BLENDING CLASSROOM WITH WORK AND TECHNOLOGY

HOW TO DESIGN A BLENDED CURRICULUM
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>06</td>
</tr>
<tr>
<td>1 WHY BLEND?</td>
<td>08</td>
</tr>
<tr>
<td>2 WHAT TO BLEND?</td>
<td>10</td>
</tr>
<tr>
<td>3 CLASSROOM LEARNING</td>
<td>11</td>
</tr>
<tr>
<td>4 WORKPLACE-BASED LEARNING</td>
<td>12</td>
</tr>
<tr>
<td>5 TECHNOLOGY-ENABLED LEARNING</td>
<td>17</td>
</tr>
<tr>
<td>6 PROGRAMME DESIGN</td>
<td>19</td>
</tr>
<tr>
<td>STAGE 1: INTEGRATION</td>
<td>21</td>
</tr>
<tr>
<td>EVALUATION INDICATORS</td>
<td>24</td>
</tr>
<tr>
<td>STAGE 2: ACCESS</td>
<td>25</td>
</tr>
<tr>
<td>STAGE 3 &amp; 4: VALUING AND FLEXIBILITY</td>
<td>28</td>
</tr>
<tr>
<td>7 CURRICULUM DEVELOPMENT</td>
<td>32</td>
</tr>
<tr>
<td>START WITH LEARNING OUTCOMES...</td>
<td>34</td>
</tr>
<tr>
<td>... AND ASSESSMENT</td>
<td>40</td>
</tr>
<tr>
<td>ALSO CONSIDER LEARNER PROFILE</td>
<td>43</td>
</tr>
<tr>
<td>DECIDE... WHAT GOES INTO CLASSROOM LEARNING</td>
<td>48</td>
</tr>
<tr>
<td>... WHAT GOES INTO THE WORKPLACE</td>
<td>52</td>
</tr>
<tr>
<td>... WHAT CAN BE SUPPORTED BY TECHNOLOGY</td>
<td>57</td>
</tr>
<tr>
<td>... WHAT LEARNING TOOLS CAN CUT ACROSS ALL THE SPACES</td>
<td>62</td>
</tr>
<tr>
<td>8 CONSTRUCTIVE ALIGNMENT</td>
<td>65</td>
</tr>
<tr>
<td>9 REFERENCES</td>
<td>70</td>
</tr>
<tr>
<td>10 ANNEXES</td>
<td>71</td>
</tr>
<tr>
<td>ANNEX A: BLOOM’S TAXONOMY</td>
<td>72</td>
</tr>
<tr>
<td>ANNEX B: ASSESSMENT METHODS</td>
<td>76</td>
</tr>
<tr>
<td>ANNEX C: INSTRUCTION METHODS</td>
<td>78</td>
</tr>
<tr>
<td>ANNEX D: WORKPLACE LEARNING METHODS</td>
<td>87</td>
</tr>
<tr>
<td>ANNEX E: SEQUENCING OF CURRICULUM/INSTRUCTION</td>
<td>93</td>
</tr>
</tbody>
</table>

First Edition

Published Aug 2016 by Institute for Adult Learning Singapore

This work is published under the Creative Commons 3.0 Singapore Attribution Non-commercial Share Alike Licence (BY-NC-SA). Under this licence you are free to copy, distribute, display, and perform the work as well as to remix, tweak and build upon this work non-commercially, as long as you credit the author/s and license your new creations under the identical terms.
Let work drive the pedagogy,

let pedagogy drive the technology.
“We will build a first-rate system of continuing education and training: learning throughout life. It will intertwine education and the world of work in ways that strengthen and enrich both. It will make the workplace a major site of learning... there is a whole new vista opening up... having working adults participate in virtual learning and in a real setting.”

Tharman Shanmugaratnam
Deputy Prime Minister, Singapore
17 Sep 2014
INTRODUCTION

In 2014, Singapore launched the SkillsFuture initiative, in a move to focus on skills mastery as a defining quality which will move the country ahead to greater heights. We recognise that mastery does not come from qualifications or ability alone, but requires a mindset of continually striving towards greater excellence through knowledge, application and experience.

Central to this idea of mastery is the work that we engage in every day. We do not become highly skilled in our jobs or roles immediately. Instead, it is through practice, feedback, working with others, conscious reflection and learning, and sometimes even getting rid of bad habits, that we slowly edge towards expertise.

So we learn at work all the time. Sometimes we even think about work when we are not working. This natural and intuitive process aids us to get better at what we do.

However, workplace learning is often an overlooked part of everyday practices in the workplace. We do it subconsciously, but we rarely pay much attention to how well we or our colleagues are learning. This is entirely understandable. Organisations and work exist not for learning, but for outcomes and returns. We don’t usually give much thought to HOW we are learning at work.

So HOW do we learn at work? In many ways – doing the work, discussing with peers and supervisors, getting feedback. In today’s times, many of us incorporate the Internet and technology into our daily work practices. We Google, watch YouTube, and get updates from experts in our industry. All these present great opportunities for educational providers to come in and support organisations and their employees in their journey to becoming skilled in their work, beyond the recognised confines of the classroom setting.

By blending work-based elements into curriculum design, and exploring the use of technology to support the learning process where feasible, learning becomes authentic, contextual and immediately relevant.

Here’s a quick peek into the why, what and how of designing a blended curriculum.
Let work drive pedagogy, let pedagogy drive technology

Think learner / stakeholder

Adopt an appropriate blended learning pedagogy

Programme and Curriculum Design and Development

1. Cognitive
2. Affective
3. Psychomotor

Scoping and design

Integration

Implementation

Access

P4 & 5

Valuing

P2

Flexibility

Adaptation

P2

Maintenance

P1

P2

P3 & 4

Start with learning outcomes (Bloom’s)...

... and assessment

Then consider learner profile

Finally decide...

- What goes into classroom learning?
- What goes into the workplace?
- What can be supported by technology?
- What learning tools can cut across all spaces?

Guiding Principles

- P1. Let work drive pedagogy, let pedagogy drive technology
- P2. Think learner / stakeholder
- P3. Adopt an appropriate blended learning pedagogy
- P4. Build infrastructure and ground for blended learning
- P5. Provide support for learning

WHY?
1. Authenticity of learning
2. Application / Recontextualisation of learning
3. Performance focus in learning
4. Multiple modes of learning

WHAT?
- Classroom Learning
  - Formal and structured
- Workplace Learning
  - Driven by organisation (e.g. workplace supervisors) or individuals
- Work-based Learning
  - Driven by education institution (e.g. Internship)
- Technology-enabled Learning
  - To support the learning process
1 WHY BLEND?

Hands up those of us who have heard this from friends or colleagues about training?

The reality is that with an increasingly literate, technologically-savvy workforce living and operating in a time-starved environment with multiple demands, employers and employees alike are becoming more and more discerning about training. Beyond hobbyist types of learning for personal motivations (like flower arrangement), it is unlikely that anyone attending work-related training is readily satisfied with sitting for long stretches listening to someone talk about a topic for days on end. Soon enough, we reach for our smartphone, our tablet or our laptop and start getting distracted. This usually says something about the trainer, the course, or sometimes both.

So, the question is – “What would engage us when we learn?” As adults, we look for authenticity when we learn. It must feel credible and relevant immediately. We look to apply or recontextualise what we are learning. Can I use or adapt this in my work? It must make us feel that we will be able to perform better as a result of applying this new learning. The performance focus in learning is critical, especially for employers who send their staff for training, expecting something in return.

The classroom is no longer enough.

Unfortunately, all the above are unlikely to come about when we do all the ‘learning’ in a classroom setting. We cannot learn how to swim without entering the pool. Similarly, we cannot learn to perform better in our work if there is no actual work component in our learning. Without a work context, everything becomes an academic exercise.

So where does technology come in in the learning process? Done right, technology supports our learning. We do it naturally already anyway. Our trainer brings up an interesting point for a minute, We want to explore that point, but the trainer then moves on to something else. We take out our gadgets, get on the Internet and dive deep into it for the next few minutes on our own. In this instance, technology personalises our learning, and gives us options. At other times, technology helps us reduce the time needed for face-to-face training, and helps us take charge of our own learning. Didn’t quite get the concept? Watch the video again, or post a question in an online community of practitioners.
Formal learning, whether we like it or not, has moved out of the classroom, into the workplace, into the virtual space.

It’s time for us, the training provider, the curriculum developer, the instructional designer, to do the same.
Most people associate blended learning with schools and universities and it typically involves the use of online learning as a form of taking charge of one’s own learning.

That is totally fine.

But when we talk about Continuing Education and Training (CET) for the adult workforce, naturally work has to come into the picture, for the obvious reason outlined earlier that learning that takes place at the workplace itself is the most authentic and relevant.

So what are the different modes of learning that we can blend? Primarily we can design learning around the following four modes of learning.

► **Classroom Learning**
Face-to-face learning that takes place in a protected space and time

► **Work-based Learning**
Learning that is driven by an educational institution (eg. internship) towards the attainment of a qualification

► **Workplace Learning**
Learning that is driven by an organisation (eg. workplace supervisors) or individuals that is embedded in daily work practices

► **Technology-enabled learning**
Learning that taps on the use of technology to support the learning process

Let us look at each of these modes briefly.
Classroom learning is something all of us are familiar with. Many of us appreciate it because it means a protected space, both physical and mental, for deliberate learning to take place. For some adults, going back to the classroom can be scary, especially if they have not done well in their early schooling years, but if their classroom learning experience is a successful one, the boost in their confidence can be tremendous. These benefits should not be underestimated, as they highlight the need to take care of hygiene factors so that effective learning can happen.

Two challenges though are becoming increasingly common for classroom learning. First, organisations, especially the smaller outfits, are less and less inclined to sign their employees up for formal training courses. Typical reasons include:

- **Opportunity cost**
  The demands of modern work mean that companies find it harder and harder to release staff for training. The longer a training course, the higher the opportunity cost for the company. As much as we know the long-term benefits of staff training and development, it can unfortunately play second fiddle to short-term business pressures like manpower shortage and lack of time.

- **Questions about relevance of training**
  Sometimes, companies who send their staff for training find no discernible application of learning and improvement in staff performance after the course. The content covered might also not be directly relevant to work practices in the organisation.

- **Cost of training**
  Formal training is often costly to mount.

  The second challenge comes from the learners themselves. As technology seeps into our daily lives, we begin to see more and more adult learners turning to their gadgets in a formal learning setting. Sometimes, this could be to find out more about something that they are interested in as a result of what’s happening in the course, as mentioned earlier. However, other possible reasons for disengagement include:

- **Lack of relevance**
  Adult learners find the content irrelevant to their needs at either a personal or work level.

- **Work exigencies**
  With work connections made available 24/7 through laptops and mobile phones, it is easy for adult learners to attend to work tasks even in a formal learning setting.

  How then do we ensure classroom learning remains a useful, coveted mode of learning?

  Make it **short**. Make it **relevant** to learner’s needs. Align it to **actual work practices**. Move the adult learner from passive listener to **active creator** of learning. Use a **range** of instructional activities. Ensure you build learner **confidence**.

  Most importantly, as much as possible, blend classroom learning with workplace learning elements. This will go down much better with companies.
Learning at and through work offers opportunities that are holistic, meaningful, and take place within the complexity of the work environment, where we use knowledge and skills in integrated ways. We know this. Yet somehow we tend not to value it as highly as learning in classrooms situated in educational institutions (Bound & Lin, 2011). While the classroom offers an ideal environment for exploring deeper levels of theory, practice and reflection, work is rich in learning affordances (Billett, 2001) and opportunities for building on learning that takes place through everyday practice.

We often consider classroom and work as separate entities yet deep inside everyone wants and hopes for closer connections between the educational institution and the workplace. The reason this is not as prevalent as we would like to see is because facilitating such arrangements is often perceived to require great effort and coordination between multiple stakeholders. In a way, that is true. However when we consider what we have as a result settled for (setting up classroom sessions in the hope that people will turn up, learn diligently then go back to the workplace to apply all the learning faithfully), sometimes the easier way out might not necessarily be the best option.

Time and opportunities built into the design of programmes or noted in an over-arching curriculum document where learners get to practice in different settings with different kinds of authentic problems is paramount to help learners develop expertise. A sense of progression appropriate for the learners, consistent messages across the programme over time, the linking of modules or units, building in cognitive challenge and complexity with each round (Schwartz, 2006) are basic curriculum design principles that are appropriate for work and educational institutions.

UNPACKING WORKPLACE-BASED LEARNING

Before we go on further into the design of a workplace-based curriculum, it is important for us to consider a few more things about workplace-based learning which are fundamentally important.

First, there are two key players in workplace-based learning which the educational provider hoping to provide a workplace curriculum needs to work with closely. With or without the educational provider, workplace learning is already happening every day. Organisations are intentionally or unintentionally providing their employees with ‘activities for learning’. These can take the form of structured learning such as induction program, job rotation and work projects, or unstructured learning like ad-hoc work demonstrations or just-in-time feedback or coaching. Well, just doing a new piece of work itself involves workplace learning! Educational providers hoping to design work-based curriculum must find out what some of these common practices are in the organisation, and ride on them rather than assuming that all learning starts from a clean slate. Doing this is likely to make their work-based curriculum go down better with the organisation. To do this, the educational...
provider needs to connect with different stakeholders from the organisation to create this alignment and buy-in. More of this is explored in the ‘Programme Design’ section.

The other major key stakeholder is the individual at the workplace. A workplace can be inviting and supportive of learning, but if the individual worker chooses not to engage, learning and as a result performance will not happen. It is easy to contend that this is something no-one but the individual can control, and that’s true. In the same breath however, the educational provider has every opportunity to design and structure the learning provision such that the individual sees it as meeting his work needs first and foremost rather than an external imposition.

Underpinning these organisation-individual interactions is the organisational culture, which dictates (often in unspoken ways) how the workplace participants behave. Is the culture one that is open to learning? Does the nature of the organisation’s business lend itself readily to constant learning and change? These are examples of factors that the educational provider must be mindful of when they draw up a work-based curriculum.

