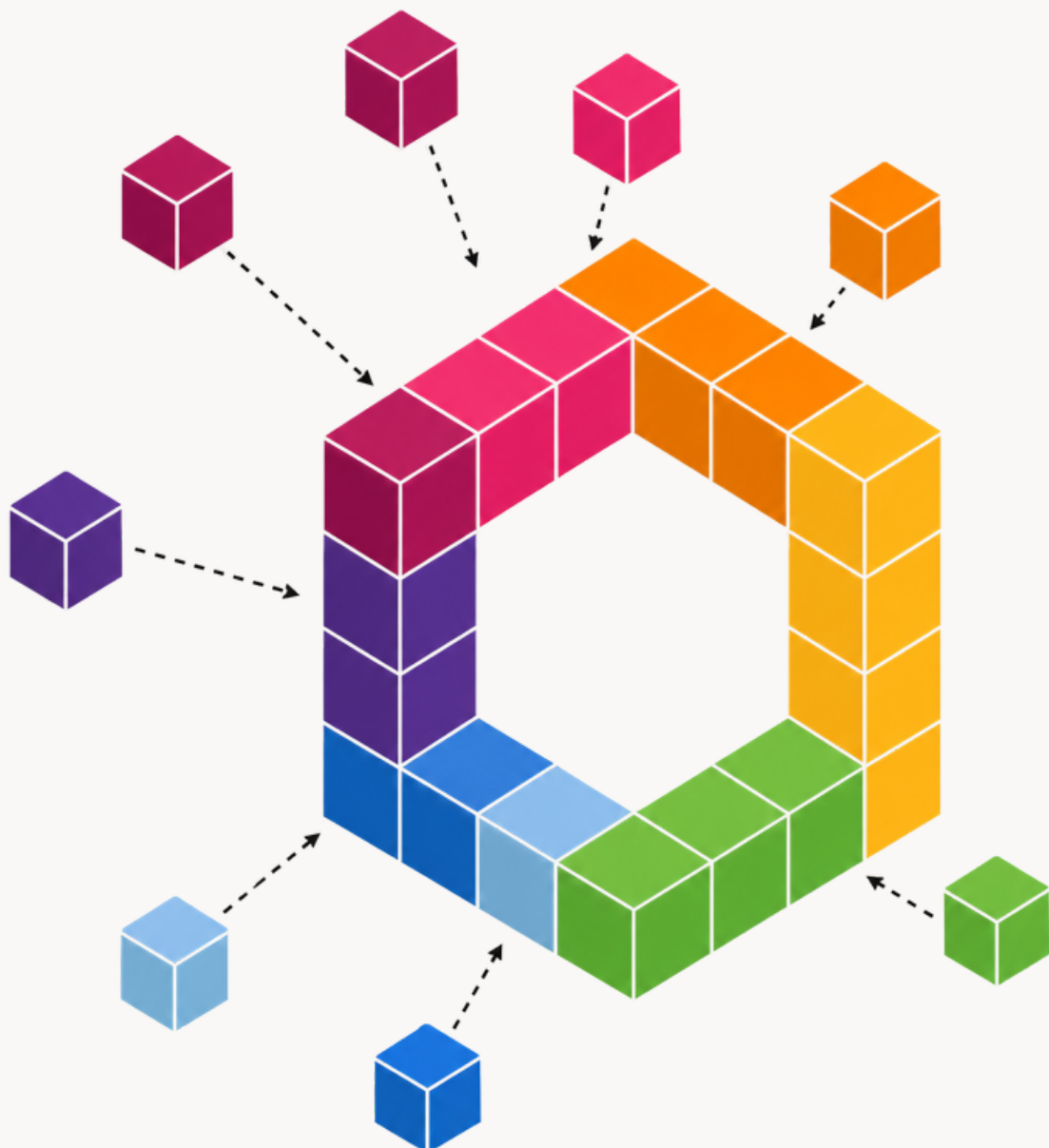


Future-Oriented Pedagogies: **Unpacking the Key Techniques and Making Them Visible**

