singapore's education system and the macro, meso, and micro layer extrapolations.

An ecological approach of professional learning is valuable as it may involve teachers in self-organised learning opportunities and negotiating their personal vision for education, which is key to their long-term professional learning. As the centralised body that supports teacher professional learning at the national, zone and cluster, school and individual teacher levels, AST adopts an approach for teacher professional learning that is arguably similar to an ecological approach. Thus, there is a need to adopt an ecological lens to consider how to further encourage and support teacher ownership of their professional learning.

### ***Key Principles in an Ecological Perspective***

It is important to acknowledge upfront that in the literature reviewed, some scholars built on Bronfenbrenner's work while others did not. There are also differences in interpretations and applications of Bronfenbrenner's work. However, despite the differences in interpretations of ecological levels, two overarching principles are core to an ecological perspective of professional learning: human agency and interactions.

1. Agency is defined as the capacity of an individual to autonomously choose, act, and influence matters in their everyday lives (Tal, 2021). It is neither a property that is possessed or an inherent individual characteristic. It is achieved through an interplay of individual effort and cultural, structural and material resources provided by the surrounding environment.
2. Interactions involve individuals acting and interacting with the environment. Individuals contribute to shaping and are also shaped by the environment.

Based on the literature scan, the Working Paper authors identified three key principles to unpack the two broad principles of human agency and interactions.

1. **Agency and Autonomy.** Professional learning opportunities need to recognise and support teachers' initial conditions and learning ecologies, enabling teachers to shape and lead their

own learning. This requires a shift from training that focuses on developing discrete competencies or knowledge to adopting pedagogic approaches such as inquiry-based and problem-based learning, which support teachers to create their own learning processes and examine their teaching values and beliefs. Professional learning efforts need to be supported by a school culture which provides spaces for experimentation and the asking of critical questions about the purpose of teaching and learning. The values of the school community significantly influence teachers' capacity and agency to develop adaptive expertise.

2. **Interconnections and Integration.** A professional learning approach which integrates different ecosystems can optimise the interconnections amongst the ecosystems and enable participants to learn in ways best suited to their needs. Efforts to support professional learning should ideally be aligned to improvement processes and priorities at the school, zonal and cluster levels and seek to integrate formal learning with informal learning in work environments. Again, schools can support teachers' professional learning by providing teachers with the freedom to collaboratively explore new pedagogies in their work environments.
3. **Coherence and Diversity.** At the system level, sustainable professional learning effort requires a governance system that coordinates activities and creates shared cultural norms, values and identities. However, from an ecological perspective, emergence and adaptation of professional learning are important in teacher learning. Ecosystems need to adopt an open-sourced model so that their boundaries are permeable and can continue to evolve to meet changing needs. This means that professional learning should incorporate and encourage external input from diverse stakeholders, with networks as a useful platform to enable dialogue with stakeholders and opportunities for networked members within learning communities to lead from the middle.

## **Implications**

Using the learning ecosystem as a metaphor, we suggest that Singapore's current approach to teacher professional learning resembles a centrally manicured park. This current approach to teacher professional learning is less likely to accommodate emergence and adaptation of teacher learning which are key from an ecological perspective. If an organisation is too structured, there is little scope for teachers' personal mastery, empowered learning and innovation. It might be timely to consider moving towards being a nature reserve, which still requires some governance, but supports nature to flourish on its own, with a diversity that is much more than what we can design in parks.

This means that the system continues in efforts to support teacher ownership and teacher leadership, providing support but minimising or giving up some command and control and trusting our teachers to grow professionally. There is, thus, a need to adopt a professional learning approach that explicitly incorporates into its design, support and respect for teacher agency, ownership and leadership, embraces diversity and supports teachers in making connections between what they learn in various learning ecologies and integrating their learning into their work practice.

There are opportunities to re-imagine teacher professional learning efforts for teachers in Singapore, affirming and building on but also moving beyond existing processes and structures. These opportunities are premised on a key underlying strategy which is to create safe spaces and conditions for creativity and experimentation.

### ***Creating Conditions to Further Encourage Teacher Agency***

Teachers achieve agency by means of the cultural, structural and material resources available to them. If we want teachers to be lifelong learners, school support is needed for teachers to attend external workshops and networked learning communities (NLCs), and to participate in the enhanced Professional Development Leave scheme and the Teacher Work Attachment Plus scheme.

Teachers may face dilemmas choosing between advancing their desired professional learning and the needs of their students or school. Schools are fundamental in helping teachers resolve this tension. It is useful to distribute leadership to teachers so that teachers are empowered with the agency to decide what is necessary for their own professional development. While student learning is important, there is a need to question the extent to which student learning should be prioritised over teacher learning.

Teacher professional learning in NLCs and professional learning communities (PLCs) can be leveraged. There is a need to support more teacher leadership and ownership in these settings.

1. Findings from a local study (OER 03/20 JHPY) show that some members of the NLC perceived that their school leaders may be uncertain about the value of NLCs. Thus, the NLC members were not sure if their schools supported their participation in the NLC, particularly when members' participation was on a voluntary basis. There might be a need for MOE to continue communicating the objectives and value of NLCs to school leaders, clarifying that all teachers can benefit from participating in learning communities and for school leaders and department heads to communicate their support for teachers' participation.
2. In terms of PLCs, a 2014-2016 MOE commissioned research study suggested some teachers felt a lack of ownership and adopted a task orientation rather than a learning orientation towards their PLC participation (Ho et al., 2020; Tan et al., 2019). There appears to be a need to give teachers more say in which PLCs they would like to participate in, with whom, what they would like to learn and how they would like to learn.

### ***Encourage Diversity***

The current number and size of NLCs are constrained by the number of Master Teachers (MTTs) and subject cluster teacher leaders and by the desire to keep each community small so that it remains close-knit. There may be a need to broaden the concept of NLCs to include

loose, open networks based on interests, where peripheral participation is accepted with simultaneous efforts to encourage and support distributed leadership by the members.

1. AST could work with the National Institute of Education (NIE) to design and trace the growth, evolution and impact of learning communities. To encourage more diverse professional learning opportunities through ground-up, interests-driven learning communities, it could be useful to conduct research studies and be evidence-informed in terms of what motivates the teacher facilitators and members of learning communities, and what supports they need to develop and sustain these communities.
2. Findings could help MOE and schools encourage and support more ground up learning communities and teachers' participation in such learning communities.

### ***Facilitating Interconnections and Integration***

MTTs are attached to schools. This is a good opportunity for MTTs to lead from the middle, to develop system coherence and professional capital across different ecological levels.

With MTTs working more closely with schools, there is potential for more schools to become Centres for Teaching and Learning Excellence. With the support of MTTs, more schools could develop different pedagogical / subject niches, providing diversity of learning experiences for teachers and helping teachers integrate their learning into their classroom practices and school ecosystems. To lead from the middle across boundaries, MTTs need to be empowered to operate in cross-boundary spaces. This means that MTTs are empowered to broker and mediate professional learning across different contexts, such as school, zone and cluster, as well as system levels.

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