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Pedagogical tools for continuous professional development and their impact

Abstract

In this paper we will present two powerful pedagogical ‘tools’ for learning; the dialogical inquiry model and the ecology room. These tools, developed as part of the intervention in our Tools for Learning Design (TLD) research project, require deep engagement by learners, offer challenge, require learners to make sense and to share that sense making, ask learners to think in different ways and from different perspectives, develop their metacognitive and reflexive abilities and if used well, uncover deeply held assumptions. Our TLD project was designed to deepen the pedagogical understanding of our nine participants who held positions of authority in a range of Singaporean Continuing Education and Training providers from across different industry sectors. Participants undertook their own action or practitioner research projects and brought their findings back to the group over a period of four months. As a result of participating in this continuing professional development program, participants started to ask completely different questions about their practice. The extent of change was mediated by their work context, the practices of that workplace, their level of power and authority and their own sense of agency. The two tools are powerful pedagogical techniques for change that have multiple purposes and can be adapted for use in multiple settings.

1 Introduction

A focus on teachers, learning and teaching, rather than training and instruction, better reflects the evolving challenges educators continuously face as they carry out their work in constantly evolving continuing and vocational education and training (CET/VET) landscapes. Old practices such as workbooks, a combination of procedural and theoretical knowledge and worksheets supporting learning as individual cognition, are increasingly identified as being limited. Rather there is a growing interest in collaborative, dialogical learning requiring a different division of labour for learners and teachers, with learners being actively engaged rather than being passive recipients of knowledge (Sfard 1998).

The authors argue that this shift in the division of labour is not straight forward; rather such a shift involves not only the philosophical beliefs about teaching and learning but that contextual conditions mediate these beliefs. It is therefore necessary to use pedagogical tools that enable educators to uncover assumptions and enable the naming of contextual conditions that impact on beliefs and practices. Contextual conditions (Bound, 2007) include the ways in which educators are employed, power relations, historical pedagogical practices, policy and discourses which shape current practices and norms, and can strongly intercede in the introduction of different practices. These contextual conditions are deeply embedded in the tra-

jectories, tools and relations of activity. They partially account for the tensions and contradictions experienced, consciously or unconsciously, in any activity and are often not visible (Boland & Tenaski 1995; Engeström 1999) to the participants. Tensions and contradictions are set up as a result of new directions, and/or new tools, ways of working, practices and so on, while the old are operational and active (see Bound 2011 for a more detailed discussion).

In this paper we explore two pedagogical tools, a model of dialogical inquiry and the ecology room that enables the uncovering of assumptions and the naming of contextual conditions that impact beliefs and practices. We aim to not only share and explain these tools but to provide an analysis of the impact of using these tools used in our Tools for Learning Design (TLD) project undertaken under the auspices of the Institute for Adult Learning in 2011-2012.

In part the rationale for the TLD project was that while earlier Singaporean research had provided testimony to the dedication of CET practitioners to their learners, this research also noted that these same practitioners felt restricted in their efforts to meet their learners' needs (Bound, 2010). In addition, a survey from the same project (Bound 2010) with 592 responses from Workforce Skills Qualifications (WSQ) trainers showed that their most recessive teaching perspective (Pratt, Collins & Selinger 2001) was developmental (see Tan & Freebody 2011), that is, most trainers completing the survey tend not to develop learners' complex thinking skills. Such findings gave us cause to reflect on the match between current and future needs of workers and enterprises and dominant CET practices. Internationally, at the time, there were similar concerns. For example, Robertson's (2008) comments on the Australian Certificate IV in Training and Assessment (TAA) suggest the following as a critical evaluation:

"The confluence of behavioural learning theory and bureaucratic organisational theory in the early 1990s led to simultaneous efforts to deskill and control teaching by limiting both teachers' autonomy and their levels of education ... Limited training for teachers was seen as an advantage for the faithful implementation of newly designed 'scientific' curricula ... The less educated teachers were, the more they allowed and encouraged greater simplification and routinisation of teaching tasks." (Darling-Hammond 2006, 78 in Robertson 2008, 19)

