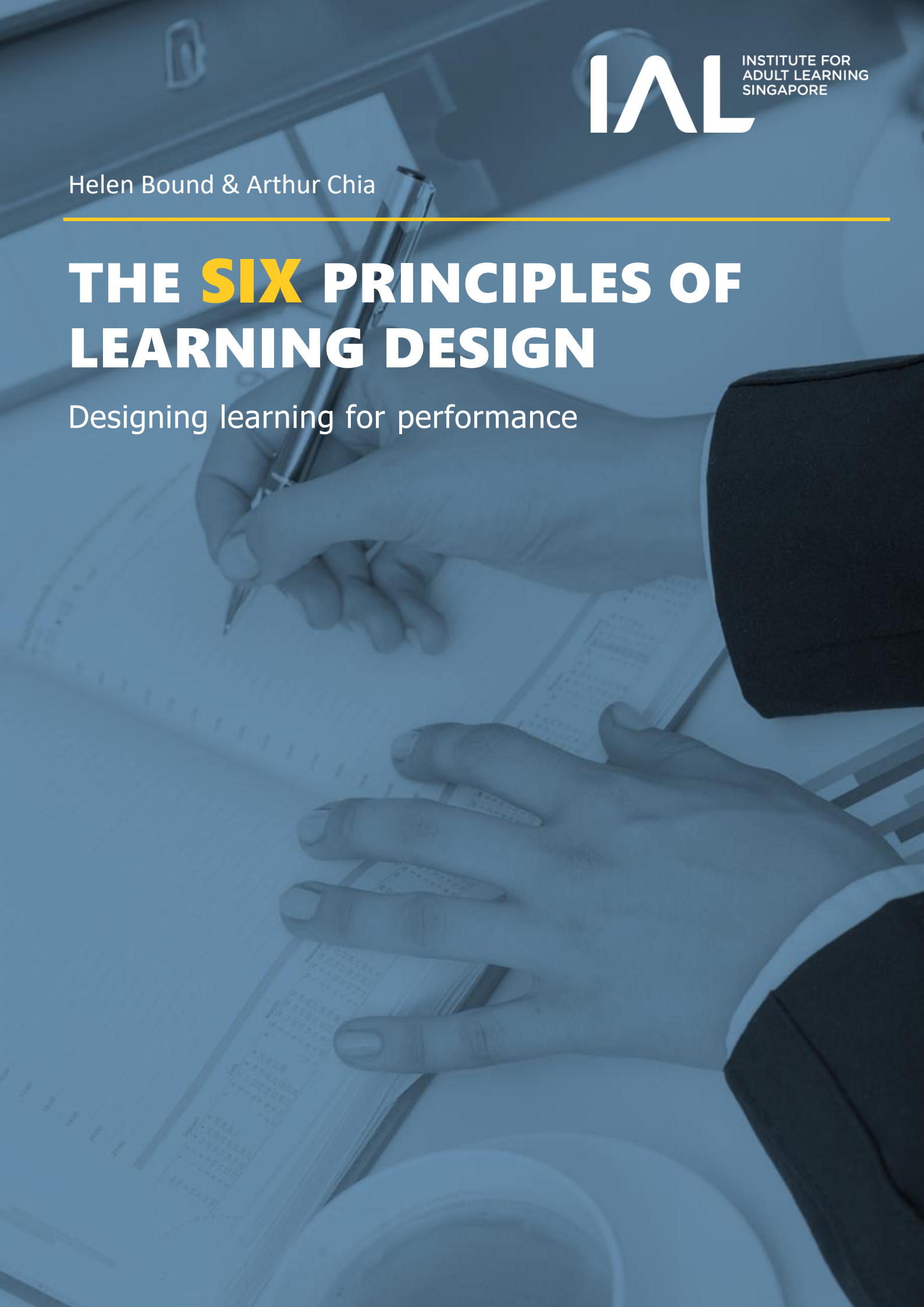


INSTITUTE FOR ADULT LEARNING SINGAPORE

Helen Bound & Arthur Chia

THE SIX PRINCIPLES OF LEARNING DESIGN

Designing learning for performance

Learning for and at work changes the role of educators. With the workplace in flux from dynamically changing organisational practices and global, as well as technological developments, adult educators are also having to constantly evolve their practice to ensure their craft keeps ahead of learning challenges. This not only involves understanding who the learners are and how they learn, but also designing and facilitation learning that reflects the complexities and nuances of work, and development of abilities that enable learners to thrive in the broader uncertain, changing conditions.