What ‘workplace-based learning’ means is the combination of essentially two common terms used in the CET landscape – work-based learning and workplace learning. These two are different, and it is important to distinguish between them because they serve different purposes, different masters and have different outcomes. Bound (2014) outlines some differences between the two (see Table 1).
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Work-Based Learning</th>
<th>Workplace Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver / owner</td>
<td>Educational institutions</td>
<td>Employers</td>
</tr>
<tr>
<td>Partnerships</td>
<td>Educational institution as Driver may partner with:</td>
<td>Employer as Driver may partner with:</td>
</tr>
<tr>
<td></td>
<td>• Employers to provide the internship / industry attachment etc</td>
<td>• Consultants</td>
</tr>
<tr>
<td></td>
<td>• Consultants</td>
<td>• Educational institutions (e.g. onsite literacy training)</td>
</tr>
<tr>
<td>Participants</td>
<td>Students / Trainees / Learners completing a qualification</td>
<td>Employees</td>
</tr>
<tr>
<td>Purpose</td>
<td>To expose learners to meaningful and relevant workplace experiences to better connect their learning to the workplace and deepen their skills, before graduation</td>
<td>To address skills gaps, improve performance, and develop staff</td>
</tr>
<tr>
<td>Time</td>
<td>• Part of a qualification</td>
<td>• Ongoing</td>
</tr>
<tr>
<td></td>
<td>• Time in workplace varies according to different educational institutions’ industry sector requirements</td>
<td>• Specific work / business / performance related outcomes often tied to stipulated period of time dictated by employer</td>
</tr>
<tr>
<td>Outcomes for driver</td>
<td>• Qualification that represents skilled and work-ready graduates</td>
<td>• Improved performance</td>
</tr>
<tr>
<td></td>
<td>• Projects undertaken in the workplace are a source of holistic, authentic activity / service / product that can be used for learning and assessment purposes</td>
<td>• Improved professional judgement and decision-making at work</td>
</tr>
<tr>
<td></td>
<td>• (If done well) Graduates who have strong disposition towards learning</td>
<td>• Development of learning culture that supports innovation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Flexible professional development appropriate to individual and collective (e.g. team) needs</td>
</tr>
<tr>
<td>Examples</td>
<td>• ITE’s Traineeship programme (outcomes are determined by qualification driven by ITE as an institution)</td>
<td>• ITE’s COJTC Programme (ITE helps to shape a structured OJT curriculum with the outcomes determined by employer)</td>
</tr>
<tr>
<td></td>
<td>• At-Sunrice’s WSQ Diploma in Culinary Arts (which includes a Study and Work component similarly leading to qualification and driven by At-Sunrice as an institution)</td>
<td>• In-house programmes (e.g. SIA’s Executives Programme which comprises classroom and OJT)</td>
</tr>
<tr>
<td></td>
<td>• IAL’s Certified Workplace Learning Specialist programme (graduate outcomes are driven by IAL leading to certification)</td>
<td>• Induction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Job Rotation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Coaching</td>
</tr>
</tbody>
</table>

Table 1: Some differences between work-based learning and workplace learning
Let us examine some of the models and methods associated with both work-based learning and workplace learning.

**WORK-BASED LEARNING**

Work-based learning has received growing interest in many countries for some decades now, particularly in higher education. We can turn to examples from these institutions, as well as the examples provided by apprenticeship and trainee arrangements both locally and internationally for further information.

From an educational institution perspective, Alkema and McDonald (2014) write about work experience designed into educational programmes. They outline four typical models of work experience:

- **Fully-integrated workplace learning**
  Most of the learning takes place on-the-job, and is supported by learning materials from the workplace and the educational institution. Learners are supported by their employers and by staff (e.g. supervisors at work and in their educational institution). It includes learning for attaining qualifications, as well as professional learning that seeks to develop people already in work.

- **Learning practicums**
  Learners – such as chefs, nurses, social workers, or engineers – are placed in workplaces for ongoing blocks of learning during their time of study. These are variously referred to as practicums, placements and field-based education.

- **Work integrated learning**
  Learners work on a project basis for short periods of time. This includes internships.

- **Simulated learning situations**
  Learners are fully located within an educational institution but participate in replicated workplace learning situations. This can range from using software that workplaces use to simulate the work context, through to simulated clinical settings and actual construction projects or hospitality work within the educational institution.

At its core, workplace learning in this context (i.e. the interface between the workplace and educational institution) is about learners having the opportunity to gain new learning, and to apply or integrate theory and knowledge from their learning at the educational institution into practice. Alongside this, it also provides learners with the opportunity to gain more generic employability skills (e.g. confidence, communication, teamwork and other work-related attitudes and behaviours). The different approaches provide greater or lesser opportunities for learners to learn and practice. Fully-integrated on-the-job learning provides this on a continual basis, practicums enable regular structured workplace opportunities, internships tend to be more a one-off opportunity, and simulations provide a controlled learning environment replicating a model workplace in which to practice (Alkema and McDonald, 2014).
What about workplace learning? Put simply, workplace learning is learning that happens naturally in the workplace - in, through and for work. It is about the relationships between the social and human processes of learning and working. These relationships and activities play out every day at work. A supervisor shows us how to use a certain tool or write a certain report. We solve work problems with our colleagues. We work alone at a problem through trial and error. Sometimes, an organisation rotates us to another role after a while. All these carry with them important and very real learning that helps us gradually perform more and more effectively at the workplace.

Since this is something that is natural and spontaneous, what does this all mean for educational providers?

As a course developer, we can recommend certain workplace learning methods to be carried out at the workplace as a complement to the programme, so that there is immediate relevance and authenticity. These methods can be used to facilitate the work-based components of the curriculum. We need to find out what are some common workplace learning methods that are typically employed by an organisation or an industry, and build that into the curriculum, with support from the organisation. We will revisit this later in the Curriculum Development section.
WHAT IS TECHNOLOGY-ENABLED LEARNING?
Technology-enabled learning refers simply to the use of technology to support learning. Many of us do this every day already without thinking much about it. Nowadays, when we are assigned a job task, many of us turn to the Internet to find information, read up what experts or practitioners say, or watch videos to help us complete the task. Increasingly too, in the formal learning space, many of us are turning to what is commonly known as e-Learning to support our learning process. Ghirardini (2011) defines e-learning as the use of “computer and internet technologies to deliver a broad array of solutions enabling learning and improving performance.” e-Learning however is commonly associated with the picture of students staying at home to pore through lots of online content and taking quizzes at the end to show they have learnt.

For the purposes of this framework, we prefer to use the term ‘technology-enabled learning’ as it places learning first, and technology second. In the world of work, technology is most readily adopted when it offers a practical, efficient, cheap (or free) improvement to existing practices and systems. IT technicians troubleshoot on the spot nowadays by accessing expert forums on the Internet, while retailers can use mobile apps to help their staff in outlets everywhere learn about different aspects of their business such as new product ranges. Such a form of infusing technology in learning for work goes beyond the traditional thinking associated with e-Learning.

FACTORS TO CONSIDER BEFORE ADOPTING TECHNOLOGY-ENABLED LEARNING
According to Piskurich (2003), we need to consider a few factors before we decide if technology-enabled learning is indeed suitable for a learning programme.

- Programme Outcomes
  The type of curriculum outcome(s) will affect how much technology can and should be adopted in a programme to support the learning. Technology-enabled learning on its own is most suited for knowledge-based outcomes. For attitude or skills-based outcomes (other than those skills which are directly technology-related eg. web
design or operating the Opera system for hotel reservations), the use of technology-enabled learning must be combined with practice opportunities (either in a formal training context or at the workplace) for the learner to actually develop proficiency in the required knowledge, skills and attitudes.

► Technology Infrastructure
While the organization does not really need to be technologically advanced, it does mean that there has to be a certain baseline required to meet the needs of technology-enabled learning:

- **Support & Maintenance**
  If no one in the organization can support from a training/facilitator and technology standpoint, then it would be difficult to sustain the use of technology to enrich the programme. The company would then have to perhaps outsource to look for such support services and the turnaround time to manage and implement changes to maintain robustness and currency of the technology-enabled learning elements in programme would be a determining factor.

- **Business Readiness**
  There should be management and financial support, as well as an espoused and enacted cultural and organizational philosophy so as to show that organizational leadership is seriously committed to the use of technology in learning.

► Learner Readiness
If readiness of the learner to embrace technology-enabled learning exists, the approach will definitely be more effective, efficient and economical.

There are both uncontrollable and controllable variables which can affect the success of the technology-supported aspects of any programme:

- **Uncontrollable Variables**
  Every individual is different. Learners might be resistant to technology, which can arise from previous bad experiences, fear or strong beliefs about the use of technology in learning. We cannot simply brush these away with responses like “The learners just refuse to learn” or “They need to move with the times”. Instead, it is our job as designers to do our best to make it easier for them to say yes rather than no.

- **Controllable Factors**
  To help make the use of technology more palatable to the learners, there are several aspects that we can manage. Addressing these factors either before or at the start of the programme (either through hand-holding or discussions about the benefits of the use of technology) will allow learners to focus purely on the learning, rather than be side-tracked by non-learning issues.

There are no model answers for a lot of the above, as the possibilities and opinions in technology-enabled learning are just too many. However, as a quick guide, we can ask the following question - How has our selected technology allowed learning to become **faster, simpler, clearer, stickier, cheaper**, and most importantly of all, result in **improved work performance**? Get the above right and we are halfway there!
6 PROGRAMME DESIGN

Now that we have a greater appreciation of the different modes of learning, how do we go about blending a learning design?

Classroom learning is relatively straightforward to design, as the adult educator has full control of what happens within that time and space. However, in venturing into the work and technological spaces, things become a lot more complicated. There are stakeholders to converse with, systems to understand, existing practices to align with, and nuances to uncover.

As such, the designer of the blended learning programme cannot ignore all these external forces and focus solely on the learning process alone. Without supporting structures, a blended learning programme cannot take off.

According to Harris, Piercy and Law (2009), there are fundamentally 4 key stages in a programme design (See Page 7 for a diagrammatic representation):

- Integration (Scoping and Design)
- Access (Implementation)
- Valuing (Maintenance)
- Flexibility (Adaptation)

As the overarching programme design is being established, work can actually begin on developing the curriculum (ie. the programme materials, learning and assessment activities). Waiting for the programme design to be finalised will take too long. In reality, it is more likely that we develop on the go. So running in parallel to the programme design process is therefore ‘Curriculum Development’.

The key guiding principle at work here is to

**P1** Let work drive the pedagogy, let pedagogy drive the technology

The purpose of any blended learning programme for workplaces is to improve performance, like greater competence, efficiency, accuracy, productivity, confidence and improved decision-making. We will not go wrong when we start with what matters to the organisation and the individual. Only after we have identified these desired **work outcomes** can we begin to determine the **pedagogy** (“What is the best way to learn to achieve this?”). This is where we need to be creative and practical at the same time - creative as we explore multiple modes and sequences of learning, and practical in designing a programme that is likely to go down well with the organisation and the individual, instead of a costly, complicated programme that is difficult to carry out. Only when the pedagogy has been established do we begin to think about how **technology** can come in to
support the learning in a meaningful way. We must never make the tempting mistake of putting the technology before everything else. That is a sure-fire way to kill any blended learning design.

Here we further propose four other guiding principles to underpin the different stages of as we undertake blended learning design and development.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Guiding Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Integration</td>
<td>P2 &gt; Think learner / stakeholder</td>
</tr>
<tr>
<td></td>
<td>P3 &gt; Adopt an appropriate blended learning pedagogy</td>
</tr>
<tr>
<td>2. Access</td>
<td>P4 &gt; Build infrastructure and ground for blended learning</td>
</tr>
<tr>
<td>3. Valuing</td>
<td>P4 &gt; Build infrastructure and ground for blended learning</td>
</tr>
<tr>
<td>4. Flexibility</td>
<td>P5 &gt; Provide support for learning</td>
</tr>
<tr>
<td>Curriculum</td>
<td>P2 &gt; Think learner / stakeholder</td>
</tr>
<tr>
<td>development</td>
<td></td>
</tr>
</tbody>
</table>

We will examine each of these stages in detail next.
STAGE 1: INTEGRATION (SCOPING AND DESIGN)

Integration entails the scoping and design of a blended programme (Harris, Piercy and Law, 2009). As a designer of the blended programme, we will need to find out and integrate the following:

- **Organisation buy-in**
  - Gather knowledge about the business and its work processes not only at the enterprise level but also at an industry level.

- **Assess organisation ability to implement programme**
  - Does it have a history of structured training for employees? If so, good.
  - Is the nature of work high-volume (i.e. use of mass production)? If so, employees might view the programme as intrusive.
  - What is the outlook of the decision-makers in the organisation? If they are short-termist (i.e. expends all effort in dealing with daily business pressures with no ability to look beyond the short term), the programme is unlikely to gain traction. If they take a middle or longer-term view in their business strategy (e.g. recognising the need to invest in employees’ development to grow the organisation), the programme is likely to be more successful and effective.

- How extensive is technology used in their daily work and learning processes? Ride on those that are already in place in the organisation. It will go down better.

- **Employee buy-in**
  - Engage employees to ascertain relevance of programme.

**Adopt an appropriate blended learning pedagogy**

It all starts at the top. For blended learning to be effectively implemented, there must be a commitment to the pedagogy and approach. Key decision-makers in organisations must sanction the approach and commit time and resources in helping staff understand how the blended learning programme benefits both the organisation and the individuals.

In discussing the shift to this approach, it is important to clearly state the value proposition (e.g. improved business outcomes as a result of the blended learning programme) to administrators, business operations, workplace supervisors, training functions, instructional designers, and most importantly of all, the learners themselves. Hearing it from a strategic position might help to facilitate buy-in and adoption at all levels of the workflow within the organisation. We say
might here because getting endorsement from the top is important, but it’s only the beginning. What is equally important are the sentiments of the other employees in the organisation. They are the ones who will make or break the programme.

**P4 Build infrastructure and ground for blended learning**

Any move out of the classroom requires planning of support beyond booking a training room and scheduling participants and trainers.

If the workplace is involved, arrangements will have to be made in advance, such that co-workers (where needed), workplace resources (such as machines) and protected time are available, and the relevant parties briefed and trained adequately to support the workplace learning tasks.

If technology is involved, there is a need to test to ensure that what is required to support the learning works according to plan. This would include the setup of a digital learning environment, capable of supporting the learning technology needs of the organisation. Some of the more elaborate technologies that might be needed here include a Learning Management System (LMS), availability of virtual learning environments, media servers (if there are plans to stream video content), and servers to host and trial online courseware.
For smaller or newer set-ups however, such an extensive infrastructure is unlikely to be available. In such cases, it would be wise to consider free (or cheap), readily available and widely adopted technologies, for example mobile apps like those from Google, or familiar platforms like Whatsapp. Sometimes, infrastructure can mean something as simple as providing wireless network access to everyone!

If these issues are not well addressed, end-user satisfaction will be adversely affected and this would be damaging to the overall drive to promote blended learning.

So what does it look like when these two principles are enacted?

We will see the blended programme sitting comfortably in a wider organisational system, like production process practices and human resource development practices. It should not stick out like a sore thumb, like a huge separate monster independent of everything that is happening in the organisation. Sure, there are extra bits – a little bit of time needed here for workplace assessment, a little bit of breathing space there for reflection, but organisational life should by and large continue as normally as possible. That’s the acid test of any blended programme.

Organisations are typically wary of new-fangled disruptions, but if we are able to start with what is familiar to the organisation from the beginning, the programme is likelier to go down better. It makes it easier for them to say yes to blended learning!
AN IMPORTANT NOTE ABOUT EVALUATION INDICATORS DURING THE INTEGRATION PHASE

Once we have the organisation on board and supporting the development of the programme, it is critical even at this juncture to think of evaluation. This might appear like we are putting the cart before the horse (we don’t even know what the programme will look like!), but setting in place right from the start what we intend to evaluate after the programme will facilitate decision-making all through the design and implementation stages. When we get inundated with data and opinions from all sides, it is easy to get lost and forget why we are running this programme in the first place. Having the agreed evaluation indicators on the forefront of things will allow everyone to focus on the end goal, and how learning will help to get us there.