With previous research of adult educators in the CET sector in mind, we sought to develop an intervention working with a small number of Singaporean CET training leaders (n=9) that would provide space, and encourage and support inquiry into practice for the purpose of deepening pedagogical understanding and fostering of innovation. We called this project 'Tools for Learning Design' (TLD). We began by interviewing our participants to determine their needs, orientations, contexts and issues, not just to determine before states for the purpose of research, but to inform the project design. These resulted in a modification of our original ideas, and we adopted a process of designing the programme as a loose intention, with details for the design of future sessions being informed from the shared experiences with the participants in the previous sessions after considerable dialogue and reflection between the researchers. An important orientation was seeing the participants as expert knowers of their context which could

be recruited to inform the whole. Because this project was an interventionist one where our intent was to deepen pedagogical understanding, we needed to use strategies and come from perspectives that provided opportunities for our participants to make visible their tensions and contradictions, and to enable them to see and to feel the potential for greater alignment between beliefs, intent and actions. In doing this, we were not just concerned about individuals and their individual learning trajectories, but about the contexts in which they work, because institutional requirements at multiple levels (team, organisational, government requirements, industry expectations and standards) often impose practices that may be at odds with practitioner beliefs and intent. We conducted three workshops over a three month period. During the first two day workshop we used the tools discussed in this paper along with many others (see Stack 2012; Stack & Bound 2012) to investigate current practices, uncover assumptions and deepen pedagogical understanding. The second workshop, held 10 days later, participants worked on designing their projects. Between this workshop and the final workshop where participants reported on their projects, participants were supported via distance to undertake their practitioner research projects.

The next section provides a brief background to the development of the tools, and is followed by an explanation of each of the tools, their use and their impact.

2 Why these tools?

Developmental opportunities for CET / VET educators to move from cognitive approaches to more collaborative, dialogical approaches require of teachers a considerable shifting of pedagogical beliefs. Figure 1 below illustrates the division of labour for learners and educators / teachers along a continuum from instructional pedagogy to a constructivist socio-cultural perspective. The reality is that as educators we constantly move along such continuums depending on the purpose, the learners, the resources, and so on. What is being referred to here is not that need to constantly negotiate different pedagogical perspectives, but what might be a dominant perspective, a home base if you like. As an educator, being aware of your philosophical and theoretical stance is a tool for reflecting on practice and beliefs. The tools we share in this article can be used to assist in articulating philosophies, beliefs and practices of teaching and learning.