The growing emphasis on soft skills in response to a dynamically changing environment, in the hope that the learners would then be in a better position to cope and deal with the changes, does not alone meet current and future challenges.

Deep understanding of the occupation, of the work is required to deal with change; it is not developed by requiring learners to reproduce knowledge, but from the ability to co-develop and apply knowledge and skills in changing environments. Deep understanding is integral to what it means to *be* a particular profession or role (a retail assistant, a nurse, a cook, a doctor, an engineer etc.) and is a never ending journey. IAL's research into both learning as a process and a practice leads to the development of the 6 principles of learning design which is elaborated below. This conceptual framework aims to assist adult educators in thinking about how to design and facilitate learning holistically, so that doing and knowing are integrated, contributing to *being* and *become* a particular profession, vocation or role.

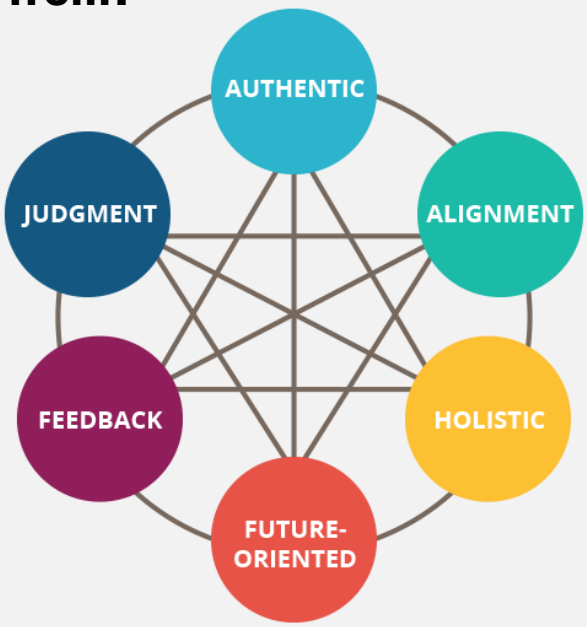
The 6 principles assist in thinking about how to design learning holistically, so that doing and knowing are integrated, facilitating learning to be and become a particular profession, vocation or role.

Where did the 6 principles come from?

The 6 principles are an important finding from an IAL research project undertaken by Centre for Work and Learning (CWL) researchers, Helen Bound, Arthur Chia and Annie Karmel.

The research sought to address the question of how can assessment design and practices be shaped or enhanced to meet changing policy and workforce development needs?

The study delved into how different contexts mediate assessment design and practices, the experience of learners, adult educators,



curriculum designers and employers in these practices. The researchers used an ethnographic (observing learning and assessment, document analysis and interviews) approach to study six cases of different types of learning and assessment experiences from formal courses to structured learning in work settings. Participants were from diverse fields – IT network engineers, aircraft engineers, specialist doctors, cooks, firefighters and workplace learning facilitators. Importantly, the study understood assessment, not as purely summative assessment, but as **entwined with learning**. That is, assessment is a learning experience, so in designing and facilitating learning, assessment is integral to the learning process.

Our (the researchers) work with stakeholders, encouraged us to reposition our 6 dimensions of assessment to the 6 principles of learning design (which implicitly encapsulates assessment).