Evaluation indicators should as much as possible be tied to work performance. Examples would be:

- Increased confidence of staff in handling customer enquiries
- Reduction in defective products
- Shorter time taken to resolve technical issues
- Improved team camaraderie
- Increased sales
- Increased level of engagement at work
- Increase in number of staff who are able to cover another job function when needed
- Increased confidence and ability to operate new equipment

Asking a question like “What is one pressing business need for you now?” might be able to throw up some issues around which the evaluation indicators can then be crafted. Get the decision-makers to agree on them, and these evaluation indicators will form the basis from which we can craft the learning outcomes as well as the assessment for the programme (See section under Curriculum Development). As we go about crafting the learning outcomes and assessment, there would be assumptions about how the learning and assessment will contribute to these indicators. For example, we might assume that helping learners increase their product knowledge will improve their confidence in handling customer enquiries, hence product knowledge is covered in the blended learning programme. If however, the confidence did not go up at the end of programme despite all learners clearing their assessment, we can then question this assumption, and make changes to the blended learning programme accordingly.

Also, with the evaluation indicators in place, we can then conduct pre-and-post tests (such as self-assessment tests) to ascertain if the programme is eventually successful. These data would be of more interest to the organisation than typical Kirkpatrick’s Level 1 (Reaction) and 2 (Learning) type of learner feedback (Kirkpatrick, 1959). If learners indicate at the end of the programme that they are more confident in performing certain tasks, the chances of the organisation continuing the programme increase significantly!
STAGE 2: ACCESS (IMPLEMENTATION)

In the implementation of a blended programme, Harris, Piercy and Law (2009) advise that we must consider the following:

- **Resourcing** – Appoint suitable and adequate staff (from both training provider and organisation) to allow for and recognise physical time and space for learning.

- **Train the trainers** – Invest time and effort in training the workplace trainers, and build some form of recognition and/or incentive for them. Just merely appointing senior or expert workers to take on the training roles does not mean they are (i) motivated and (ii) equipped to train.

  - **Create opportunities** for the learners to consolidate and internalise their learning in a community setting, either at the workplace or during the formal learning components of the programme.

Alkema and McDonald (2014) break down the support needed into 3 separate groups:

- **Learner** – career aspirations, motivation and persistence to learn, communication and participation in workplaces, and reflection.
Training provider – providing resources and materials (including assessment information) that help workplaces facilitate a good workplace learning experience

Organisation – planning with training providers and individuals at workplaces who might have little knowledge or access to learning and assessment

All these are crucial enablers for any blended programme. The learners, the trainers, the support structures at the workplace, the technological and workplace learning aids must all be in place before we move to implementation.

Build infrastructure and ground for blended learning

With a proper support structure in place, it’s time to think about execution. At the heart of it, the end goal of any blended programme is work performance. This must become the single-minded message as different stakeholders start to feature in the programme (eg. colleagues, customers, supervisors, assessors).

So how do we prepare the ground for blended learning? Face-to-face sessions and email communications are two ways to do so. Get a person or team with positive (not just positional) influence in the company to communicate the following:

Why learning matters for the organisation
‘What’s in it for me?’ (WIIFM) - value propositions of the blended learning programme for:

- The business (eg. increased productivity, improved staff morale, standardised assessment)
- The workplace trainers (eg. improved staff performance, reduced staff turnover as a result of improved staff confidence at work)
- The workplace learners (eg. better performance leading to recognition and rewards)

Organisation-wide commitment to the programme in terms of time, cost, and recognition

This communication effort is often overlooked, as organisations or training providers rush into implementing the programme. Taking the time to help everyone understand the intent and the programme flow sets it up for success.

Provide support for learning

Once the ground is prepared and clear about what the blended learning programme is all about, it’s time to put in effort to support the learning process all the way to the end.

New events will happen which we cannot anticipate. Here are some common issues which can compromise the implementation of a blended learning programme:

Staff movement – the supervisor or the learner you were working with earlier has just resigned, or is being transferred to another department

Scheduling issues – the longer a training or assessment segment at
the workplace, or the more people we have to coordinate, the harder it is to schedule time together for purposeful learning.

▲ Human dynamics – personal issues and agendas begin to surface during the programme, making progress difficult.

▲ Organisation-wide events – for example, an external audit which brings the programme to a halt, or a huge customer order which just came in, taking precedence over everything else.

▲ Technological hiccups – what worked well during testing is not going as smoothly during implementation for a whole range of reasons.

While the programme planning part is important, getting feedback, constant monitoring and evaluation, and adaptability is the key during the implementation stage when these things happen. The training provider must work hand-in-hand with the organisation to resolve these issues as they happen. There is no secret formula, for every context is different and will require different solutions. The aim is simple – protect the final goal, which is work performance. If it requires extra time spent by the workplace trainer, a switch in personnel involved, a longer time frame, or any other interventions required to continue the learning support, do it.

At the same time, good blended learning design should empower the workplace learner and trainer to make decisions on the best time and way to learn and assess performance. As long as the outcomes are clear, there can be some room for the different stakeholders to manoeuvre so that they can get the most out of the programme.

When it comes to the use of technology, support for learning could come in the form of:

▲ clinic sessions – either face-to-face or using synchronous tools, like Skype.

▲ peer support – pairing more able/experienced learners with those who are new/inexperienced.

▲ easily-accessed aids – eg. instructional Youtube videos, weblinks or short guides.

Providing support for the learning in a classroom is relatively easy, but when the workplace and technology is ready, it requires the trainer and the organisation to be responsive when new needs arise.
STAGE 3 & 4: VALUING AND FLEXIBILITY (MAINTENANCE & ADAPTATION)

As the programme is implemented, it is vital to monitor if the desired programme outcomes are being met, and to make further changes to the programme if they are not. Harris, Piercy and Law (2009) call these last two stages Valuing and Flexibility.

The Valuing stage revisits the level of buy-in obtained at the Integration stage, to ask, “Has the level of buy-in been maintained throughout the implementation?” The point here is to signal that the training provider’s role does not end when implementation starts. They have to watch the programme goal, which in this case is work performance.

What the training provider and organisation need to do is to:

- **Assess** the blended programme in terms of the linkages between production processes and human resource development:
  - Have all managers continued to buy into the programme and accompanying organisational change?
  - Is sufficient time off or space for learning being provided?
  - Are the skills being developed by the programme actually being used in the workplace?
  - Are incentives supplied effective? Or are resistance and high turnover occurring, limiting productivity gains?
  - Is support being provided within the organisation and outside to the workers involved in the programme?

- **Tweak** the design of the programme to plug the gaps arising from the assessment above

The idea behind the Flexibility stage is that a good blended programme can never be static. What works once might not work the next time for simple reasons like a change in organisational direction, introduction of new technologies, industry developments or a new profile of learners. At the same time, it is not feasible for the training provider to overhaul the programme every time it runs it. The key then is to adapt the programme in a sensible, practical manner that keeps it relevant and hence attractive to the organisation.
Think learner / stakeholder

To help us to monitor the buy-in of the blended programme, and make decisions on what to adapt if there is a need to, we need to step into the shoes of the different stakeholders in the organisation. Here is a list of questions that we can ask as the programme is implemented:

The Enterprise Owner perspective
- What is the return on investment on this blended programme?
- Why should I continue to invest in this programme?
- How scalable and sustainable is this programme?

The workplace learner perspective
- Why am I learning this? What’s in it for me?
- How can I manage this programme and my daily work?
- What is my boss expecting of me after I finish this programme? Will my workload increase? Will I get a promotion?
- Will what I learn help me in the future, not just here at my current workplace, but maybe even elsewhere?

The workplace supervisor perspective
- Why am I involved in this? What’s in it for me?
- What if my staff leave after they are trained?
- Will my staff take over my job after they are trained? Do I want to share everything I know with them?
- I’m not sure I make a good trainer

The HR perspective
- Why should we incentivise the workplace trainers and learners?
- How can we incentivise the workplace trainers and learners?
- What is the return on investment on this blended programme?
- How does this programme align with our HR practices (eg. talent management, individual learning plan, career advancement)?
- How do we manage the change that this programme will create?

The learning technology user perspective
- Why are we adopting the learning technology to be used in the programme? What are its benefits?
- Did we explore alternatives?
- How user-friendly is the technology to be used?
- How secure is the technology to be used?
- Are there privacy issues in the use of the technology?
- Is there support for when problems are encountered?
PROGRAMME DESIGN IN SUMMARY

Hopefully by now you would have realised that designing a blended learning programme is not as simple as just tweaking an existing programme to replace generic content with content from a specific industry, and then converting some bits into technology-enabled learning. Without input and endorsement from an organisation to ensure that it is accepted at all levels, any programme, which entails a change which requires attending to, is likely to meet with scepticism and resistance at some point. This means that the programme designer can no longer hole himself away behind a computer and produce a course just like that, relying solely on desktop research. Instead, the designer needs to get out there and learn as much about the organisation. Essentially, the programme design demands a partnership of sorts, between the training provider, the organisation and its learners. This design approach can be summarized in the following partnership model (Figure 1), which is adapted from Alkema and McDonald (2014).
Blended Learning Partnership

Figure 1. Blended Learning Partnership, adapted from Alkema and McDonald (2014).
After the organisation has bought into the blended programme, and is in the process of setting up the support structure (eg. communication efforts, scheduling, manpower deployment, technological infrastructure), it is time to delve into the blended learning curriculum itself. In an ideal world, the organisation is set up nicely for the programme to ‘plug and play’. In reality, this rarely happens, if at all. Developing and implementing a blended learning programme involves multiple stakeholders, who are handling many different pieces. We can have a mental concept of how we imagine the programme to unfold, but new information will surface all the time which might influence the design. Some of this might be good news (eg. discovering incentivisation schemes which can be incorporated into the programme to increase buy-in and motivation), and some might not be so welcoming (eg. discovering that a certain operations team is denying access to their physical space for learning purposes). As mentioned earlier, it is a lot easier to design a purely classroom-based programme, but we all know how that is panning out as the adult education landscape evolves.

Developing a blended programme requires more than just curriculum development and instructional design knowledge and skills. Some of these requirements include:

- **A pragmatic consideration of the creative possibilities** of the programme design, as well as operational constraints in the implementation of the programme. In other words, to strike a balance between “everything is possible” and “nothing is going to work, so don’t even try”.

- **Developing on the go.** An important first step is to put a stake in the ground. Waiting until all the stars are aligned is unlikely to get us anywhere. Businesses can’t wait, and initial enthusiasm can wane. Get the curriculum outline out, have a rough feel of the implementation details, and start our engines.

- **Resilience** in the face of challenges. Planning is important, but adaptation as the team encounters roadblocks is equally important.

- To facilitate all of the above, **constant communication with relevant stakeholders.** As mentioned earlier, gone are the days when a curriculum developer or instructional designer can hole himself or herself up behind a computer and churn out a training programme just like that. If we want to include work-based and technology-based elements in our programme, we need to get out there and find out from important stakeholders what it would take to infuse them seamlessly and effectively into the programme.

In a nutshell, the important thing for the curriculum development team is to be open, adaptable and resourceful.
FOUR STAGES OF BLENDED LEARNING DEVELOPMENT

There are four stages in blended curriculum development. They may appear sequential, but really we need to think of all four at the same time (eg. it’s difficult to consider assessment without considering the learner profile):

Let us examine these four stages in detail.
1. START WITH LEARNING OUTCOMES...

We always begin with the end in mind. What we are striving for is for the blended programme to produce positive outcomes for the organisation and the learner. Only then can we say that the blended programme is successful. The learning outcomes therefore must relate to the real work outcomes that are desired at the workplace. There is no point teaching a learner about how to operate a machine which is not and will not be available at his workplace for the foreseeable future. He will not be interested, and his organisation will be asking, “Why am I sending him to learn that?”

So it is vital right from the beginning to start with what matters for the organisation and the individual learner, which is the knowledge, skills and attitude required to do his work.

We can categorise these learning requirements into the following:

- **Conceptual Knowledge** (‘Knowing that’)
  - Understanding of facts, concepts, propositions, that can range from surface to deep
- **Procedural Knowledge** (‘Knowing how’)
  - Knowledge of how to do something (steps/processes)
- **Dispositional Knowledge** (‘Knowing for’)
  - Values and attitudes related to specific domains and practices
- **Skills** (‘Doing it’)
  - The act of actually performing something. This is different from procedural knowledge, which is only knowledge that is not acted on (eg. knowing CPR procedure versus actually doing it).
Remember how we should start with evaluation indicators as we begin our programme design (pg. 23)? Now’s the time for us to drill into those indicators to derive the requisite knowledge and skills. Here’s an example.

Figure 2. Evaluation Indicators and Types of Knowledge and Skills

We have to remember that these are only assumptions that we hold about how to increase the confidence of staff in handling customer enquiries. We need to quickly validate them with stakeholders (eg. General Manager, supervisors and the learners themselves). Even then, we might still be wrong. But the whole point is that once this is done, we will have something concrete to:

- **Begin crafting a pre-and-post programme instrument** (eg. survey, checklist for workplace observation) which will give us and the organisation a possible sensing of the effectiveness of the programme
- **Question the assumptions** (eg. does knowing the SOPs really help to increase staff confidence?) if the post-programme evaluation indicators do not show desired outcomes
- **Begin crafting our learning outcomes** and subsequently the programme design

Now that we have an agreed set of knowledge and skills to inform the curriculum development, we can drill down even further into learning outcomes for the programme.
For work-related types of learning outcomes, Lucas and Spencer (2014) categorised them as follows:

- **Routine expertise** in an occupation
- **Resourcefulness** – the capacity to think and act in situations not previously encountered.
- **Craftsmanship** – pride in a job well done and an ethic of excellence
- **Functional literacies** – numeracy, literacy, digital and graphical
- **Business-like attitudes** – customer and client-focused, entrepreneurial and aware of value for money, whether in for-profit, public sector or third sector roles
- **Wider skills for growth** – the dispositions and wider skills for a lifetime of learning and change

These different types of learning outcomes form a useful frame as we begin thinking about what we are hoping the learners will take away from the programme. For example, in the case of the concept of customer service, it is common to think about it in a ‘what’s-to-be-done’ SOP kind of way. However, if viewed as a craftsmanship type of learning outcome, the procedures play a smaller role compared to instilling pride and an ethos of excellence. Alternatively, seen from the perspective of growth, customer service can be linked to concepts of servant leadership and personal development.

Related to the above, Meyers and Nulty (2009) described certain qualities of well-constructed learning outcomes:

- authentic, real-world and relevant
- constructive, sequential and interlinked
- require learners to use and engage with progressively higher order cognitive processes
- all aligned with each other
- provide challenge, interest and motivation to learn

So before we launch ourselves into developing the curriculum in detail, we must be very clear about what the learners and their organisation are hoping to get out of the programme. If the outcomes speak to them because of their relevance, recognition of the intertwining with their real work, and how they are structured in a gradual, meaningful way, we are off to a good start!