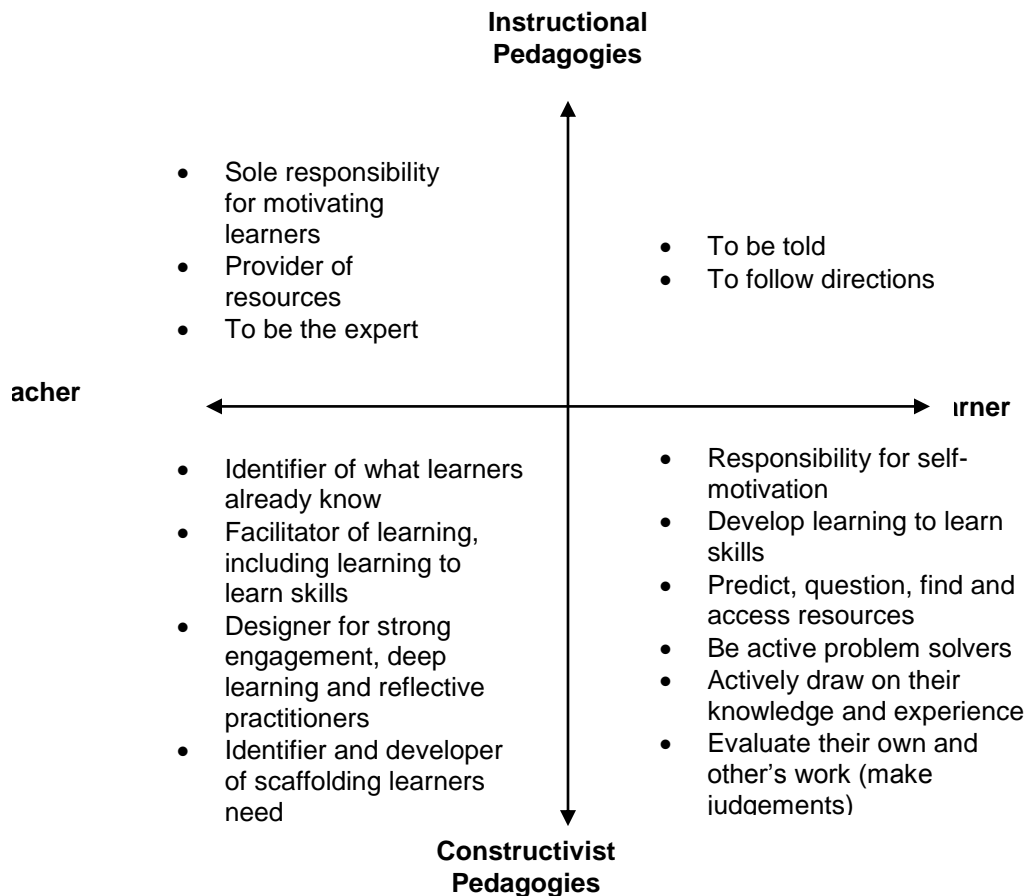


Figure 1: Pedagogies and their division of labour
(Source: Bound 2011, 114)

The two tools we discuss here in fact involve multiple tools, strongly situated in a constructivist pedagogy but move beyond this theoretical framing of pedagogies to embrace 'flourishing'. Flourishing is not something that can be categorised by the psychological learning theories (behaviourism, cognition, constructivism, socio-cultural perspectives), but is of philosophy, dating back to Aristotle (384-322 BC). Aristotle argued that the purpose of life is earthly flourishing achieved via reason and virtue, using our abilities to their fullest potential to realise our capacity (Ghaye 2011). Ghaye (2011) argues that this idea can be applied beyond the individual, to a group, a team an organisation a community and that it is based on working with our strengths, not deficit models focusing on weaknesses.

The dialogical inquiry tool Stack (2007) initially developed was used to assist Year 12 and first-year university Physics students to improve their scientific inquiry process in conjunction with other meta-cognitive practices. It was adopted by some university physics lecturers and tested with some top-level Australian scientists engaged in collegial dialogue. We further adapted the model for online learning facilitation (see Bound 2010). Stack (2012) explains how she developed the model:

"In listening to Physics students' conversations I realised that when I asked certain questions students would be engaged in inquiry and then after a while stop. I was keen to empower

them to generate their own inquiry. I would then go around and ask, 'What were the questions which weren't necessarily connected to a linear notion of a scientific investigation. I then thought deeply about what it meant to be a scientist and the different inquiry spaces I had visited in my own work as a paper mill engineer/scientist. I began to realise that there was a side to doing science that wasn't covered in the typical scientific investigation representations, which were often a sequence of steps. These 'extras' included using imagination, conversations, intuition, and fuzzy thinking. These were the invisible glue that helped to make my science inquiry work, and indeed that of other scientists. It wasn't in a set sequence. I then realised the similarity of what we were valuing in terms of processes and questions to whole brain learning models and wondered if I could adapt them for a scientific context. So I created a specific scientific inquiry model for my students to use when they conducted investigations.

I saw students' inquiry deepening and achieving considerable rigour. Students told me that they often preferred certain inquiry modes; some simultaneously drew on different modes. Some teams initially struggled because people were too different, or too much the same. Team members began not only to become empowered in asking questions, but also taking more responsibility for appreciating and melding the individuality of the different team members and building communities of inquiry. Students' understanding of the content of the course expanded way beyond what they needed for the exam and generated lively and continuous conversation and debate beyond the classroom. They didn't need the inquiry map as a tool after three weeks, naturally creating their own questions. It was temporary scaffolding. It is important for a teacher to know when the students are beyond the tool – that the tool was useful for a particular stage." (Stack 2012)