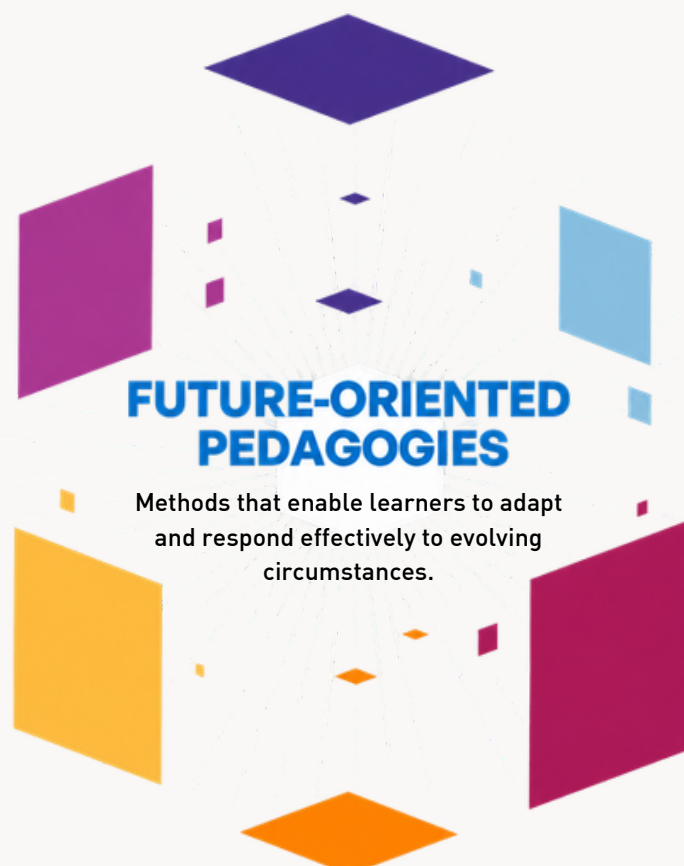
Wai Mun LIM and Priscilla PANG



01 INTRODUCTION

Singapore's adult learning sector faces a significant challenge. The rapid pace of change driven by technological disruption, evolving industry structures, and increasingly complex work environments indicates that training focused primarily on transmitting established content and developing specific competencies is no longer adequate. What is required is an orientation towards the future: as Bound et al. (2022, p.21) describe it, "the dispositions, process and accomplishment of thinking about, preparing for, and traversing the future." As the issues workers will encounter in the future remain unpredictable today, the ability to adapt, think critically amidst uncertainty, and generate new knowledge collaboratively becomes as crucial as any technical skill. This represents the challenge that Future-Oriented Pedagogies (FOP) aims to address.

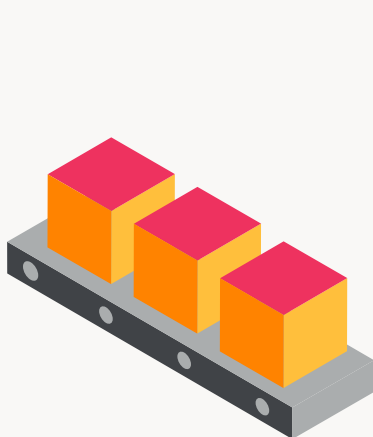
FOP represents methods that foster learners with a future-oriented approach characterised by the capacity to address evolving circumstances. Future-oriented learners engage in critical thinking, adaptability and collaborative skills. FOP does not supplant traditional training; rather, it supplements it by encouraging conditions conducive to developing learning agility alongside content mastery.



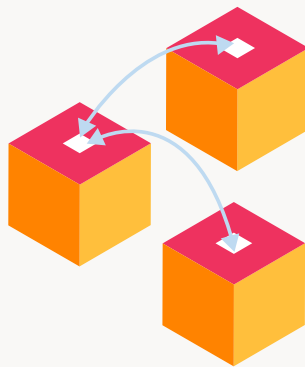
02 The Epistemological Foundation

Understanding FOP necessitates comprehending the epistemological assumptions that underpin various approaches to learning. Three positions can be distinguished: **Reproducing Knowledge (RK)**, where knowledge is regarded as authoritative and static, and the role of the learner is to receive and reproduce content provided by the educator. **Distributed Knowing (DK)**, where knowledge is viewed as residing within individuals and their environments, with learners leveraging the experience and expertise of others. While both **RK** and **DK** are valuable and remain appropriate in numerous training contexts, neither sufficiently prepares learners to generate novel knowledge in situations where established answers are absent and no expert is available to provide guidance.

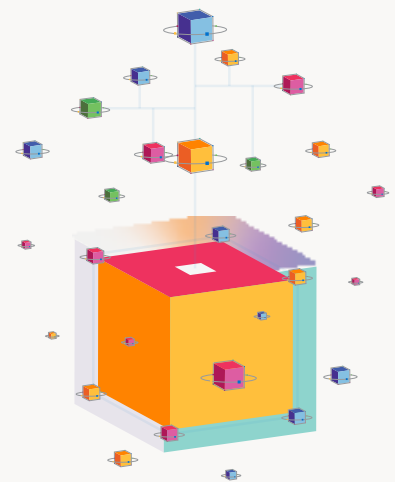
Dynamic Generative Knowing (DGK) presents a third perspective. Within **DGK**, knowledge is collaboratively co-constructed and generated among learners, peers, and educators through intentional processes that promote profound learning and critical analysis. **DGK** underscores the importance of constructive dialogue, real-time sensemaking, and the joint transformation of ideas. It is this epistemological stance that underpins FOP.