Bound, H., Chia, A. & Karmel, A. (2016). Assessment for the changing nature of work: Cross case analysis. Singapore: IAL. https://www.ial.edu.sg/access-research/research-publications.html

Also look for the 6 individual case study reports

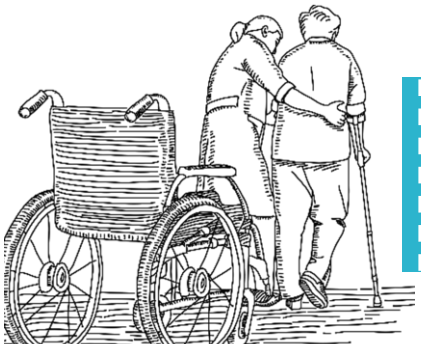
UNDERSTANDING THE THINKING BEHIND THE 6 PRINCIPLES

These 6 principles enable TAE sector policy makers, leaders and educators to shift from a technicalised and decontextualized notion of 'skill' to understandings of 'skill' as embodied learning, identity development, deep understanding and knowing in practice.

The principles challenge traditional understandings of learning that is content based and relies largely on lecture formats – what has come to be known as the acquisition metaphor (Sjard, 1978) – is limited in its ability to facilitate learning that meets dynamically changing needs.

What are the 6 principles?

While each of the six principles is described separately below to provide the foundation on which to support the thinking and applying these principles. Each principle is necessary and related to one and another and should be present in the design of a module (to a greater or lesser degree). Having said that, the authors deem authenticity as the most important as without authentic activities (and/or settings), it is difficult to achieve the other principles.



AUTHENTICITY

Use of real world work practices and settings.
Embodies complexity of work and enables engagement.

Authenticity brings a focus to performance that is required in real work settings. Learner engagement is a critical aspect of authenticity, as is engagement with the complexities and nuances of the work of a particular profession or vocation (including cross boundary work). Generic courses such as how to use Microsoft Excel, can also meet these requirements through the examples and real scenarios used to practice particular skills in designing the learning tasks or activities. Provided such practice opportunities are accompanied by opportunities for peer dialogue on problem solving, this brings a measure of authenticity to such a short course.

Authenticity does NOT necessarily mean that all tasks or activities are about doing the work in real work settings – as this is not always appropriate (e.g. for short courses, or for highly specific skills such as using Excel). The alternative is to bring the complexities of the work into the classroom environment and/or tech. enabled environment, through for

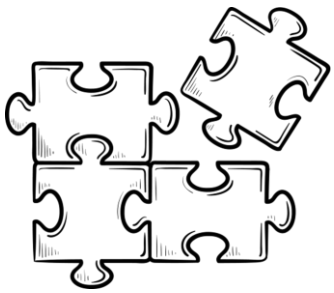
- peer sharing of experiences
- complex case studies based on real life examples
- solving of complex problems that are based on real life examples
- practice exercises that require application of technical and generic/soft skills
- tasks/activities that reflect performance required in work settings
- tasks/activities that mirror the way knowledge and skill is performed in real settings and/or take place in real work settings

Table 2 provides some examples of the differences between non-authentic (traditional) design and facilitation of learning and authentic design of learning. Note that in authentic design, learners are actively engaged, the activities lend themselves to lots of dialogue amongst peers to assist with developing deep understanding that is holistic. As such there are opportunities to experience the embodiment of learning, to bring theory and practice together, to integrate technical/disciplinary knowledge with soft skills. As such, knowing and doing are integrated. This is the importance and value of authenticity – it enables the achievement of the five other principles.

Table 2: From traditional approaches to using authentic design

Traditional	Authentic
Selecting a response Learners are given a set of possibilities form which they are required to select the correct responses.	**Performing a task** Learners select or are given tasks to perform where they are required to make sense of and respond to the complexities of work.
Contrived The task or activity does not reflect the complexities of work.	**Real-life** The task or activities reflect the complexities of work practices and settings.
Recall / recognition This is the lowest level of Bloom's taxonomy, requiring parroting back without necessarily understanding or being able to apply.	**Construction / application** These are higher levels of cognition and require holistic understandings. Requires learners to bring together different aspects required for performance.
Instructor centred The instructor is the focus, does most of the talking.	**Learner centred** Learners and learning are the focus, they are active meaning makers and actively engaged in learning.
Indirect evidence Learners are given evidence that may be partial, not reflective of the complexities of work practices and settings. They are not required to actively make judgements about the evidence.	**Direct evidence** In the process of meaning making, learners draw on their own or peers experiences or data or materials they have collected, or real examples. Learners make judgements about the veracity and quality of the evidence.