The dialogical inquiry model was further developed as part of a University of Tasmania project aimed at better understanding the nature of the dialogue between online learners in the Bachelor of Adult and Vocational Education (BAVE). From this investigation Stack and Bound developed the 'Map of dialogical inquiry' (Bound 2010) based on Stack's thesis (Stack 2007). This tool (see Figure 2) has possibilities in developing dialogue that encourages not only the usual academic requirement for critical thinking, but also encourages and develops the processes of relating to others, reflecting beyond the everyday technical reflection we all engage in, theorising, analysing, imagining possibilities and attending to matters of detail and organisation. The ability and skill to employ meta-thinking, or thinking about thinking, is important in positioning practitioners to reflect on their practices beyond the technical level of reflection, and recognise the dynamic relationships between their practices, beliefs and assumptions, their learners, their employers and system requirements. Further, such reflective practices open people up to new ways of seeing and framing problems and issues that enable them to find creative and innovative solutions.

Dialogue Inquiry Model

Create your Inquiry Profile

On the map below mark out those statements that resonate the most with who you are. Work out how many of each category that you have. On the map to the right mark with a dot on each axis this number, including if it is zero. Join the dots and shade in the interior of the shape that emerges.

Reflect: Does this represent the ways you prefer to learn or inquire? How does it compare to others' profiles? How does it compare to opportunities for learning?

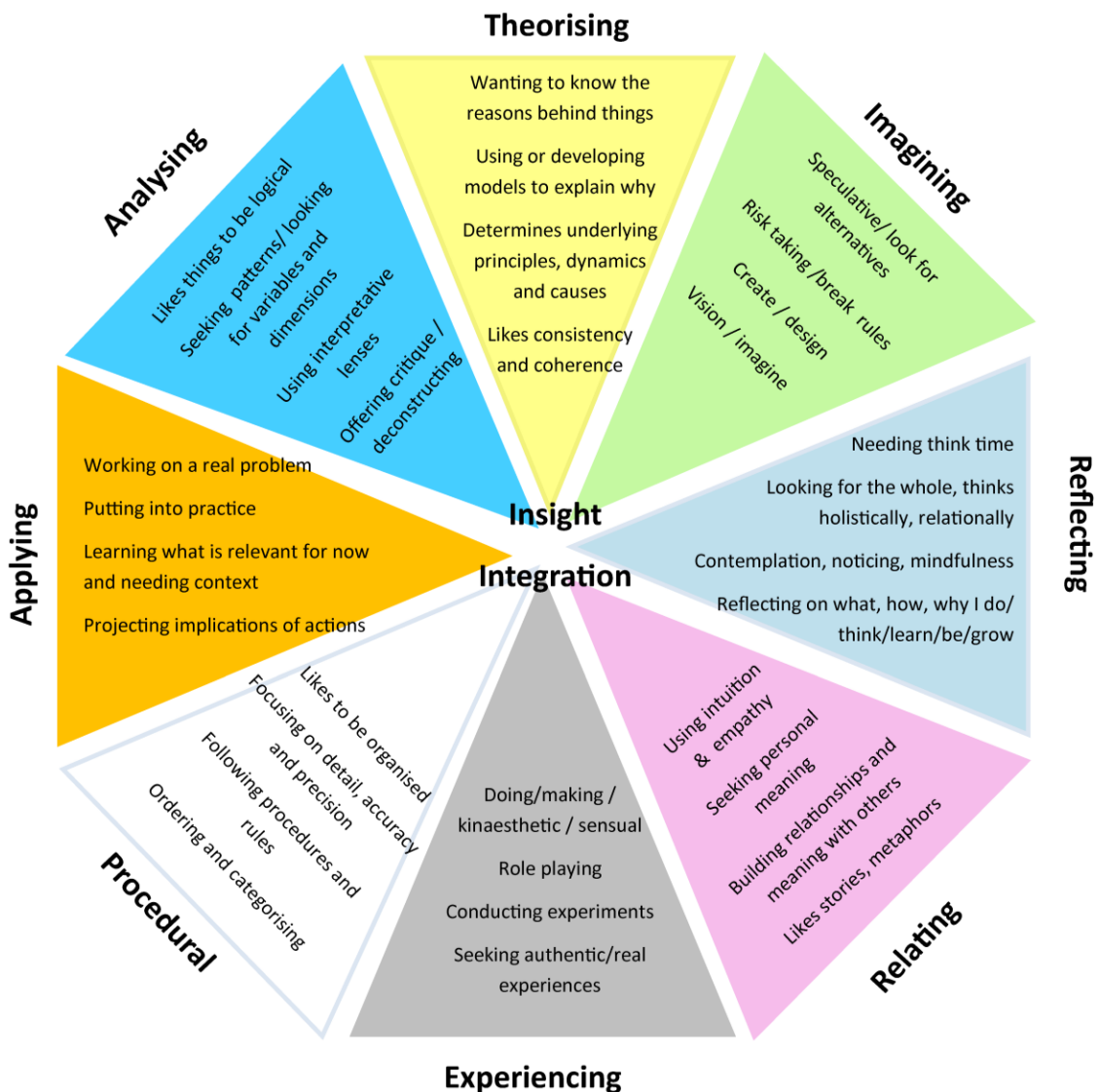
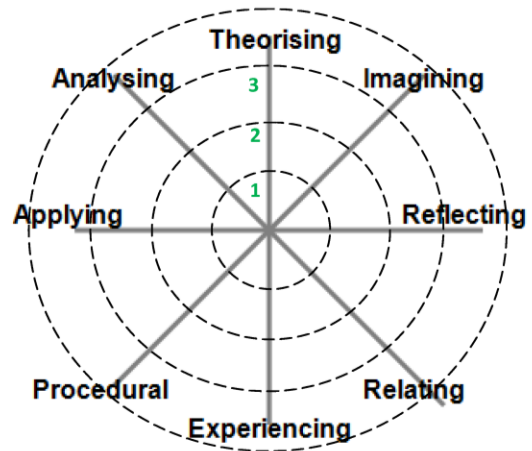