Reproducing
Knowledge (RK)



Distributed
Knowing (DK)

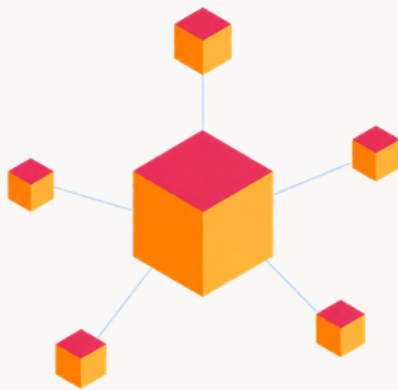


Dynamic Generative
Knowing (DGK)

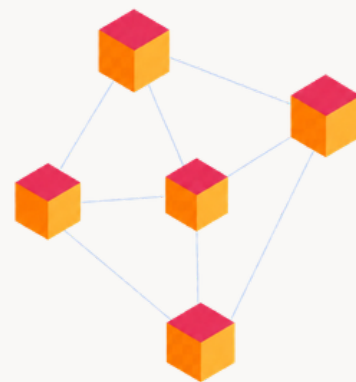
03 The Two Key Techniques

FOP operationalises DGK through two core techniques: **Emergent Scenarios** and **Generative Dialogue**.

Emergent Scenarios reflect the unpredictable nature of real-world challenges. Unlike conventional scenario-based learning, which generally introduces a specific problem with a predetermined set of solutions, **Emergent Scenarios** are defined by six intentional design markers: real-world relevance; enough complexity to encourage multiple avenues of inquiry; the ability to see from multiple stakeholder perspectives; evidence-based critical thinking; collaboration across disciplines; and, most notably, a change-making aspect that requires learners not just to analyse a situation but to develop adaptive, innovative solutions that question their current assumptions and practices. Repeated engagement with such scenarios enhances learners' resilience and confidence in managing uncertainty.



Emergent Scenarios



Generative Dialogue

Generative Dialogue constitutes the conversational process through which **DGK** is enacted. It distinguishes itself from conventional dialogue in form, intent and depth. Whereas **conventional dialogue** involves the exchange of pre-existing ideas, **generative dialogue** progresses beyond mere exchange towards the co-creation of novel meaning and insight, i.e. instances in which existing mental models are challenged and restructured through authentic collaborative inquiry.

Table 1: Conventional Dialogue and Generative Dialogue

Feature	Conventional dialogue	Generative dialogue
Purpose	Sharing and exchanging information	Deep transformation of thinking through co-creating new meaning and insights
Effort	Low, needs little practice	High, requires repeated practice
Listening	Listen to respond or rebut	Listen to connect deeply with each other's ideas and feedback
Assumptions and boundaries	Unexamined, taken for granted	Examined seriously and with curiosity
Trajectory	Back and forth, needs no integration	Build towards new understandings and insights
Flow	Fragmented, fleeting topics	Focused, outcome-oriented

The pedagogical strength of both techniques lies in the process of boundary crossing they facilitate. In the realm of educational research, boundaries^[1] denote tensions and discontinuities that emerge between diverse sociocultural practices, perspectives, values, and assumptions. When learners engage with these tensions, either through an **emergent scenario** that resists straightforward resolution or via dialogue that challenges their pre-existing understanding, they are compelled to navigate unfamiliar territory and synthesise their existing knowledge with new concepts, or create new knowledge collaboratively with their peers. Through continuous practice, this process fosters the development of learning agility as a professional reflex, rather than as a sporadic capacity.

[1] Akkerman and Bakker (2011:133) define boundaries as 'sociocultural differences that lead to discontinuity in action or interaction'.