Naturally, the next thing for us to consider at this point is the formulation of the learning outcomes themselves. This is where we go back to the age-old tried and tested Bloom’s taxonomy (Bloom et al, 1956), which attempts to describe learning objectives with appropriate verbs. These learning objectives span three domains which are relevant for the world of work: Cognitive, Affective and Psychomotor. These correspond nicely with the different types of knowledge and skills we discussed earlier (See Figure 3).
Increased confidence of staff in handling customer enquiries

Conceptual Knowledge
[Knowing what]
Customer service knowledge

Procedural Knowledge
[Knowing how]
Greetings
Use of appropriate language
SOPs

Dispositional Knowledge
[Knowing for]
Service mindset
Non-verbal language
Personal strengths

Skills
[Doing it]
Handling a customer
Handling products

Cognitive
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Affective
Receive
Respond
Value
Conceptualise
Internalise

Psychomotor
Imitation
Manipulation
Precision
Articulation
Naturalisation

Learning Outcomes
Bloom’s Taxonomy

Figure 3. Evaluation Indicators, Types of Knowledge and Skills and Bloom’s Taxonomy

For a detailed list of the three domains, take a look at Annex A
In the use of Bloom’s Taxonomy, there are a few guidelines:

- Domains generally do not overlap in each learning objective.
- The action verb used in crafting each learning objective should correspond to the domain type and level. The domain type and level should in turn correspond to the intended level of difficulty and competence.
- There should be sufficient coverage across appropriate levels towards gaining competency on a skill. For example, to master the skill of baking cakes, learning objectives should be holistic descriptors that encompass knowledge of ingredients, comprehension of baking process, application of folding techniques to trap air within the cake batter, and finally creating (synthesizing) cake by assembling all the ingredients correctly.
- Above all, we must remember that expertise is not a one-time destination. Bloom’s verbs capture a snapshot in time, but it is equally important to use them in a way that helps learners to learn beyond that one learning activity. For example, to learn how to bake a cake, a Level 4 Psychomotor outcome like ‘create a cake’ holistically covers aspects of baking like time management, knowledge of ingredients, working with others, and ability to manipulate baking equipment, among others. Equally important though is a Level 5 Affective outcome like ‘display resilience’ to build in learning that happens when things do not go according to plan (e.g., time is running out, faulty equipment, managing anxiety). The latter outcome will go a longer way than simply completing an act of baking one cake.
A QUICK WORD OF CAUTION

While it’s neat and easy to use Bloom’s taxonomy, we need to understand the limitations of using it too narrowly to cut work tasks into isolated pieces. We know that work as it happens is often a messy entanglement of expertise and individual dispositions tied up in a sense of identity and reactions to ourselves, the people and the environment around us. Bloom’s domains are useful only to give us a language to express in holistic terms outcomes we are looking for in the development of the blended programme. If we allow ourselves to be fixated by the verbs alone and forget the reality within which the real work happens, then we run the risk of developing a programme which cuts no ice with the intended learners, who know more than anyone else whether achieving the Bloom’s outcomes really mean one can now do the real work. What we are trying to capture with learning outcomes is the ‘essence’ of work, and that can be developed, and is often manifested in many ways, beyond a definitive Bloom’s verb. So use the Bloom’s taxonomy, but use it loosely, with a light touch and with a constant awareness that it is the learners who should own and wield them for their own learning and growth.

While we are now clearer about the connection between evaluation indicators, types of knowledge and skills, learning outcomes and the need to use Bloom’s taxonomy in a holistic fashion, it is time to fast-forward to the end of the programme to look at assessment.
2. START WITH LEARNING OUTCOMES... AND ASSESSMENT

What we assess is another way of saying “this is important, this is what matters”. Learners spend their time trying to learn what will be assessed. As we consider how we might design blended learning so that work drives pedagogy and pedagogy drives technology, we will also need to figure out the appropriate approach for assessing learners.

WORK FOCUSED
The two main points of assessment are generally to:

▸ see the extent that learners’ performance meets the standards expected of them to do their work (which should align to the outcomes of the programme and, often, certification); and

▸ provide opportunities through non-formal (structured but not used for grading) or in-formal (ad-hoc, unstructured) feedback from educators, peers, and colleagues so that learners and educators understand where their strengths and weaknesses are to direct further effort and attention.

An important third element, that is rarely considered, is to design assessment that helps learners assess their own work and develop a reflexive sense of whether they think their performance meets the standards and what to do about it. In other words, it allows learners to instinctively know during and after the activity where they are in terms of competence. This latter element is about equipping individuals with the ability to make judgements so they can
continue to improve and be aware of their performance even after a formal course is completed.

In order to address these three points it is useful to think about assessment being outcome-oriented and designed for learning. Below are some questions that we may want to consider:

**OUTCOME ORIENTED**
- What is the assessment being used for?
  - For example, to:
    - ascertain performance or competence
    - support learning
    - foster judgement
    - support development of being a (cook, leader, trainer etc.)
    - determine pay
    - promote
- Are the purposes of the assessment activities transparent to learners, educators, and supervisors?
- Have we designed the assessment to be holistic or are the elements broken down to tasks (thus limiting opportunities for learners to understand the big picture, the practices of the vocation/profession and enabling learners to see relationships and connections)?
- Are we assessing theory and practice together?
- Do the learning outcomes and assessment criteria reflect the practices of real work (are they valid)?
- Can we design the assessment activities to be embedded in real work activities?

**DESIGNED FOR LEARNING**
- Have we designed structured feedback loops into the programme?
- Are educators and supervisors equipped to provide meaningful feedback?
- Are learners empowered to make judgements about their own work?
- Have the assessments been designed to actively engage learners in learning?

It is important to consider these questions to figure out whether the assessment design is doing justice to the learning outcomes and desired work performance, but, perhaps more importantly, whether it is really helping learners learn, become engaged, and take some ownership of improving performance rather than just trying to pass a test.

This means we need to make hard decisions that include assessing not just technical competence, but the qualities we want learners to work towards through the learning activities / programme. We discussed this facet of learning under the ‘Learning Outcomes’ section.

So start with the end in mind. If it is important for learners to handle customers professionally and know their products, these two things work together, they are not separate from each other. We need to assess authentic experience. Think about how the vocation works beyond tasks. Think about how conceptual, procedural and dispositional knowledge and work skills intertwine and combine to become performance.

We are often concerned with validity and reliability, but if we assess authentic experiences the old ways of thinking about validity where everything is the same cannot apply because every work context is different.
So what does that mean for letting work drive assessment? It means that we can think beyond tests and use strategies such as:

- assessing during real or simulated (for safety) work situations
- practice evaluation exercises with learners evaluating their decision processes within a particular situation during a conversation with a supervisor
- 360 reviews
- on-the-spot feedback using constructive language and rich descriptions of expectations

It also means that we as learning designers and educators undertake a different role. In blended contexts, peers and supervisors play important roles in formative assessment, and self-assessment also needs to be practiced. Blended assessment also begs us as educators to step back and take a more strategic, holistic role where we draw together, support, and link information, comments, and artefacts for and from the learners, supervisors and peers.

Letting work drive pedagogy begs us to consider a different role for assessment. We need to go beyond assessment of task-based competences and technical skills towards assessment of and for knowledge, skills, cognitive abilities (e.g. analysis), personal attributes, and interactional abilities as all are exercised in the process of applying knowledge and skills basic to the vocation or profession, and should be aligned to the programme goals.

Blended assessment driven by work is no longer about a grade or mark. It is beyond competent or not yet competent (although this remains important). Blended assessment provides opportunities to use all our senses to understand how our learners engage with and meet the standards of professional or vocational practice.

Take a look at Annex B for a list of possible assessment methods that are relevant for a blended learning curriculum.
3. ALSO CONSIDER LEARNER PROFILE

Besides desired organisational outcomes translated into learning outcomes and ways of assessment to ascertain real work competence, the third factor to consider in designing a blended learning programme is the most important stakeholder – the workplace learner.

A learner profile is a rough persona of the person who is likely to come through the programme we are designing. Smith and Ragan (2005) outline 4 categories of learner characteristics that can be used in a target audience description (see Fig. 4):

**Cognitive**
- General characteristics
  - Aptitudes
  - Language level
  - Cognitive processing styles
  - General world knowledge
  - Specific prior knowledge
  - Novice-expert scale

**Affective**
- Interests
- General motivation
- Motivations to learn
- Attitude toward subject matter
- Attitude toward learning
- Academic self-concept
- Anxiety level
- Beliefs
- Attribution of success (i.e. locus of control – external or internal)

**Social**
- Relationships to peers
- Feelings toward authority
- Tendencies toward cooperation or competition
- Socio-economic background
- Role models

**Physiological**
- Sensory perception (5 senses)
- General health
- Age

Figure 4. Learner’s Profile

Depending on the instructional task, some characteristics may be more critical than others. When designing any programme, it is unlikely that all factors will be included in the learner analysis. The trick then is to home in on those that are important to take note. For example, academic self-concept is an important consideration when the target learners are likely not to be highly-educated, and hence might be anxious about tasks related to reading and writing.
IMPLICATIONS OF LEARNER PROFILE FOR DESIGN

Regardless of the mode of learning (classroom, workplace or through the use of technology), a careful consideration of the general characteristics of the target audience will help the designer determine what instructional strategies to employ. Following is a beginning list of instructional strategy factors that are directly related to learner characteristics:

- **Speed of presentation (pace)**
  Novice learners encounter new learning for the first time. They will need to process what is being presented, and fit that into their existing understanding of the topic. This takes time, so employing solely direct instruction (e.g., lectures) does not allow the learners enough processing time. In such instances, interactive strategies like discussion will give them time and space to process and internalise new information and increase retention.

- **Number of successful experiences learners should have in practice**
  Success comes from opportunities for practice and good feedback. Feedback can come from multiple sources – self, peers, supervisors, educators, as well as the results of practice. The more practice is built into a blended programme, the more likely that competence will be achieved at the end. Thus, building in time for reflection and giving and receiving feedback is important to help learners make their own meaning of what they are learning.

- **Ensure relevance**
  One crucial adult learning principle states that adults need to see the relevance of what they are learning. Merely stating learning outcomes from the onset does not suffice. Weaving in clear messages on the relevance of what they are learning from the point of view of the learners will help them connect what is to come to how it will
be useful to them. This ideally is done not just at the beginning of any learning, but throughout the whole learning process.

**Techniques for gaining and focusing attention and the frequency of use of these techniques**

The human brain craves novelty. New experiences increases the alertness of the learner, so a good curriculum should go beyond the ‘I-tell-you-then-you-do’ cycle, allowing learners at appropriate junctures to immerse in unique experiences that heighten their senses and bring their learning to another level (eg. getting front-of-house staff in the restaurant to try out kitchen duties for half-a-day to understand the whole chain of operations).

**Context of examples and practice items**

Adults seek practicality in what they learn. Examples, in the form of work samples, stories or demonstrations help to make learning tangible and easily understood. These must be carefully done depending on the learner characteristics (eg. language ability, cultural sensitivities, general confidence level).

**Amount of structure and organisation**

Novice learners typically appreciate a more structured approach to learning something new. They are at a stage where they are uncomfortable with ambiguity, and cannot yet join the dots between seemingly disparate topics. A good curriculum developer recognises this through including more structure at the beginning, and helps learners to connect and consolidate the learning at an appropriate juncture in the whole learning process.

**Medium / media of instruction**

The learner profile and learning outcomes determine what medium of instruction is most appropriate (technology-enabled, face-to-face, workplace-driven). For example, learners who are naturally more social in nature (eg. those working in front-line occupations) typically learn better face-to-face and in groups.

**Level of concreteness / abstraction**

Highly cognitive learners are typically more able to process more abstract learning content (eg. scientific principles) for a sustained period of time. However, all adult learners at some point need to be led to connect whatever abstract material to real-life application. Being mindful of the learners’ characteristics will help the curriculum developer decide on the appropriate level of concreteness / abstraction.

**Grouping of learners**

It is important to consider if the learners accessing the curriculum are homogeneous or mixed-ability. Mixed-ability groups will require different strategies in learning (eg. group activities where the ‘experts’ can teach/demonstrate to the novices).

**Size of instructional chunks**

Chunking refers to the strategy of breaking down information into bite-sized pieces so the brain can digest new information more easily. The cognitive and language ability of the learners, as well as the familiarity of the learners with the topic, are crucial determinants of how big each instructional chunk should be.
BLENDING CLASSROOM WITH WORK AND TECHNOLOGY: HOW TO DESIGN A BLENDED CURRICULUM

- **Response mode (eg. written, oral, demonstration)**
  Checking for understanding and ongoing determination of progressive competency are key instructional activities in any curriculum. How learners respond in these activities (eg. verbally, through writing, through demonstrating) is very much dependent on the learning outcomes as well as the learners characteristics.

- **Number and difficulty of examples and practice**
  If the knowledge or skills to be acquired are complex in nature, it is necessary to build in more examples and opportunities for practice, preferably from easy to more difficult.

- **Type of feedback given after practice**
  More important than the practice itself is the feedback given. If the task is relatively simple and safe, peer feedback can be used to create more opportunities for simultaneous practices. If the task is more complex or dangerous (eg. safety training), it is advisable to engage an expert to monitor and give precise feedback.

- **Level of learner control**
  When the learners are generally motivated from the onset of the programme, it is useful to empower them to take charge of their own learning through self-directed instruction. However, if learners are less motivated for certain reasons (eg. overworked, anxious, forced to attend), it is advisable for the curriculum developer to build in specific activities at the beginning to build confidence and motivation before releasing the control to learners once they are more self-directed.

- **Reading level / Vocabulary and terminology used**
  Materials used in the programme must take into account the learners’ linguistic and cognitive abilities. For learners who are not academically inclined, it is useful to be as visual as possible, and to keep text to a minimum. If new terminology needs to be introduced, it will be good to help learners remember them (eg. through the use of mnemonics).

**ASSESSING LEARNING REQUIREMENTS**
After establishing learner characteristics and the programme scope, the curriculum and instructional designer can then begin the following:

- **Analyse the requirements of the learning task** (skills, knowledge, attitudes)
- **Analyse learner’s ability** to complete the tasks, including the predictable demands on and limitations of memory
- **Select an appropriate learning strategy** – decide what goes into classroom learning, what should be done at the workplace, and what can be supported by technology
- **Apply selected strategy**
- **Evaluate** the effectiveness of the strategy used
- **Revise** as required

What we have seen up to this point is a clear illustration that we need to place the learner at the heart of any blended learning curriculum.
This is where it gets really interesting. The tendency is for learning designers/organisations to see their learners/employees as a homogeneous group identified by their job role (e.g., cashiers, graphic designers, store supervisors). This is the picture we hold in our heads when we ask the question - “What do they need to learn?” - ‘they’ being a group of identical people carrying out a specific work task. The truth, when you think about it, is a lot more layered and complex. We might have 2 cashiers in a same supermarket. The first one could be a bright 18-year-old polytechnic student on a part-time job, wanting to earn some income and choosing a job near home to cut down travelling time and costs. The second cashier could be a Chinese-educated 45-year-old housewife returning to work to supplement family income. Both their learning preferences, life experiences, motivations and willingness to learn could be very different.

So does this mean that a learner profile is in reality pretty useless? Quite the contrary!