Figure 2: Dialogical inquiry model (Stack and Bound 2012)

The dialogue model is intended as a tool for helping learners and teachers to be more aware of the different ways they learn and inquire, or design curriculum, or facilitate learning in order to expand their options. It draws on and combines the four aspects from Kolb's learning model of experiencing, reflecting, theorising and applying (Kolb 1984) with the four aspects from Julia Atkin's Integral Learning model of detail, logic, holistic and feeling (Atkin 2000.) Both models suggest that people have preferred ways of learning, however all four aspects need to be covered in cyclical learning processes to achieve integration of learning. The dialogical inquiry model is a map where people can see the different learning modes they might use when having inquiry conversations. People might see themselves using two or more of these modes simultaneously or oscillating between modes, or moving through different modes in a more structured way. It is not cyclical, but often people take well-trodden pathways, avoiding areas they find difficult. Good inquiry is likely to visit many places on the map.

2.1 Learner use of the dialogical inquiry model

Working out an inquiry profile can give individuals some insights about their own learning and the way they inquire, as well as helping to build familiarity with the model. Sharing profiles with others helps develop understanding of the differences between people and the way they respond to different learning opportunities and potentially help develop appreciation of the strengths people can bring to team situations and the value of diversity within teams. Reflecting on how individual learning preferences have been developed can help move beyond habitual patterns and consider other ways of learning or teaching.

Feedback can be a shared inquiry where students are encouraged to explore the issues with the facilitator. By visiting different aspects of the dialogical inquiry map they can both create greater insight. The map can act as temporary scaffolding to change behaviours and open up to more expansive self-generative and self-reflective questions.

2.2 Educator use of the dialogical inquiry model

There are a number of ways in which the model is useful for educators; designing learning, facilitating learning, and in considering design of assessment (assuming it is aligned with the learning outcomes and learning activities and experiences).