Adapted from: Deakin University. (2016). Authentic Assessment. Retrieved 27 September 2016, from http://www.deakin.edu.au/__data/assets/pdf_file/0005/268511/AUTHENTIC-ASSESSMENT.pdf



ALIGNMENT

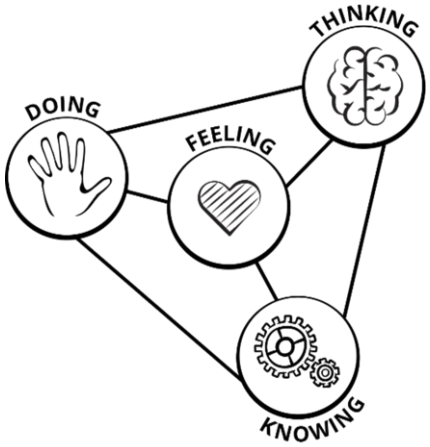
Design that involves every aspect of learning so that all work together.

Alignment (John Biggs (2003) uses the term "constructive alignment") refers to all aspects of design to form a cohesive whole. So learning purposes and outcomes, assessment design and learning activities and the authors also include, the *place* of learning, need to support each other. For example, a short course that has the purpose of developing participants' report writing skills and has as its assessment a series of multiple choice items, is clearly NOT aligned. For there to be alignment, the assessment would need to be the writing of a report for a real audience (and thus the assessment itself is authentic).

How does alignment relate to the other principles? While all the principles are integral to

to each other, authenticity, holistic and future oriented are perhaps most closely inter-connected with alignment. The following example of poor design, illustrates this. In this example, the course intention is to teach a particular software accountancy package commonly used by firms, to increase learners' employability. The course takes place over a nine-month period and learning consists mainly of reading content online with some face-to-face time and doing exercises that focus on technical know-how. The exercises do not include any of the many ways in which different firms adapt and use the software. There is a disjuncture between the intent of the course to contribute to learners' employability, the learning environments, the design of the activities and the materials - that are mainly technical. Additionally, the focus only on the know-how, with limited development of deep understanding (some call this know-why) that would enable learners to adapt and problem solve is missing from the design of the exercises and the learners' experiences. Learners felt cheated and ill prepared for using this software, despite having paid considerable sums for what was a costly course.

To address this issue, bringing in guest speakers from a range of firms and/or visits to a number of different firms where the software was being used and discussing how the firms used the software, what the challenges were and so, would help with aligning the design of learning with the complexity of the work. Additionally, developing learners' deep understanding of the principles behind the software would enable problem solving and meeting of challenges – this is an aspect of the future-oriented principle. To ensure learning is holistic, the separation of know-how and know-why needs to be addressed, as does the separation of technical and generic. For example, complex case studies that not only involve enabling of learner's problem solving capabilities (future-oriented principle), but require learners who are given different roles, to collaborate would contribute to holistic design of learning. By addressing issues of alignment, it is also possible to include other principles of learning design.



HOLISTIC

Integrates knowing, doing, thinking and feeling.
Integrates theory and practice, technical and generic, learning to learn.
Taps on multiple senses.

Holism aims for learning to be inclusive of the wider ethics and values of the profession and/or occupation AND of integrating knowledge, skills and experience. This latter means that technical and generic 'skills' are not separated from each other and that theory and practice are not separated, but all are experienced together. "Integratedness" suggests the inseparability of learning from the learner and that which is learned, or the connectedness between doing, thinking and being. Holistic design is important in developing the core of what it means to be a particular professional, or role or vocation.

Learning is regarded as an ongoing process of participation in relevant activities,

and engagement in meaningful undertakings, rather than as a "thing", "product" or acquisition of certain "products". (e.g. Vygotsky, 1978; Marchand, 2008; Ross, 1999). While task specific practice (e.g. knife skills for cooks, or delegation for managers, using a cash register for a cashier) is necessary, such practice should not be isolated from the complexities of the work. Isolation can result, for example, in a cashier who is highly competent on the cash register in the practice setting, but who cannot operate in the real supermarket context when s/he is face-to-face with customers. This means that designing practice sessions also needs to bring in the realities of the skills being performed. Scaffolding is necessary to work towards performance that is not just on the technical skills but that integrates technical, generic, theory and practice.