Knowing our learner profile is really important, as it guides our decisions in content selection, design of learning processes and materials, and assessment methods, as we have just examined. The important point to remember, as shown in the cashiers’ example is to warn against generalising across our target audience (as it is a convenient thing to do) but to always remind ourselves that the learner profile serves a guide and nothing more. The truth is, the reality when the programme hits the ground could (and often would) be different than what we had imagined, and we will need to be prepared to adjust on the go.

Now that we have discussed learning outcomes, assessment and learner’s profile, it is time for us to get into the action and start blending!
As we move into blended learning, there is a tendency to think of moving everything out of the classroom and into the online and work spaces. That would be a mistake. The classroom offers a conducive place for learning to take place. It is a controlled environment where learners have ‘permission’, both from themselves and their employers, to do some serious learning. We cannot underestimate the importance of the need to ‘prepare’ ourselves to learn, and this typically comes more readily in a formal classroom setting.

However, as we have shared earlier, in the world of adult learning, not everything is best learnt in a classroom. We can teach lathe machine operators about the different parts of a lathe machine in a classroom, but they will not learn how to operate it until they have done it themselves with some guidance and feedback (unless of course we bring the lathe machine into the classroom!)

So what types of learning are suitable for the classroom?

► **Non-routine procedures / situations**
   An important part of learning to perform for work is in being able to handle contingencies when they happen (eg. a machine malfunction, or dealing with an angry customer). Unfortunately, we have no control over when that happens in the real workplace, and we also do not want to wait for that to happen before we begin learning about what to do! Therefore the classroom is a great setting for us to be intentional about helping our learners to learn how to deal with non-routine procedures and situations, perhaps through the use of instructional methods like simulations, case studies, problem solving and role-play.

► **Learning from practice and mistakes in a safe environment**
   Related to the above, the classroom offers a safe setting for learners, especially novices, to apply new knowledge and practice new skills without fear of making mistakes, and with intentional support in the form of feedback and coaching, either from the educators or their peers. Building confidence is key to their journey towards competence, so the classroom context can serve as the place where they get their first boost off the ground. Relevant instructional methods include drill and practice, peer practice and role-play.

► **Conceptual knowledge in a controlled way**
   Outside the classroom, many of us have experienced struggling to explain a complex concept to someone using only verbal communication. We know how everything is related to everything else, but it can be difficult to help the other person join the dots, without the help of learning aids such as diagrams, analogies, videos or other instructional materials. This is where being in a controlled environment such as the classroom comes in handy. The
developer and the facilitator has an opportunity to deconstruct knowledge in a structured manner to help the learners put everything together in a scaffolded manner, in a protected time and space, and with the help of appropriate resources, through methods such as concept formation, discussions, demonstrations and didactic questioning. This might be challenging to do in the hustle and bustle of the workplace, or through technology.

► Learning in a community, from each other
Research has shown consistently that adults prefer to learn together than alone. At the workplace, it is often hard to make this happen, for reasons such as lack of space and scheduling issues. Online learning is possible with the prevalence and ease of use of smartphones and social media, but the classroom remains a low-cost, effective and visceral setting for people to learn together. It’s true that nothing beats face-to-face interactions sometimes. With the use of instructional methods such as debates, brainstorming, discussions, peer teaching, games and field trips, there is an opportunity for a community of adults to learn from each other’s experiences and opinions and construct meaning and understanding together.

► When the workplace is too noisy or too cramped
Learning at an individual level happens every day at the workplace. That can and should be harnessed. However, not all workplaces are conducive for learning from others. For example, manufacturing shop floors can be hot, noisy and dangerous, or retail shops can be cramped and crowded. Facilitating learning in such an
environment might not be ideal, no matter how authentic it is. In such cases, it might be more effective to stick to the classroom for learning that is not workplace-dependent (eg. conceptual knowledge).

 ► **Learning just before a real work task is about to happen**

 A key adult learning principle is that adults are motivated to learn something that they feel is useful and applicable, that is just-in-time rather than just-in-case. If a group of newly-promoted store managers are asked to attend a classroom session on how to write monthly reports, chances are they will all be keen to attend. Matching what needs to be done at work to learning it in a classroom setting is a good way to increase learner motivation! Relevant instructional methods include experiments, field trips and case studies.

 By now, we have established the different types of learning that are suitable for the classroom setting, and suggested some instructional methods to go along to facilitate that learning. Choosing the right instructional methods for the different types of knowledge and skills is important.

 Typically, instructional methods for the classroom can be categorised into five categories (see Fig. 5):

 ► **Direct Instruction** is mainly directed by the trainer, and is usually used for transmitting of information, or developing step-by-step skills. Due to their unidirectional nature, the methods here need to be complemented with other less trainer-directed methods for effective learning to take place.

 ► **Indirect instruction** is more learner-centric compared to direct instruction. Although still controlled by the trainer (eg. in setting up a problem or a case study), indirect instruction allows the learner space to construct meaning and understanding from engaging with the instructional task.

 ► **Interactive instruction** allows for learning and meaning to be constructed socially. This is particularly useful when learners come into the classroom with prior knowledge and experience with the topic at hand. These instructional methods allow the learning community to tap on each other to take learning to another level which can be more than what the adult educator knows.

 ► **Experiential learning** operates on the principle that ‘experience is the best teacher’. Through multi-sensory engagement, our chances of deep and lasting learning go up significantly compared to methods that rely only on listening, reading and writing.

 ► **Independent learning** passes the onus of learning to the individual learner, in requiring him or her to take charge of his or her own learning. These methods are useful not just to foster attributes of ownership, self-reliance and self-improvement, but can also be carried out in a group for learners to learn to work together. Independent learning is especially useful for learning tasks that are manageable and pitched appropriately.

 For video links and notes on the instructional methods outlined in Figure 5, take a look at Annex C.
Instructional Methods

Interactive Instruction
- Discussion
- Debates
- Peer Practice
- Brainstorming
- Peer Teaching

Indirect Instruction
- Problem Solving
- Case Studies
- Concept Formation

Direct Instruction
- Drill and Practice
- Didactic Questions
- Demonstrations/Modelling
- Lecture

Independent Learning
- Independent Reading
- Research Project

Experiential Learning
- Field Trips
- Experiments
- Role Play
- Simulations
- Games

Figure 5. Instructional Methods
Now that we know what goes into the classroom, what about the workplace? The workplace is the most authentic setting for learning, as it is where work and learning happen together, very often at the same time. Learning that is closely aligned to work helps everyone:

- **Individual** – learning leads to better performance, which leads to increased competence, confidence and engagement with the job. This has potentially positive implications on individual reward and recognition later as well.

- **Organisation** – when an employee learns to perform well at work, the organisation stands to gain not just in concrete business outcomes such as sales or satisfied customers, but also aspects such as talent retention, productivity and competitive edge.

So what are the considerations to help us decide what learning should go into the workplace?

- **Opportunity for learner to take responsibility of learning**
  At the end of the day, the intended outcome of any learning programme is for an individual to achieve competence in doing something. For this to happen, the individual needs to take charge of his or her own learning. The workplace is the most natural setting for this to happen. For example, coupled with just-in-time classroom learning in the earlier example of newly promoted store managers who are learning how to write monthly reports, these learners then go back to the workplace and are instructed to write their first report to submit as part of their assignment for the programme. There is a high chance that these learners will do it!

- **Authentic tasks to apply and consolidate knowledge**
  Similar to the earlier point, the only difference is that while what we learn in the classroom is usually nicely cut up, organised and presented, what we are confronted with at the workplace is unfortunately unlikely to be so neat and compartmentalised. Workplace tasks usually need us to activate different skills and knowledge at the same time, while managing all the other things that happen at work. In the earlier example, writing a monthly report will likely require the new managers to not only combine their language and numeracy skills, but also in real practice require them to liaise with actual stakeholders in the process of putting together and submitting the report, within a certain timeline, and in a way that he or she can manage within the multiple daily job tasks of a manager. Hence if we know that the tasks that our learners do at work are multi-faceted and best learnt in the midst of day-to-day work activities, it is good to include the workplace as part of the learning process.
Structured opportunities for observation, practice and feedback
Learning is incomplete without feedback – what was done well, what mistakes were made, how to do it better. While we can give feedback in the classroom, nothing beats feedback at the workplace by the people who know the work best. For skills and knowledge that take repeated practice to acquire (e.g. floral arrangement), it is appropriate to build in guided learning at the workplace, so that the learner gets to engage in real work that is supported by experienced co-workers or facilitators who are well-placed to observe and give feedback so that self-reflection, immediate improvement and new learning can happen. Of course, this means that the learning designer has to work together with the relevant workplace stakeholders to build in some form of structure for this to happen, especially for assessment!

Building confidence where the action is
One of the most important links between learning and performance is confidence. Confidence is highly subjective and individualised. Often, we make the assumption that just because knowledge has been imparted and our learners have had a chance to apply what they learnt in class, they are now work-ready. This feeling of readiness unfortunately resides with the individual, and the same learning process undertaken by two different learners can somehow still result in one feeling confident and the other not. The sure-fire way then is to get down to the real work itself. It is the only way. For the anxious learner, it might feel like being thrown into the deep end, so that’s where support in the form of guidance and feedback at work comes in.

Assessment by those who matter most
Let’s be honest here. The adult educator in the classroom plays an important role in teaching and learning (especially when accreditation is involved), but is unlikely to be the learner’s paymaster. The feedback that is often the most important for learners is the one from their supervisors or bosses on whether they have performed well or not. If we design learning that allows the learner to build knowledge, own their learning, get authentic practice, improve and gain confidence at work, it becomes that much easier to introduce workplace assessment at the workplace by the people who matter most to them.

WORK-BASED AND WORKPLACE LEARNING
Earlier, we mentioned that there are mainly two types of learning at the workplace – work-based learning that is primarily driven by an educational institution, and workplace learning that is driven by the organisation and individuals.

The work-based learning is the easier bit. As curriculum and instructional designers, we can intentionally design work-based learning activities into the blended learning curriculum. Such structured activities include:

- Workplace learning plan
- Review of work done by learners at the workplace
- Gathering of feedback from workplace stakeholders
- Workplace observation, coaching and feedback by trainers
- Workplace assessment (where possible)
The good news is that if we can get this part going, it will greatly benefit our learners. The tough part is to get it accepted and running in the first place. No matter how true the intentions are in introducing work-based components in learning, some organisations will view it as an added imposition on their day-to-day business operations. In such cases, it would be better to build on existing workplace learning practices in the organisation, with the aim of making the learning more effective. This requires some effort in finding out from the organisation.

Common methods of workplace learning according to Lucas and Spencer (2014) include those which involve:

- learning from experts
- deliberate practice
- hands-on learning
- feedback which promotes learning
- real-world problem solving
- one-to-one coaching and mentoring
- competing against the clock
- seamless blending of online and face-to-face learning.

Table 2 further outlines specific learning methods which are typically used at work every day. Specific details on each method are found in Annex D. You can also go to IAL’s Learning@Work website (learningatwork.ial.edu.sg) for videos, guides and critical success factors for each of the following methods.
How do we know which workplace learning method is appropriate for who, what, where and when?

The answer is "It depends". There is no model answer. The choice of workplace learning method depends on the following:

- **Purpose of the learning and the learning outcomes**
  - Declarative or procedural knowledge (e.g. product, process, problem solving)
  - Dispositional knowledge (e.g. integrity, teamwork)
  - Skills (e.g. operating machine/system)

Some methods lend themselves readily to more skills and performance-based type of learning (e.g. *workplace demonstration, shadowing*), others for building of declarative or procedural knowledge (e.g. *using diagrams and models*) and yet others for picking up desirable dispositions and attitudes for the job role (e.g. *coaching, mentoring, feedback*).

- **Learner profile**
  - Language proficiency
  - Preferred mode of learning
  - Learner’s disposition towards learning (e.g. ability to learn, attitude towards learning, perceived benefits etc)

It is useful to consider who our targeted learners are when choosing the appropriate method. For some, feedback from peers and supervisors and self-reflection can be very useful. For others who prefer more hands-on learning, use methods like *demonstrations, diagrams, models* and *empowerment*. If the team dynamic is good, we can employ strategies
like *setting a challenge, teaching others* and *meetings* to tap on collective wisdom.

**Affordances at the workplace**
- Organisation of work
- Structure of the workplace (e.g. reporting structure, department functions)
- Resources available at the workplace (e.g. machinery, time, space, job aids)
- Use of technology for learning and work purposes
- Expert guidance available
- Support from workplace trainers
- Opportunities for inexperienced workers to learn
- Structure for rewarding proficiency (e.g. career advancement, recognition, ‘stretch assignments’)

What the workplace has is a key consideration in the selection of workplace learning methods to use. If the organisation is open to new ways of recognising and rewarding their employees, *goal setting, workplace coaching, mentoring* and *assigning of buddies* can work hand-in-hand with the right incentivisation in place. If the work is highly complex and specialized, identifying right and willing sources of expertise and sharing these *tricks of the trade, mnemonics* through *spaces for sharing* will be useful in quickly raising everyone’s performance levels. If such skills can only be acquired over a longer period of repeated practice, it is good to carefully *scaffold* and *sequence learning tasks*, before eventually *fading* and *gradually releasing responsibility* when the learners are more ready and competent. When expert guidance is available in the organisation, we can tap on these experts to guide the novices through *guided reflection, trial and error* and *active noticing.*

**Organisational culture**
- Learning culture (e.g. just-in-time learning, knowledge sharing)
- Culture of innovation
- Level of tolerance towards mistakes

Is the workplace culture one that is open, empowering and tolerant of mistakes, or is it one that is governed by rules and fear? Does it promote *teamwork, job rotation, trial and error* and *reflection,* and reward staff who take the initiative to do their own *research* and *problem-solve* at work? Do the staff see each other as competitors or collaborators, as this will influence our decision in creating *communities of practice?*

**One final word...**
Before we decide on certain methods, we need to be mindful that sometimes things might not fit so well. For example, the ideal way to induct a new restaurant employee with no prior experience would be to sequence the tasks over time (from hosting to serving water to handling hot food and beverages). However, other factors might jeopardize this sequencing. For example, if the employee lacks basic language proficiency (and so cannot host patrons) or if the organisation is severely short-handed in manpower (no affordance), it will be difficult to sequence the learning in a structured way. In such situations, it will be wise to engage the right stakeholders, get their input and support in the eventual implementation and sustained adoption of workplace learning.
Finally, we look at technology. It is not a coincidence we place technology as the last consideration. Too often, we have seen technology being placed as the main driver of learning, only to come up short eventually in terms of outcomes that we are looking for. True, people all over the world have come to use technology in their daily lives. This includes learning (e.g. reading the news, watching a YouTube video to try out a new recipe, or to find information that we need to do our work). Much of this however is driven by an individual in his own time and space, dictated by considerations of his own. In the use of technology for learning, we might ask questions like:

- Is there a faster, cheaper, more effective, non-technical alternative for me to learn this?
- How much time do I have?
- Am I willing to make time for this?
- What are other competing priorities for my time?
- What technologies do I know and have access to?
- How do they serve my needs?
- How pressing is it for me to learn new technologies?
- Am I willing and ready to learn new things at this point?
- Who can help me if I face difficulty?