04 Evidence from Practice

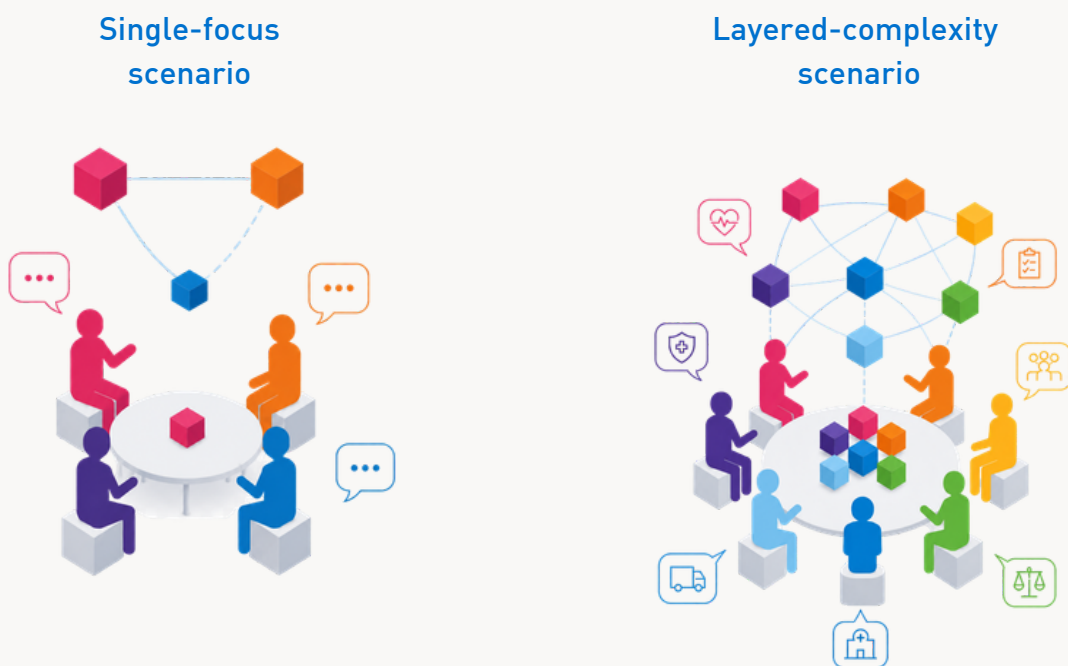
The insights presented were drawn from an FOP project conducted within the Adult Learning Collaboratory (ALC), a social innovation initiative by the Institute for Adult Learning (IAL) and SkillsFuture Singapore. Launched in 2024, the ALC brings together enterprises, training providers, adult educators, researchers, and policymakers in an open-innovation environment, combining rigorous research with repeated cycles of real-world testing. One of the ALC's early focus areas was integrating future-oriented teaching methods into Singapore's training and education sector, informed by findings from prior IAL research[2].

The FOP project reflects this effort, with Adult Educators (AEs) participating as both practitioners and learners, testing FOP techniques in their training settings and improving their skills through structured coaching clinics.

Insights from the project illuminate how the techniques manifest in practice. In coaching clinics conducted with the AEs, using a web application (the “Analyser”) that makes **Emergent Scenario** and **Generative Dialogue** markers visible from data collected in the training sessions, several consistent patterns were observed. AEs who used scenarios that incorporated multiple stakeholder perspectives, operational constraints, and layered complexity generated noticeably richer **generative dialogue** than those whose scenarios centred on a single resolvable problem or invited learners to draw primarily on personal experience. In one documented session, learners even independently engaged deeply with multiple dimensions of a complex real-world scenario (medical urgency, operational logistics, emotional stakes, and institutional protocols) without facilitation prompts, demonstrating precisely the multi-perspective reasoning that emergent scenarios are designed to elicit.

Equally instructive were sessions where generative dialogue was less evident.

In scenarios lacking sufficient complexity, discussions remained at the level of anecdotal sharing rather than critical analysis. When AEs intervened prematurely or directed questions too narrowly, the open-ended exploration characteristic of generative dialogue was curtailed. These observations affirm that both techniques must be carefully designed for the facilitation to be fruitful; their impact results from deliberate and informed facilitation decisions.



The Analyser plays a crucial role in making these patterns visible, allowing AEs to precisely identify where generative dialogue was occurring and where it was absent.

05 The Analyser: A Breakthrough Innovation

The Analyser represents a breakthrough innovation for introducing FOP across the training and adult education sector. Traditionally, the observation of classroom interactions has relied on trained supervisors or researchers conducting in-situ observations, rendering the process labour-intensive and potentially intrusive to teaching practice. In addition, such an approach relied heavily on the perspectives of external observers rather than building on AEs' own capacity to assess, interpret, and make informed judgements about their practice.

The Analyser systematically identifies and visualises pedagogical patterns from recorded learning sessions, presenting them in user-friendly and accessible visual formats. Trained and iteratively refined by pedagogical experts, it supported AEs in discerning what worked well and which aspects of their practice could be further strengthened in each learning session. It provided AEs with a means to observe and learn from their own teaching experiences within authentic adult training contexts across diverse settings and facilitation modes. With the Analyser, AEs gained in-depth visibility into their own lessons and, drawing on the observations and recommendations generated by the Analyser, were empowered to implement targeted adjustments to their teaching practice.



**Recorded
Learning Session**



**The Analyser
Makes Patterns Visible**



**Targeted
Practice Improvement**

Towards Future Oriented Learning

The rationale for FOP is that conventional methods alone tend to be unable to fully address the range of challenges faced by adult learners in Singapore today. Emergent and complex challenges demand that adult learners are strong in critical thinking, flexible in adapting their knowledge and skills in new, uncertain and dynamic contexts, and who can co-create value in collaboration with others. DGK, executed through Emergent Scenarios and Generative Dialogue, offers a practical methodology necessary to cultivate learners capable of navigating unforeseen future uncertainties beyond merely current tasks and standard operating procedures.

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