Often in adult learning, learners are encouraged to share experiences with each other from their own contexts. This builds the capacity to relate and make sense of experiences, but also has the danger of entrenching people in their own views. A challenge for facilitators might be how to extend the learning and get deeper conversations. A facilitator using the dialogue model can sense whether people are operating from limited aspects on the map and 'nudge' them into other ways of inquiring by asking generic questions that come from different parts of the dialogical inquiry map. For example, moving towards *reflecting*, after people have shared their stories they might be asked to consider them as a whole. Analysing, *Are there patterns, themes or similarities amongst stories?* Theorising, *Are there common reasons or*

drivers? Imagining, *Can you imagine other possibilities?* The dialogue inquiry model can become a shared tool that both teachers and learners use to generate questions and perspectives that they may not have previously considered. The model can be used not only as a prompt to inquiry but also after a conversation to help build awareness in learners about where they have been and where they might go in future.

To illustrate how the dialogical inquiry model can be used by educators for design and assessment of learning, we draw on a study undertaken by Bound (2010) where Stack and Bound developed the dialogical inquiry model to analyse online posts in an undergraduate adult and vocational teacher education unit. The course was totally delivered online. Bound (2010) gives a number of examples from the unit, but for the purposes of this paper we give one of these examples, the conflict case study. Students were asked what they would do, how they would respond as a teacher and as a learner to a classroom scenario (details provided to students) where a racist remark was made by a student called John. It became clear that the framing of the question pushed many students in ‘applying’ – what I would do – before bringing more careful inquiry to the case study. However, some students moved naturally into inquiry perspectives that helped them to deepen and give nuance to the on-line conversation. These included a greater analysis of the issues or imaginatively and empathetically considering the perspectives of those in the case.

The lecturer (also the designer of the unit) valued critique and the development of a sense of community. As a result of the analysis of the online postings, she redesigned the unit, incorporating not only the theoretical content and how to skills, but also these meta-cognitive and relational skills and was mindful of stretching learners across the range of possible responses. In the redesigned case study, she identified her intent and what she valued in relation to the activity, namely to encourage learners to identify and name the problem, explicitly link theory and practice, and reflect on similar situations they have experienced, either as a learner or a teacher. Given this intent, design decisions in the conflict case study were to first ask learners, *What would you do if you were in John's shoes?* and *How would you respond if you were a teacher?* and then to ask, *What would you do if you were a learner?* This guided inquiry was an example, summarising the learning points and inviting learners to explore the link between their responses; knowing how they deal with and identify a number of approaches suggested by learners; and asking about the ways in which these relate to particular theories. In this example, the design and facilitation deliberately invites learners to move across ‘procedural,’ ‘analysing,’ ‘applying,’ ‘relating,’ ‘reflecting,’ and ‘theorising’ aspects of dialogical inquiry. These multiple aspects of dialogical inquiry provide learners with tools for becoming deeply reflective practitioners. In terms of assessment, the explicitness of the intent and the provision of tools provided not only a continuous means for self-assessment, but were also criteria in the formative and summative assessment of engagement in the online community and in criteria for summative assessment items.

The *dialogical inquiry model* is so called because it represents a valuing of dialogue and multiple perspectives to create meaning. Bakhtin (1986) highlights the preserving of ‘otherness,’ or difference. This valuing of difference results in dialogic as a difference or gap or

opening without which there would be no meaning (Wegerif 2007, 24). Dialogue requires a 'space' in which we make meaning (see Bakhtin 1986). Spaces are created first by the design of the dialogic activity, by the meaning learners make of this space and by the ways in which we facilitate that space.

3 Ecology room



Figure 3: The ecology room

The ecology room (pictured) creates a learning environment which acts like an eco-system. It is a space which enables interaction between learners as they engage in different activities placed around the room with a unifying theme. Learners create their own journey of learning through the activities which can be done randomly, and which can be for different time durations. There are enough activities, and 'seats' in these activity areas so that spaces are always free for learners to be mobile. The ecology room when well-designed has the capacity to provide a holistic way of exploring a theme:

- Providing a sense of greater wholes – enabling connection of many parts into emergent wholes. At one level the individual is making emergent meaning for themselves, at another level the whole group generates emergent understandings – collective wholes – and energises the space and the intent.
- Providing different perspectives and experiences which encourage more nuanced understandings, particularly making visible past assumptions.
- Bringing different aspects of the self to the learning experience – hand, heart, mind, spirit, values – past experiences, playful self.