The reality is that in a busy world, it is not realistic to expect working adults to devote long periods of time in a focused manner to learn something with only the help of technology, no matter how compelling the reason for learning is.

Don’t get us wrong. We are not saying that all learning should happen only in the classroom or workplace. We have seen how the Internet, mobile phones and tablets have drastically changed the way we search for, access, retain and use information in every aspect of our lives. These same advances have also changed the way we communicate with others, beyond the usual face-to-face interactions. Such new behaviours offer plenty of new opportunities in augmenting learning.

But here’s the catch. Everyone responds differently to technology, as we have discussed earlier. To design learning that is supported by technology in a way that the learners would actually do it, we cannot start with the technology. Hence the underlying principle in this guide – “Let work drive the pedagogy, let pedagogy drive the technology”. When we have established what the blended programme is seeking to achieve both for the organisation and the individual, and build in the work elements in
the learning, only then do we think of where technology can come in to support the whole process.

From the learning perspective, technology can support learning in the following areas:

▶ **Conceptual knowledge**
The highest motivation to learn comes at the exact moment when we need to learn, usually when we are setting out on a task (eg. drawing up a new business proposal). Perhaps no one is there to help, so the use of technology is well-placed to offer just-in-time, bite-sized learning that we are looking for. This can come in the form of a nice in-house online guide to proposal writing (especially if it’s something commonly done), or something as simple as a shared folder with samples of past business proposals.

Other forms of conceptual knowledge could be related to standard and accepted understandings that are crucial for certain types of work (eg. engineering or financial concepts) which could be self-learnt with the help of well-designed and appropriate online learning aids.

▶ **Procedural knowledge**
To be able to do something, we must know how to go about doing it. We could have learnt to do it once before, but the problem arises when the task is one that we carry out infrequently (eg. repairing a machine, using a particular software once a year).

This is where we can harness technology to help us in our learning and re-learning efforts. Demonstrations through videos or online learning aids can be created easily and shared on mobile platforms such as YouTube for timely and easy access.

▶ **Dispositional knowledge**
One of the best features of many technologies nowadays is its ability to connect people in an online setting. Social learning has never been easier with social media like Facebook, Whatsapp, Instagram and Twitter. These are widely adopted and easily accessed. With social learning comes the possibility of rich, diverse opinions and discussions anytime and anywhere.

Imagine a soft skills trainer posting in a social online platform a recent video in the news of a customer complaint handled poorly. He can invite comments and discussion from his learners without having to meet all of them. Of course, this is still all talk at this point, but this can be a useful start to prepare learners for the actual practice of skills eventually.

▶ **Skills development**
Some people are sceptical about how technology can be used to develop skills, but the truth is as some technologies become increasingly smaller, portable, well-adopted and cheaper, the possibilities of using them in some way to help us acquire new skills are expanding. Take GoPro, the small hi-definition camera that can be mounted on a helmet to take hi-quality videos from a person’s perspective. Currently, it is commonly used in sports (like snowboarding for analysis of things like technique), but it can easily be used to capture how one learns a new skill like carpentry or laboratory work. The key to improvement in skill development is reflection and feedback, and technology can facilitate that by capturing processes for review later. This can be in the form of taking photographs of completed works, taking videos of a creating process, and then posting these work artefacts online for feedback and coaching by others.
Other more costly examples of using technology for learning skills would be the use of simulators (e.g., aviation, crane operation, driving of buses). This requires a greater investment of development time, money and effort, but the benefits can be substantial.

**CHARACTERISTICS OF SUCCESSFUL TECHNOLOGIES IN LEARNING**

So now we have seen how technology can support learning. Which technologies should we choose then? Here are some important characteristics to consider:

- minimal disruption to work activities
- available in the organisation
- commonly used by individual learners
- established and familiar
- easy to use
- simple
- free
- mobile-enabled
- simulation of actual work practices
- useful for assessment purposes

Really they are self-explanatory! One more thing to note though is to consider the context and environment within which the technology will be used. We might have a well-designed, informative and easy-to-use mobile app on tablets issued by the store for sales assistants to use when assisting with customers’ enquiries, but if the assistants find it difficult to hold the tablet and gather products to show customers at the same time, chances are they will not use the app, no wonder how wonderful it is!

So we must put ourselves in the shoes of the learner and experience what it is like to use the technology.
THE SAMR MODEL

In considering how technology can be used to support learning, the SAMR Model is an elegant model to use. Puente-Puente (2006) developed the SAMR model to help educators integrate technology into teaching and learning. The model aims to enable educators to design, develop, and integrate digital learning experiences that utilise technology to transform learning experiences that lead to high levels of achievement for learners and meet learning outcomes. The following (Fig. 6) is a brief explanation about each of the stages of the SAMR model, with an example of how Google Drive can be used in blended learning.

**Figure 6. The SAMR Model**

Although as designers we would love for all the technologies used to be in the Redefinition category, the SAMR model is not a grading system to assess how great the technology used is. Granted, if technology is used merely to replace an existing non-technological process or content with no improvement (Substitution), questions will be asked about why we are expending effort and perhaps money on that. However, the simple answer could be related to cost or efficiency (eg. reducing manual effort in storage and physical space needed in the case of the example of submitting assignments through Google Drive instead of hard copies). Yet again, we need to think about the context within which the technology is used. Therefore, there is no need to shoot for Redefinition every time when we think about the use of technology of learning. Every stage has its time and place!
WHAT TECHNOLOGIES CAN WE USE?

Naturally, the last question we come to is – so what are some examples of technologies that we can use? The first answer would be – **whatever the organisation is already using!** And by using, we mean already adopted widely, rather than white elephants that are there on paper but have little uptake.

In the absence of technologies that are already in use, we can explore others. We know in all honesty that technologies come and go. Some however, have stood the test of time, for reasons such as **simplicity, user-friendliness, popularity** and **functionality**.

Jane Hart, an established practitioner in field of workplace and technology-enabled learning, published on her blog an annual crowdsourced list of Top 100 Tools for Learning ([http://c4lpt.co.uk/top100tools/](http://c4lpt.co.uk/top100tools/)) (Hart, 2016), with examples from real users for learning. Many of them fit the characteristics we discussed earlier. Here’s a snapshot of the Top 30 tools for 2015, many of which we will find familiar but might not have thought of as a tool for learning (See Table 3).

As you might have gathered by now, there is no silver bullet in identifying one best technology to use in learning. Everything is circumstantial and contextual, dependent on so many human, organisational and work factors. However, if we strip away all the jazz and hype typically associated with technology, the vital ingredients for any successful use of technology is one that combines purposefulness, creativity and practicality!

| 1. Twitter                        |
| 2. YouTube                       |
| 3. Google Search                 |
| 4. Google Docs/Drive             |
| 5. PowerPoint                    |
| 6. Dropbox                       |
| 7. Facebook                      |
| 8. WordPress                     |
| 9. Skype                         |
| 10. Evernote                     |
| 11. Prezi                        |
| 13. Pinterest                    |
| 14. LinkedIn                     |
| 15. Moodle                       |
| 16. iPad and Apps                |
| 17. Kahoot                       |
| 18. Blogger                      |
| 19. PowToon                      |
| 20. Slideshare                   |
| 21. WhatsApp                     |
| 22. Google Chrome & Apps         |
| 23. Google Hangouts              |
| 24. Snagit                       |
| 25. Audacity                     |
| 26. Articulate Storyline         |
| 27. Screencast-O-matic           |
| 28. Yammer                       |
| 29. Padlet                       |
| 30. Word                         |

...WHAT LEARNING TOOLS CAN CUT ACROSS ALL THE SPACES?

Up to this point in time, we have been talking about classroom, workplace and technology separately. In reality, the distinctions are not so clear. When we are in the classroom, we think about how our learning can be applied at work. When we are at work, we sometimes use technology to help us, and sometimes look back to what we have learnt in the classroom for help. Recognising and accepting that this is possible (even probable) human behaviour can open up new possibilities for the blended learning designer. So what learning tools can we capitalise on that can cut across all spaces?

Bound and Lee (2014) introduced what is called Pedagogical Boundary Tools (PBTs) which suit this purpose. PBTs are essentially learning activities (inclusive of making use of online/mobile platforms) designed to facilitate and leverage on crossing the boundaries between the classroom and work over time, and vice versa in order to make the most of each environment (see Figure 7). PBTs include for example projects (whether initiated through work or part of class requirements), reflective journals, log books, photos and more, most of which can contribute to a portfolio.

Figure 7: Pedagogical Boundary Tools

The following tables provide generic examples of PBTs and ways in which they could be used to enhance performance. **Table 4 assumes the learning initiatives arising from the workplace** and **Table 5 assumes the learning initiatives arising from the classroom**. Many of the tools can be administered with the help of appropriate technologies.
<table>
<thead>
<tr>
<th>From Workplace…</th>
<th>The space in between</th>
<th>…to Classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Possible actions of learner</strong></td>
<td><strong>Possible actions of class facilitator or supporting other</strong></td>
<td><strong>Dialogue</strong></td>
</tr>
<tr>
<td><strong>Questioning</strong></td>
<td>Journal (Text, Photos and Videos)</td>
<td>Work-based project</td>
</tr>
<tr>
<td>Example:</td>
<td>Reflecting on and processing different experiences</td>
<td>Suggestions and examples of how to document</td>
</tr>
<tr>
<td>Trainee chef learning the type of questions they need to ask and observations they need to make as they move across different kitchens and teams</td>
<td>Documenting this learning in and out of work time</td>
<td>Learning about different work practices and workplaces from other learners</td>
</tr>
<tr>
<td><strong>Troubleshooting</strong></td>
<td>Journal (Text, Photos and Videos)</td>
<td>Peer learning through Networks</td>
</tr>
<tr>
<td>Noting recurring problems they encounter (e.g. how to influence key personnel, turning product knowledge into a sale, difficult personalities – ‘handling difficult people’, language to describe practices/processes)</td>
<td>Reflecting on and processing different experiences</td>
<td>Provide online space for sharing and/or documenting</td>
</tr>
<tr>
<td></td>
<td>Documenting this learning in and out of work time</td>
<td>Provide online space for class peers to make suggestions</td>
</tr>
<tr>
<td></td>
<td>Asking work peers</td>
<td>Facilitate the discussions and note required learning needs OR</td>
</tr>
<tr>
<td></td>
<td>Asking class peers</td>
<td><strong>Sharing experiences</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ask learners to think of examples before the next class session and be ready to share</td>
</tr>
<tr>
<td><strong>Troubleshooting</strong></td>
<td><strong>Troubleshooting</strong></td>
<td><strong>Dialogue</strong></td>
</tr>
<tr>
<td>Time management and prioritising may be difficult. Challenges, solutions and reflections are documented</td>
<td>Learner trials what was learnt in class</td>
<td>Facilitator sets up 1:1 sessions with learner at their work</td>
</tr>
<tr>
<td></td>
<td><strong>Dialogue</strong></td>
<td>Knowledge development working from examples to theory</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Autonomy/Building Confidence</strong></td>
<td><strong>Support from the workplace</strong></td>
<td><strong>Gradual release of responsibility</strong></td>
</tr>
<tr>
<td>Learning to operate a cash register and serve customers</td>
<td>Practice, including interaction with customers</td>
<td>Demonstrations</td>
</tr>
<tr>
<td></td>
<td>Problem-solve technical issues while serving customers</td>
<td>Provide support and guidance and gradually hand over responsibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Learning initiatives arising from the workplace
As we can see, there are many ways to support learning (some of which can be technological in nature) as the learner moves between the classroom and workplace.

All the above examples show isolated segments of blended learning possibilities. At the curriculum level, it is likely that the learner is going to move in and out of the different spaces in various ways. This is where the sequencing of curriculum comes in. We must establish at a broad level how the curriculum should unfold to achieve the desired outcomes. This will impact when the learner goes into the classroom, and when he or she goes to the workplace. See Annex E for different ways and considerations in sequencing a curriculum.
It has taken us a while to get here. Now for the piece to tie everything together.

Before we do that, let’s do a quick recap. We started with outcomes of the blended learning programme, using what the organisation wants to achieve to derive the learning outcomes for the programme. As we set about designing the programme, we have to find out as much about the organisation as possible, to surface possibilities and get buy-in into the programme. We look at who the learners are, how they work and learn and how they should and could be assessed. We then consider where the classroom, workplace and technology play a part in all of this. We try hard to ‘let work drive the pedagogy, let pedagogy drive the technology.’ But let’s be honest, that’s a lot of work, isn’t it? What if we lose the forest for the trees?

As we move amid the complexity and multiple activities, we need a compass to keep referring to if we feel that there are just too many things to juggle at the same time. A common response when it all gets too much is to ask,

“What are we trying to achieve here?”

Essentially what we are trying to achieve here is an outcomes-based curriculum. One theoretical underpinning of the outcomes-based curriculum is provided by Biggs (2003). He calls the model constructive alignment which he defines as “…coherence between assessment, teaching strategies and intended learning outcomes in an educational programme.” (McMahon & Thakore 2006). As currently articulated, the model is attributed to Biggs (2003) but the essentials were formulated by Tyler (1949) some 50 years earlier – and elaborated in the 1980s by Shuell (1986). At its most basic, the model requires alignment between the three key areas of the curriculum, namely, the intended learning outcomes, what the learner does in order to learn, and how the learner is assessed.

While the principles behind Biggs’ model are sound, it does appear that it is more suitable for a formal school curriculum, with the learner at the heart of it. This is perfectly fine. However, in our context of designing a blended curriculum for workplaces, we go back to the desired outcomes, expressed in the evaluation indicators, from which we derive the learning outcomes. With the evaluation indicators, we are adding an organisation-centric perspective, one which we deem important enough to drive the entire curriculum design. Hence, we propose a slightly different take on what constructive alignment means in blended learning for CET (see Figure 8).
Your eyes do not fool you. We have intentionally used the Penrose Triangle illusion to bring home the point that aligning a blended curriculum often appears to be an impossible task. Look at the following things we need to juggle:

![Figure 8. Constructive Alignment in a Blended Curriculum](image)

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Factors</th>
<th>Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise management</td>
<td>Pedagogy</td>
<td>Authentic learning</td>
</tr>
<tr>
<td>Learners</td>
<td>Technology</td>
<td>Authentic assessment</td>
</tr>
<tr>
<td>HR</td>
<td>Available time</td>
<td>Improved performance</td>
</tr>
<tr>
<td>Technology support</td>
<td>Available support</td>
<td>Buy-in</td>
</tr>
<tr>
<td>Trainers and assessors</td>
<td>Knowledge of enterprise</td>
<td>Sustainability</td>
</tr>
</tbody>
</table>

Put simply, there are many stakeholders, factors and expectations to manage. Aligning everything will take time and effort. In a dynamic organisational situation where things are constantly changing and evolving, it is a tall challenge to keep anything aligned for a sustained period of time. A new CEO comes in and suddenly the evaluation indicators don’t fly anymore, the company switches to a new content management system. Business units cannot afford to release staff for the classroom sessions, no matter how short. Workplace supervisors give feedback that the workplace assessment is interfering with the daily business operations. These things can happen. However, that should not stop us from seeking constructive alignment, no matter how elusive.
We must get the core design right. What are we trying to achieve here? What are the learner and organisational performance outcomes? What’s the best way to get there through learning? How should the learners learn? How should they be assessed? Then, we come one full circle and ask – have we achieved what we set out to achieve?