For example, learners need to experience the very real pressures of what it is like, for example, to work in a fast paced kitchen, or as a fire-fighter, face real fear and develop situational awareness, or as an engineer, to work with others to develop solutions. Simulated exercises in tech-enabled environments can contribute to the development of such capabilities, as an early introduction to real work settings.

Another strategy that integrates theory and practice, and brings into focus the importance of 'soft skills' as technical expertise is enacted, is to arrange for learners to observe particular practices and ways of being in real work settings. These workplace visits might initially be for two to three hours, then back in the classroom learners share and discuss their observations. Short observations can be gradually lengthened where learners are gradually given responsibility to do the work. Awareness of the standards of holistic performance is important to enable feedback and self–reflection. Holistic, is closely connected with feedback and judgement.

FEEDBACK

Involves: -

- *giving and receiving feedback from multiple sources*
- *opportunities for learners to act on their feedback*

Feedback is far more than expert others giving feedback to learners; it is dialogic – a discussion. Learners need to be engaged in giving feedback, receiving feedback from peers, educator, work supervisor etc. (where appropriate) and in self-assessing their own performance. The purpose of feedback is to improve performance – this is why feedback needs to be a discussion and from multiple sources. Creating multiple feedback loops over the time of a module and of a program enables learners to:

- understand how they are progressing
- develop clarity about standards/ expectations (quality) of performance
- understand how they can improve their performance

It takes time and exposure to various experiences and examples for learners to understand the quality of expected performance. It is helpful to provide criteria, a rubric or outline for the students to follow in order to authentically self-assess their work.

Learners who are able to receive and give quality feedback that improves performance generally develop professional judgment about

their work. Hence opportunities to be engaged in the feedback process about their own and others performance are critical to performing to to the required quality of performance. Feedback and judgement are very dependent on each other, as principles of learning design.

JUDGEMENT

- *Enables learners to make judgments about their own and others' performance*
- *Involves making and evaluation ethical judgements*

Judgement refers to the ability of learners to make informed conclusions about the quality of their performance.

Judgement is also involved when making ethical decisions. Opportunities to make judgements as a learner about ethical dilemmas helps prepare learners for being professional practitioners.

Creating opportunities where learners make judgements about their own work (performance) reflects what takes place everyday in workplaces.

Feedback and judgement are intertwined, they happen together and both require learners to be actively engaged in learning (Boud & Molloy, 2013).

Designing in and facilitating judgement in learning requires (Boud & Molloy, 2013) that:

- the learning design gives opportunity for learners to a) make judgements of own and others performance AND to act on feedback. This means that most practice opportunities are not assessed summatively
- learners are expected to actively participate in making individual and collaborative judgements
- multiple opportunities over time, are given for learners to compare their current performance with the expected quality of performance
- practice opportunities are given for making judgement of others performance to build the skills in a) comparing performance to required quality and b) giving constructive feedback – facilitators may need to provide learners with appropriate tools for this process
- learners contribute to, or at least discuss, the agreed criteria for making judgements
- that tasks are incrementally increased in complexity and expected quality of performance
- That tasks are incrementally increased in complexity and expected quality of performance
- Learners are given responsibility for their learning – giving too little responsibility may mean that students feel lost and unclear about what to do.

All of these processes contribute to learners' future-oriented capabilities.

FUTURE-ORIENTATION

Involves: -

- *Learning to learn*
- *Deep understanding – thus enabling application to multiple situations and contexts*
- *Consideration of multiple perspectives*
- *Inquiry*

Future-orientedness refers to learners' ability to face future unknowns and new challenges beyond the immediate course/ training. The emphasis is on the ability to resolve unfamiliar problems.