These activities might invite observation, design, reflection, experimentation, exploration, discussion, building, creativity, theorising, finding patterns and deconstruction. Different artefacts may be created and put on the walls which others can comment on (for example using post-it notes to give feedback) and thus be inspired. Learners can navigate the room individually or in pairs, and are encouraged to interact with each other as they explain their artefacts. Once the teacher has set up the room, they are then free to talk to or help individuals where

needed. The movement and interaction creates a sense of energy and freedom to explore with a playful heart and open mind.

In this paradigm of learning, classrooms are seen as self-organising coherent entities with feedback, iteration and opportunity for learning according to each student's unique journey. Learners create meaning in the space between activities which are designed to encourage the learners to grapple with often conflicting as well as resonant concepts and experiences. Key principles of the ecology room are:

- **Diversity** – richness of resources and experiences. Design activities drawing from different learning styles – visual, spatial, audio, multiple intelligences, analytical, intuitive, values, metaphors. Activities can be designed to enable learners to make connections and meaning for themselves, and posing of their own questions.
- **Redundancy** – activities or concepts which learners might already be familiar with or which *resonate* with each other. A repetition of theme but with different approaches – so learners can infer generalisations or see patterns from different perspectives.
- **Liberating constraints** – provide creative rules that provide some structure, but allowing freedom within that, enabling learners to break out from habitual behaviours.
- **Decentralised control** – allow for emergence of understanding.
- **Dissonance** – provide conflict that destabilises previous views. Design opportunities to help learners see alternative 'frames' from their own frame, such as pairs of activities which can act to create a potential conflict and alert learners to a deeper issue.

Providing time for participants to debrief through sharing what they experienced in the room is essential in building connections and meaning between the activities. Layering reflective questions is important here where learners can move iteratively towards deeper understanding. For example, asking, *What was the experience like for you?* Before moving to a more reflective question such as, *What are you learning or seeing differently?*

Examples of when to use the ecology room include as a key part of a short workshop, as a key turning point in a module, at the beginning of a unit or a celebration and bringing together what has been learnt at the end of a unit. For short workshops the ecology room might provide the main learning experiences, preceded by introductions and key questions. It would enable learners to explore a range of activities, which can be followed by a focused discussion to evaluate and consolidate the learning which has taken place. For such workshops some considerable effort might be made in the planning and setting up of the room. However, there is likely to be a big pay-off in terms of making a deep impression, and opening up to new conversations.

As a key turning point in a module the ecology room is very powerful as a circuit-breaker for learning where learners may be entrenched in certain expectations of how they should be learning – e.g. spoon-fed by the teacher in lock-step approach. As the ecology room encourages individual journeys according to the needs of the learner to build their experiences in a

certain way, it models a more self-directed learning approach. The design of the activities can be carefully orchestrated to offer potentially transformative experiences. At the beginning of a module the ecology room can be used to give learners a taste of specific learning activities that they might later learn in greater depth. This has the advantage of giving a whole picture up front, and enabling learners to get a sense of the interconnections.

In our Tools for Learning Design project for deepening pedagogical understanding with participants from the Singaporean CET sector, the ecology room was designed to demonstrate an alternative pedagogical approach and each of the 14 activities were designed to help participants to explore and question their pedagogical practice and values. Activities included writing about a critical teaching moment, thinking about a mentor and doing a poster of the characteristics about them that you most valued, creating a collage based on tearing out images in magazines while thinking of the question ‘What do I value as an educator?’, a box of cut-out leaves each containing a pedagogical assumption inviting participants to come up with an opposite and think how it might work, using cards of different roles of teachers to determine what roles and therefore what teaching paradigms appeal to you, a question cascade, a poster asking what learning looks like, and another asking what *effective* learning looks like, a tensions tightrope.