Everything really boils down to these same few questions, that we need to keep asking ourselves from start to end. Constantly answering them and acting on them is the only way to get closer and closer to constructive alignment.

On the next page (Figure 9), we see a little attempt in putting together a blended design based on the sample evaluation indicators seen earlier in this document. A quick disclaimer – it looks possibly constructively aligned on paper, but the real devil is in the execution!
Figure 9. A Possibly Constructively Aligned Blended Curriculum

- Conceptual Knowledge
  - Customer service
  - Product knowledge

- Procedural Knowledge
  - Greetings
  - Use of appropriate language
  - SOPs

- Dispositional Knowledge
  - Service mindset
  - Non-verbal language
  - Personal strengths

- Skills
  - Handling a customer
  - Handling products

**Increased confidence of staff in handling customer enquiries**

**What are the learner and organization performance outcomes?**

**Have we achieved what set out to achieve?**

**How should the learners learn?**

**What is the best way to achieve the outcomes through learning?**

**How should the learners be assessed?**

- **Technology-supported**
  - Read up online on products (features, forums)

- **Classroom supported by technology**
  - Online videos + role-play + feedback from adult educator

- **Workplace supported by technology**
  - Job aids (products) + peer teaching (creating videos) + feedback from supervisor + workplace assessment

- **Workplace assessment**
  - Assessment by supervisor as and when competency is demonstrated

What are the learner and organization performance outcomes?

- Increased confidence of staff in handling customer enquiries

**PRE-PROGRAMME SELF-ASSESSMENT (EVALUATION INDICATORS)**

**POST-PROGRAMME SELF-ASSESSMENT (EVALUATION INDICATORS)**
WRAPPING UP

For too long, we are used to thinking about training and learning in the same way we have experienced education in our formative schooling years. That has its place and will always remain so. At the same time, the world is changing. Fast. Businesses reinvent themselves all the time. Product shelf lives are getting shorter. New technologies are disrupting our way of life and the way we learn. Information is expanding at breakneck speed, but we have less time to consume and digest it. Performance is all that matters.

Against this backdrop, work drives everything. Sticking to the notion that classroom training and learning is the only and best way to learn to perform for a job will increasingly not go down well with employers and employees, who are coming up daily against new pressures and challenges of an ever-changing world. As we said at the beginning, the classroom is no longer enough. Let work drive the pedagogy, and we’ll have buy-in for learning. Let the pedagogy drive the technology, and suddenly there are many ways to learn.

Do not look at this as an impossibility, as a pipe dream. Yes, designing blended learning comes with challenges. But it offers new and exciting possibilities as well. We learning designers suddenly get a bigger playground, with more toys to play with! We get to exercise more creativity as we break out of the confines of the classroom! We now have the opportunity to see the outcomes all the way back to the workplace, instead of wondering if any of the training our learners have gone through amounts to anything the moment they leave the classroom.

Granted, all these require a paradigm shift across the whole CET sector. But first, it starts with us. Happy blending!
REFERENCES


ANNEXES
## BLOOM’S TAXONOMY

1. Cognitive Domain – the levels represent order of thinking from simple to complex

<table>
<thead>
<tr>
<th>Level</th>
<th>Category</th>
<th>Behaviour descriptions</th>
<th>Activities</th>
<th>Action Verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Knowledge</td>
<td>Recall Recognize or identify concepts</td>
<td>● Multiple-choice test</td>
<td>highlight, arrange, define, describe, label, list, memorise, relate, reproduce, select, state</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Recount facts, statistics</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Recall a process, rules, definitions, quote concept or state procedure</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Comprehension</td>
<td>Understand meaning, explain data in own words, interpret, translate</td>
<td>Explain or interpret meaning from a given scenario or case, summarise a text, formulate examples and metaphors on concepts or texts</td>
<td>explain, illustrate, paraphrase, example reiterate, critique, classify, summarise, translate, review, report, discuss, estimate, interpret, theorise, reference</td>
</tr>
<tr>
<td>3</td>
<td>Application</td>
<td>Use or apply knowledge in real life situations, translate knowledge into practice</td>
<td>Demonstrate, translate a theory into practical illustration, solve a problem, manage an activity</td>
<td>use, apply, discover, manage, execute, produce, change, implement, react, construct, respond, role-play, prepare</td>
</tr>
<tr>
<td>4</td>
<td>Analysis</td>
<td>Interpret elements, organizational principles, structure, construct internal relationships, quality, reliability of individual components</td>
<td>Compare components, functions of processes, deconstruct a methodology or process, make qualitative assessment of elements, relationships, values and effects, measure requirements or needs</td>
<td>analyse, break down, catalogue, compare, quantify, measure, test, examine, experiment, relate, graph, diagram, plot, extrapolate, value, divide</td>
</tr>
<tr>
<td>5</td>
<td>Synthesis</td>
<td>Develop new structures,</td>
<td>Develop plans or procedures, design</td>
<td>develop, plan, build, create, design, organize,</td>
</tr>
<tr>
<td>Level</td>
<td>Category</td>
<td>Behaviour descriptions</td>
<td>Activities</td>
<td>Action Verbs</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>------------------------</td>
<td>------------</td>
<td>--------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>systems, models,</td>
<td>solutions, integrate</td>
<td>revise, formulate,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>approaches,</td>
<td>concepts, resources,</td>
<td>propose, establish,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ideas; creative</td>
<td>ideas, parts; create</td>
<td>assemble, integrate,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>thinking,</td>
<td>teams or new</td>
<td>rearrange, modify</td>
</tr>
<tr>
<td></td>
<td></td>
<td>operations</td>
<td>approaches, write</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>protocols or</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>contingencies</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Evaluation</td>
<td>Assess effectiveness</td>
<td>Review strategic plans</td>
<td>review, justify, assess,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>of whole concepts,</td>
<td>in terms of efficacy,</td>
<td>present a case for,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>in relation to values,</td>
<td>return on investment</td>
<td>defend, report on,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>outputs, efficacy,</td>
<td>or cost-effectiveness,</td>
<td>investigate, direct,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>viability; critical</td>
<td>practicability; assess</td>
<td>appraise, argue, project-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>thinking,</td>
<td>sustainability; perform</td>
<td>manage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>strategic</td>
<td>a SWOT analysis;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>comparison and review;</td>
<td>produce a financial</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>judgment based on</td>
<td>justification for a</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>criteria</td>
<td>proposition; perform</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>a risk analysis with</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>recommendations and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>justifications</td>
<td></td>
</tr>
</tbody>
</table>
2. **Affective Domain – the levels reflect order of internalization of values**

<table>
<thead>
<tr>
<th>Level</th>
<th>Category</th>
<th>Behaviour descriptions</th>
<th>Activities</th>
<th>Action Verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Receive</td>
<td>open to experience and ideas, willing to hear</td>
<td>Attend to information, listen to adult educator, take interest in training, take notes, turn up punctually</td>
<td>ask, listen, focus, attend, take part, discuss, acknowledge, hear, be open to, retain, follow, concentrate, read, do, feel</td>
</tr>
<tr>
<td>2</td>
<td>Respond</td>
<td>react, get involved in, participate actively</td>
<td>Participate actively in sharing of views and discussion, interest in outcomes, enthusiasm for action, question and probe ideas, suggest interpretation</td>
<td>react, respond, seek clarification, interpret, clarify, provide references and examples, contribute, question, present, cite, become animated or excited, help team, write, perform</td>
</tr>
<tr>
<td>3</td>
<td>Value</td>
<td>attach values and express personal opinions</td>
<td>Decide worth and relevance of ideas, experiences; accept or commit to particular stance or action</td>
<td>argue, challenge, debate, refute, confront, justify, persuade, criticize</td>
</tr>
<tr>
<td>4</td>
<td>Organize or conceptualise values</td>
<td>reconcile internal conflicts; develop value system</td>
<td>Qualify and quantify personal views, state personal beliefs, position and reasons</td>
<td>build, develop, formulate, defend, modify, relate, prioritise, reconcile, contrast, arrange, compare</td>
</tr>
<tr>
<td>5</td>
<td>Internalize or characterize values</td>
<td>adopt belief system and philosophy</td>
<td>Demonstrate self-reliant; behave consistently with personal value set</td>
<td>act, display, influence, solve, practice</td>
</tr>
</tbody>
</table>
3. Psychomotor Domain – the levels reflect order of naturalization in tasks

<table>
<thead>
<tr>
<th>Level</th>
<th>Category</th>
<th>Behaviour descriptions</th>
<th>Activities</th>
<th>Action Verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Imitation</td>
<td>copy action of another, observe and replicate</td>
<td>Observe adult educator and repeat action, process or activity</td>
<td>copy, follow, replicate, repeat, adhere</td>
</tr>
<tr>
<td>2</td>
<td>Manipulation</td>
<td>Reproduce activity from instruction or memory</td>
<td>Carry out task from written or verbal instruction</td>
<td>re-create, build, perform, execute, implement</td>
</tr>
<tr>
<td>3</td>
<td>Precision</td>
<td>execute skill reliably, independent of help</td>
<td>Perform a task or activity with expertise and to high quality without assistance or instruction; able to demonstrate an activity to other learners</td>
<td>demonstrate, complete, show, perfect, calibrate, control</td>
</tr>
<tr>
<td>4</td>
<td>Articulation</td>
<td>adapt and integrate expertise to satisfy a non-standard objective automated, unconscious</td>
<td>Relate and combine associated activities to develop methods to meet varying, novel requirements</td>
<td>construct, solve, combine, coordinate, integrate, adapt, develop, formulate, modify, master</td>
</tr>
<tr>
<td>5</td>
<td>Naturalisation</td>
<td>automated, unconscious mastery of activity and related skills at strategic level</td>
<td>Define aim, approach and strategy for use of activities to meet strategic need</td>
<td>design, specify, manage, invent, project-manage</td>
</tr>
</tbody>
</table>

Adapted from 'Taxonomy of Educational Objectives' (Bloom et al, 1956)
## ASSESSMENT METHODS

<table>
<thead>
<tr>
<th>No</th>
<th>Assessment Method</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Real-Work Real-Time Activities</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Observation</td>
<td>Observation of a candidate performing at the workplace</td>
</tr>
<tr>
<td>2</td>
<td>Third-Party Reporting</td>
<td>There are some situations in which workplace evidence is required but it is not possible for the assessor to directly observe the candidate at work. In these instances, the evidence can be collected by an observer or a third party.</td>
</tr>
<tr>
<td></td>
<td>Structured Activities</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Demonstration</td>
<td>In situations where it is important for the candidate to demonstrate a work process, but are unable to do so due to issues such as logistics, safety, expense or time, assessment may take the form of a demonstration.</td>
</tr>
<tr>
<td>4</td>
<td>Simulation (which includes Role-play)</td>
<td>Simulation involves the candidate completing or dealing with a task, activity or problem in an off-the-job situation that replicates the workplace context.</td>
</tr>
<tr>
<td>5</td>
<td>Activity Sheets</td>
<td>Activity sheets are structured exercises that usually involve the candidate completing tasks based on specific piece or collection of pieces of information (eg. case study, technical diagram, chart, sketch, scenarios). Activity sheets need to be realistic, reflect workplace situations and cover the requirements of the assessment criteria.</td>
</tr>
<tr>
<td>6</td>
<td>Work-related projects / assignments</td>
<td>A work related project can be a good way to assess work activities over a period of time</td>
</tr>
<tr>
<td></td>
<td>Questioning</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Oral Questioning</td>
<td>In oral questioning, the assessor may ask the candidate questions that are:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• about real, simulated or hypothetical situations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• used as clarification to complement real time/real work observations and structured activities such as after simulations or role plays, either to address gaps in knowledge and understanding, or to confirm candidates’ knowledge and understanding where it is not apparent from performance</td>
</tr>
<tr>
<td>No.</td>
<td>Assessment Method</td>
<td>Brief Description</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>8</td>
<td>Written Questions</td>
<td>Written questions are useful for assessing knowledge and application of knowledge.</td>
</tr>
<tr>
<td>9</td>
<td>Portfolio</td>
<td>A portfolio contains individual pieces of evidence demonstrating work outputs that have been collected by the candidate. The items are usually produced over a period of time and come from different sources. A well-constructed portfolio incorporates a selection of evidence that is clearly benchmarked against the competency/learning outcomes and indicates consistent performance of work activities in accordance with workplace standards.</td>
</tr>
</tbody>
</table>
### INSTRUCTIONAL METHODS

<table>
<thead>
<tr>
<th>Instructional Method</th>
<th>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</th>
<th>Suitable for learning of actual skills?</th>
<th>Possible level of retention?</th>
<th>For novices, competent practitioners or experts?</th>
<th>Notes on instructional method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Drill and Practice - Learner practices a topic/skill repeatedly</td>
<td>C, P</td>
<td>y</td>
<td>Mid to high</td>
<td>More for novices</td>
<td>• Authentic practice environment closely simulating the actual work environment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Skills being practiced closely mirrors what is happening at the workplace</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Knowledge being tested repeatedly is fundamental</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Feedback is key to prevent learner doing/learning the ‘wrong things’ again and again</td>
</tr>
<tr>
<td>2. Didactic questions - Trainer asks focused questions (eg. &quot;What&quot;, &quot;How&quot;, &quot;Why&quot;, &quot;What if&quot;) to structure learning</td>
<td>C, P, D</td>
<td>Low to high</td>
<td>All (depends on the breadth and depth of the questions asked)</td>
<td></td>
<td>• Simple, efficient way to create active learners (getting them involved in the learning process) rather than passive learners (sitting back and taking it in)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Preferably used together with other instructional strategies to ensure learning is complete</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Can be used to elicit prior knowledge of learners</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Can be used to introduce a learning topic to learners (priming)</td>
</tr>
<tr>
<td>3. Demonstrations / Modelling - Trainer shows right way of doing something</td>
<td>P, D (possible)</td>
<td>y</td>
<td>Low to mid</td>
<td>Novices</td>
<td>• For demonstrations and modelling to be effective, they should be paired with practice by the learners and feedback</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Using video-ed demonstrations can help because of the ability to pause and break down the demonstration into smaller parts to learners focus and learn</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Most effective when the demonstrator verbalises his thought processes while he demonstrates, allowing learners to know why he is doing what he is doing</td>
</tr>
<tr>
<td>Instructional Method</td>
<td>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</td>
<td>Suitable for learning of actual skills?</td>
<td>Possible level of retention?</td>
<td>For novices, competent practitioners or experts?</td>
<td>Notes on instructional method</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
<td>-----------------------------</td>
<td>---------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>4. <strong>Discussions</strong> - Learners discuss as a class or in small groups</td>
<td>C, P, D</td>
<td>Depends on how impactful the discussion was</td>
<td>All</td>
<td>• Low-cost, simple way to promote active learning by passing the ownership of learning back to the learners</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Length, depth and numbers of questions for discussion should be considered carefully. Underestimating the time required can compromise the learning, while overestimating the time can cause learner disengagement and loss of focus</td>
<td>• Most effective when combined with report-backs (i.e. learners share the outcomes of their discussion with the rest of the class), as this allows each group to hear what other groups have come up with, and also deepens retention.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Be aware though of discussion fatigue (too many discussions) as it becomes repetitive</td>
<td><img src="image3.png" alt="QR Code" /></td>
</tr>
<tr>
<td>5. <strong>Problem solving</strong> - Learners are assigned a problem to solve</td>
<td>C, P, D</td>
<td>Y</td>
<td>Mid to high (if the problem is challenging enough)</td>
<td>All (problems can be pitched at different levels of difficulties and complexity)</td>
<td>• Writing good well-designed problems is a skill</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• PBL problems are ill-structured problems. The characteristics are:</td>
<td>• They are not easily solved – in fact, the problem can have more than one answer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• The learner initially lacks essential information that he or she must obtain to solve the problem</td>
<td>• The learner must consider a variety of facts and issues</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• The learning occurs in the context of solving the problem and that learning has a real life context</td>
<td>• The learner learns and employs a process that he or she can apply to future problems</td>
</tr>
<tr>
<td>Instructional Method</td>
<td>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</td>
<td>Suitable for learning of actual skills?</td>
<td>Possible level of retention?</td>
<td>For novices, competent practitioners or experts?</td>
<td>Notes on instructional method</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------------------------</td>
<td>-------------------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>6. <strong>Case studies</strong> - Learners are given a case and some questions to discuss / find a solution to C, P, D</td>
<td>Low to high</td>
<td>All (cases can be designed with different levels of complexities)</td>
<td></td>
<td></td>
<td>Widely recommended by Harvard Business School, a fully relevant and contextualised designed case is important as it lends clarity and focus to the discussion.</td>
</tr>
<tr>
<td>7. <strong>Reflection</strong> - Learners reflect on a lesson/experience individually or in a group C, P, D</td>
<td>Y</td>
<td>Mid to high</td>
<td>All</td>
<td></td>
<td>Reflection is best used in tandem with other instructional methods. Its versatile and learner-centred nature allows learners to construct and encode their learning according to their own context, increasing the likelihood of retention. Time is of essence for a reflection to be truly effective for learning.</td>
</tr>
</tbody>
</table>