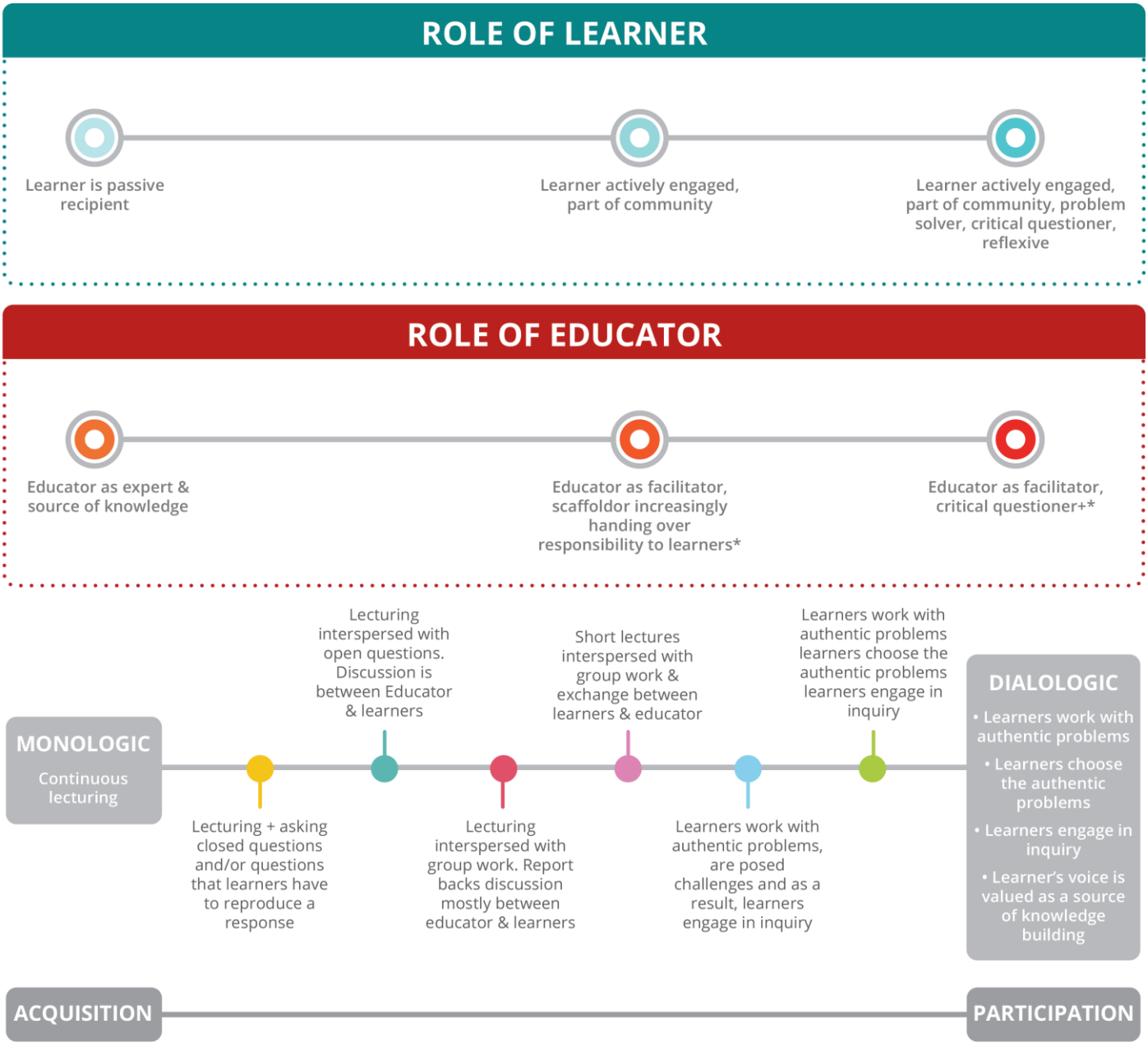
To be able to do this, future-orientedness therefore involves many of what are variously called, 21st century skills, or the new 'top 10 skills', such as critical thinking, creativity, learning to learn, etc. Deep understanding of a discipline, a process, etc. is required for effective solving of the unfamiliar. Deep understanding is developed through exposure to multiple perspectives which in turn requires critical thinking, and the ability to evaluate different forms and sources of 'evidence'. Having inquiry skills, knowing what questions to ask, how and where to gather data to assist in meeting challenges is all part of future-orientedness. Also exposing learners to and engaging them in using "meta-thinking" processes (using big-picture thinking or conceptual frames) are important for making sense of the unfamiliar (Stack & Bound, 2012). Examples of how future-orientedness can be designed into learning, means learners are required to:

- be exposed to different learning approaches, to stop, discuss and think about how they are approaching a particular challenge
- become aware of the types of questions they ask, of how they approach a challenge, that is unfamiliar (by, for example, pointing out what they observe in others – this encourages reflection on own questioning and approaches)
- compare and contrast; to work out the pros and cons of different ideas, approaches, solutions, etc. (this requires exposure to multiple perspectives/approaches)
- being exposed to different perspectives, experiences and processes and discussing these and making judgements about what works best for them, or what best reflects their beliefs, values, etc.

Such techniques, contribute to learning to learn capabilities and to developing deep understanding, important in being able to meet unfamiliar challenges or situations.

UNDERSTANDING LEARNING AND THE 6 PRINCIPLES OF LEARNING DESIGN

As is evident in the description of the principles, learning is understood as participation, not as acquisition and reproduction of knowledge. Rather, learners are engaged in learning with all their senses, wherever possible. Studies have shown that being immersed in a particular kind of learning environment profoundly structures the learners' "social knowledge, worldviews and moral principles that denote membership and status in a trade" (Marchand, 2008, p. 246). In other words, our learning environments need to enable learners to experience what it means to *be* a particular profession, vocation or role.



The six principles of learning design require active learner engagement.

The following examples indicate you are more towards the acquisition end of the continuum:

- use language such as learners 'acquire' skills, knowledge etc.;
- believe learning is mainly individual and cognitive thinking
- talk about 'testing' knowledge or learning
- design learning that is about delivery of content or as a facilitator, do most of the talking
- believe learners can only make sense of something once you have taught them the steps or necessary prior knowledge

The following examples indicate you are more towards the participative end of the continuum:

- use language such as growth, develop, learning is a process, learning is embodied
- believe learners make their own sense or meaning and that learning is social,
- focus on assessment of performance that is holistic
- design learning so that learners are actively engaged, have choice, there are lots of opportunities for dialogue (that is exploratory), learners are required to be self-directed (developing these capabilities are built into the course design and facilitation)
- create multiple, complex experiences for learners where they need to make sense, meaning

It should be noted that there will always be times when it is necessary to use facilitation techniques that are towards the acquisition end of this continuum. As Sfard (1998, p.9) notes, "giving up on the acquisition metaphor is neither desirable nor possible."

Helen heads the research Centre for Work and Learning (CWL) within IAL, SUSS. CWL's research contributes to policy and practice in the continuing education and training sector in Singapore. Helen's research interests focus on learning across a wide variety of contexts, including workplace learning, learning in high technology environments, professional learning and learning through collaborative activity. She has published widely on a range of topics including professional learning and development of continuing education/vocational teachers, workplace learning, generic skills, dialogical enquiry, learning spaces between classroom and work and the development of research instruments. Helen has a background in vocational training and education, having coordinated the Bachelor of Adult and Vocational Education at the University of Tasmania, (Australia) and before that spent some years as a trade union trainer. Prior to that, her experience teaching in Australian secondary schools is the source of her deep interest in pedagogy and learning.

Arthur's research focuses on work and learning practices, workplace development, nature of work, and professionalization situated in organisational and societal contexts. His research aims to shape and inform conversations and expand the sociological imagination. Arthur's research interests include anthropology of work and learning, professional education, globalization, technology, and governance. He publishes on topics including education, work, and workplace learning, and collaborates with colleagues from other IAL departments by lending support and incorporating research insights into IAL's programmes and development work. Arthur has experiences in university teaching and research, and is an advocate of building informed, inclusive and diverse communities.

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