The use of the ecology room was critical in enabling participants to step back from their everyday teaching practice, re-connect to their values and challenge assumptions about institutionalised learning. It contributed to a major reframing of their original intentions for their projects. Stack and Bound (2012) describe the power of the ecology room for the Tools for Learning Design Project:

"The ecology room activity was one of the most powerful experiences in opening up potentials, new conversations and inviting the holistic self to be present, having a profound impact on participants and many others who came into the room. The resultant ‘art gallery’ space that was created from the activity became the preferred working space for the participants in contrast with the corporate training room space, and we recreated this comfy room with the pink couches for the second workshop. It engendered a very different approach to learning, one that enabled pairs to work quietly together, or people to be in their own thinking space, or to engage in group activities that were both physical and conversational. From this, we believe it is important when requiring people to do profound thinking that aims to align values, concerns, systems, cultures, passions and intents that they have a welcoming visual and experiential environment to work in." (Stack & Bound 2012, 143)

The ecology room also contributed to cultivating a *culture of meta-cognition* through conversation, drawing on visual tools and metaphors and building meta-language. The first time the participants were asked to think about their assumptions came as a bit of a shock to them. But with practice, they became accustomed to engaging in meta-thinking not just about themselves, but also about the processes we were engaged in such as the relationships set up by the facilitator/learner roles and researcher/researched roles. Such a culture meant that conversations that might be seen as critiquing the teacher could happen in an open way and people

could take ownership and contribute to the creation of learning opportunities for others. However, meta-thinking and conversations about pedagogical knowledge was initially hard thinking for one participant. We were pleased that on the final workshop, she threw away a 'learning edge' chart as the artefact she felt she could discard, having grown beyond it, 'I am out of the red zone'.

However, while it is one thing to engage in meta-conversations with the group and the facilitators, it is another thing to maintain it as part of individual practice in the workplace. The things that occupy us everyday can take over so we forget to lift ourselves into a meta-space. The lack of work-place conversations of this nature makes it difficult to practise this level of conversation with others. Conversations become more task-oriented, procedural exchanges, and contain more pushing arguments than being explorative. Further, those still enculturated in the socialised self-developmental stage may only think from new frames in a cohort that lifts them up through Vygotsky's zone of proximal development. But when they return to their workplace environment without that peer support, it is unlikely that these new developmental frames will consolidate.

This highlights the importance of cultivating a community of practice where the quality of conversations can continue, and where new people can become inducted into a culture of meta-cognitive inquiry and conversation, enabling the building up of meta-cognitive language.

4 Conclusion

Collaborative, dialogical learning is a powerful learning process, requiring deep engagement. The two tools we have shared in this paper contribute to how such learning can be developed and facilitated. These tools can be used by learners, by educators and by educators of educators for pre-service, continuing professional development, short courses, workshops, and so on. The ecology room and dialogical inquiry model are powerful tools to use where educators are seeking outcomes that develop any or all of the following; hard thinking, uncovering of assumptions, changes in practice, new approaches, ideas and concepts. Skilled use of these tools allows for layering, where uncovering assumptions introducing concepts, ideas, heuristics (the dialogical inquiry model is itself an example, of heuristic), etc. and exploring relations between them are visited multiple times in multiple ways, resulting in being comfortable with what is being introduced. The tools can be used across disciplines as evidenced in Stack's use of early versions of the dialogical inquiry model with her physics students and our use of the tools with Singaporean adult educators.

Adult educators can use the dialogical inquiry model with their learners as a temporary tool to develop strong inquiry and communities of inquiry; in the process develop strong meta-cognitive skills, important for workers in a knowledge economy. Similarly educators of adult educators can use the model for the same reasons. The ecology room enables the adult educator in a short period of time to deeply engage their learners with considerable material, ideas and practices using different multiple intelligences. When well-designed and facilitated

it can help participants gain a sense of a greater whole, build deep relationships with fellow participants and to connect back to personal and shared values.

Further information about the project, the report and other tools can be found at:

<http://www.ial.edu.sg/index.aspx?id=534>

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