- A good case should address realistic issues with the integral complexities confronted in authentic situations.
- Case studies can be introduced when learners are prepared to apply and test ideas and concepts previously covered.
- Case-based discussions allow diverse opinions and assumptions to be surfaced on a common yet objective platform.
- Well-designed case studies would have a short list of questions to guide the discussions and outcomes / decisions of learners.

- Reflection is best used in tandem with other instructional methods. Its versatile and learner-centred nature allows learners to construct and encode their learning according to their own context, increasing the likelihood of retention. Time is of essence for a reflection to be truly effective for learning.
- As a learning review, reflection can be used either as a quick individual task (eg. 3-2-1 (3 things I learnt today, 2 things I will do differently from today, 1 thing I would like to find out more) or a more in-depth group activity (eg. What happened? Why did that happen? What have we learnt?)
- For group reflection to happen, it is important for the learning environment to be conducive and safe. This can be set up through earlier activities that allow learners to connect with each other (eg. ice-breakers)
<table>
<thead>
<tr>
<th>Instructional Method</th>
<th>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</th>
<th>Suitable for learning of actual skills?</th>
<th>Possible level of retention?</th>
<th>For novices, competent practitioners or experts?</th>
<th>Notes on instructional method</th>
</tr>
</thead>
</table>
| **8. Concept formation**  
- Learners connect pieces of what they have learnt into a bigger concept | C, P | Low to high | All | - Concept formation is a constructivist method particularly useful for novices accessing and trying to make sense of a sizable amount of information. As a ‘join-the-dots’ exercise injected at appropriate junctures in a learning process, it provides cognitive space for the learners to recall, test their understanding of, and connect different pieces of information into a schema.  
- Concept formation can also work for a group consisting both novices and experts. Experts can see the links between seemingly disparate nodes of information easily, and through such an activity, they can articulate and share their thinking process, which is particularly useful for novices. From the experts’ perspective, it is a way to consolidate their knowledge in a simple fashion. |
| **9. Field trips**  
- Learners go out to experience and observe real practice at work | C (when paired with post-trip learning activity), P, D | Low to high (depends on how well the field trip has gone according to plan) | All | - Hands-on and kinaesthetic in approach, field trips bridge the gap between the conceptual and observation-focused learning.  
- Pre-tip homework should be designed to prepare learners for the trip and this may include helping them to gain an understanding of the organisation, individuals, task and purpose of the field trip.  
- When introducing field trips as a learning activity, facilitators may adopt Kolb’s learning cycle to guide learners. |
| **10. Experiments**  
- Learners try out different things to see what the | C, P, D | Mid to high | All | - Careful selection of the tool for experiment is crucial in the learning environment. The choice of tool should suit the learners’ demographics and meet the learning outcome in order to limit the influence of distracting factors. |
### Instructional Method

<table>
<thead>
<tr>
<th>Instructional Method</th>
<th>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</th>
<th>Suitable for learning of actual skills?</th>
<th>Possible level of retention?</th>
<th>For novices, competent practitioners or experts?</th>
<th>Notes on instructional method</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Simulations - Learners learn through interacting with a simulated environment (e.g. safety engineering)</td>
<td>C, P</td>
<td>y</td>
<td>Mid to high</td>
<td>Novices</td>
<td>-</td>
</tr>
<tr>
<td>12. Games - Learners play games to pick up concepts or skills</td>
<td>C, P, D</td>
<td>Low to high</td>
<td>All</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

- Trainer needs to ensure that a safe environment is created and sufficient information shared before starting the experiment.
- The set-up and outcome of the experiment (as captured in debrief) should be carefully calibrated to ensure accuracy and closure to the experience.
- Allowing learners time to reflect on the hypothesis and their own observation throughout the process helps to close and personalise the learning.
- The activity can be integrated as part of Kolb’s learning cycle.

- To prevent learners from doing something without knowing what or why they are doing it, simulations should be complemented with other methods which allow learners to acquire sound knowledge which will enable them to improve or repeat good practices. These methods can include appropriate methods from the rest of this document, or more individualised coaching from an expert supervisor.

- Games can be used at any suitable junctures during training – a fluid tool. It can be used for learning, recap or application.
- Like any other methods, games must serve a clear objective when used.
- Process precedes the outcome in the game-playing experience.
- Briefing and debriefing are essential and crucial in helping learners to understand their roles (when playing) and the learning, from the experience.
| Instructional Method | Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge? | Suitable for learning of actual skills? | Possible level of retention? | For novices, competent practitioners or experts? | Notes on instructional method | Watch a video!  
(Scan the QR code below) |
|----------------------|--------------------------------------------------------------------------------|----------------------------------|--------------------------|-----------------------------------------------|--------------------------------|--------------------------------------------------|
| **13. Role-play**  
- Learners assume different roles in a learning situation that involves human interaction | C, P, D | y | Mid to high | Novices | ▪ A well-written role-play script with specific briefs for role players are essential before introducing role-play as learning activities.  
▪ Role-play is designed to help learners practise and apply specific prescribed behavioural and interpersonal communication skills in a structured scenario.  
▪ Role-playing takes the learners out of the comfort zone of intellectual discussion to becoming physically and, or emotionally involved as participants of a situation.  
▪ Different versions of role-player briefs could be developed to introduce differing outcomes in the scenario and enrich the discussions that should arise from the learning.  
▪ Including at least 1 learner as observer during role-play would help focus the post-role play discussion. The observer(s) should be given a checklist to guide his observation. | |
| **14. Explicit teaching (Lecture) & Homework**  
- Trainer teaches concept and learners complete work assigned by trainer | C, P | Low to mid | All | | ▪ Explicit teaching should last no longer than 10 minutes. Learners’ retention decreases the longer they are not involved actively in the learning process. More preferable would be Interactive Presentation (see 20)  
▪ The off-session nature of homework means it can be used in tandem with any other instructional method (eg. drill and practice) to shave time off face-to-face classroom training  
▪ However, before assigning homework, need to recognise learners’ ability to complete it:  
▪ Sufficient time allocated given learners’ circumstances (eg. full-time employment, shift-work, family | |
<table>
<thead>
<tr>
<th>Instructional Method</th>
<th>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</th>
<th>Suitable for learning of actual skills?</th>
<th>Possible level of retention?</th>
<th>For novices, competent practitioners or experts?</th>
<th>Notes on instructional method</th>
<th>Watch a video! (Scan the QR code below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. Independent reading - self-explanatory!</td>
<td>C, P</td>
<td>Low to mid</td>
<td>All</td>
<td></td>
<td>Useful, easy way for introducing new knowledge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Text must be pitched at learners’ reading level</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Can be used as pre-reading before coming to face-to-face session (either in electronic or hard copy format). To increase probability that learners read before coming:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ Ensure reading material is of reasonable length (not more than 8 pages)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ Inform learners how much time will be needed to complete reading, so they can plan for it</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ Allocate ample time for pre-reading</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ Include pre-reading task (eg. worksheet) which learners must bring to session</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ Must be followed by a post-reading activity (eg. discussion) where trainer can gauge learners’ level of understanding of the related article</td>
<td></td>
</tr>
<tr>
<td>16. Debates - Learners take different sides of a topic to examine different perspectives</td>
<td>C, P, D</td>
<td>Low to high (depends on quality of debate and Learners’ engagement)</td>
<td>More suited for advanced beginners and beyond, who have some prior knowledge or experience</td>
<td></td>
<td>Useful for topics where there is no clear right or wrong. The more controversial, the better.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ The motion should be presented in a statement that takes a forceful stand</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ Assign a scribe for each side to capture points raised for review later</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>▪ The format of the debate can be simplified to meet requirements like timing, topic complexity, group size,</td>
<td></td>
</tr>
<tr>
<td>Instructional Method</td>
<td>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</td>
<td>Suitable for learning of actual skills?</td>
<td>Possible level of retention?</td>
<td>For novices, competent practitioners or experts?</td>
<td>Notes on instructional method</td>
<td>Watch a video! (Scan the QR code below)</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>-------------------------------------</td>
<td>-------------------------------</td>
<td>---------------------------------</td>
<td>-----------------------------</td>
<td>----------------------------------</td>
</tr>
</tbody>
</table>
| 17. **Brainstorming** - Learners explore a topic quickly in groups | C, P, D | Low to high | All | - with the topic room set-up. Get creative!  
- It is useful to arm the trainer with some possible arguments for both sides. These can come in handy:  
  - to kickstart the debate if both sides are struggling  
  - to steer the debate in a new direction to explore a new perspective  
  - to diffuse the situation when learners get overly heated up!  
  - as pointers for a learning review | |
| 18. **Peer teaching** - Learners teach each other by learning their assigned topic beforehand | C, P | Mid to high | All | - Useful as a lead-in activity to elicit prior knowledge, or to use in tandem with other methods like problem-solving or case studies  
- Divergent nature of brainstorming is useful to explore range of different perspectives for learning purposes | |
| **Peer practice** - Learners help each other to pick up skills through | | | | - To avoid the problem of ‘the blind leading the blind’, the designer must ensure that:  
  - Materials that trainer assign to the learners must be manageable and relatively easy to understand within a short reading time  
  - Time is built in for trainer to walk around and check on learner’s progress and level of understanding of the material, as well as to correct misconceptions  
  - Learning review is in place after the activity to consolidate the learning and correct any misconceptions still at that stage  
- For peer practice, distributing a checklist to learners to | |
<table>
<thead>
<tr>
<th>Instructional Method</th>
<th>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</th>
<th>Suitable for learning of actual skills?</th>
<th>Possible level of retention?</th>
<th>For novices, competent practitioners or experts?</th>
<th>Notes on instructional method</th>
</tr>
</thead>
<tbody>
<tr>
<td>practicing together</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>guide them on what to observe and what kind of feedback to give will help ensure learning and reflection is focused and effective</td>
</tr>
</tbody>
</table>
| 19. Interactive presentation - Trainer presents information in a way that actively involves learners | C, P, D                                                                                  | Low                                    | Novices                     | • The difference between an interactive presentation and a lecture (which did not feature in this matrix) is that an interactive presentation is intentionally designed for learners to ‘do’ something at some point during the presentation. These can include:  
  o Filling in answers in blanks in the presentation handouts as the presenter covers them  
  o Mass polling through hand/finger gestures or cards to questions raised by presenter  
  o Short 1-minute discussions throughout the presentation with the person next to learner on what has just been presented  
  o Posting questions along the way (eg. post-its, through mobile technology) on a platform where everyone can see (eg. flipchart, website)  
• A prolonged presentation, no matter how interactive, typically does not value-add much to proficient or expert learners, because it is still predominately unidirectional, with content that is pre-planned and hence is not likely to change. | -                                                                                   |
### Workplace Learning Methods

View videos and detailed information on each of the methods below at [learningatwork.ial.edu.sg](learningatwork.ial.edu.sg)

<table>
<thead>
<tr>
<th>Workplace Learning Method</th>
<th>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</th>
<th>Possible level of retention?</th>
<th>For novices, competent practitioners or experts?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demonstration</td>
<td>C, P</td>
<td>Low to high</td>
<td>Novices and competent practitioners</td>
</tr>
<tr>
<td></td>
<td>Demonstrate at normal pace (understanding of whole task). Repeat at slower pace with explanations (understanding of sub tasks). Repeat again as necessary. Verbalise standards of performance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Coaching</td>
<td>C, P, D</td>
<td>Mid to high</td>
<td>Novices and competent practitioners</td>
</tr>
<tr>
<td></td>
<td>Repeated practice over time with coach providing constructive feedback, demonstrations, supportive comments to enable smooth performance to required standard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Mentoring</td>
<td>D</td>
<td>Mid to high</td>
<td>Novices and competent practitioners</td>
</tr>
<tr>
<td></td>
<td>A mentor focuses on the mentee as a person, taking interest in their career development, support for individual growth and maturity. This is different from a workplace coach, who is likely to be more job-focused and performance oriented.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Community of Practice</td>
<td>C, P, D</td>
<td>Low to mid</td>
<td>All, but more effective with competent practitioners and experts</td>
</tr>
<tr>
<td></td>
<td>Gather people who share similar interest in a particular domain or areas to gain knowledge related to your field. Share information and experiences and learn from each other. Collaborate on sharing experiences whether online or in face-to-face settings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workplace Learning Method</td>
<td>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</td>
<td>Possible level of retention?</td>
<td>For novices, competent practitioners or experts?</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td><strong>5. Job Rotation</strong></td>
<td>C, P, D</td>
<td>Mid to high</td>
<td>All</td>
</tr>
<tr>
<td>Provide a different perspective and help staff understand various functions in the organisation by rotating them within the organisation. Help them appreciate the organisation as a whole rather than in silos.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>6. Provide opportunities for practice</strong></td>
<td>C, P, D</td>
<td>Mid to high</td>
<td>Novices and competent practitioners</td>
</tr>
<tr>
<td>Give staff a series of planned tasks to accomplish or assign staff real life situations of handling customers or performing a task.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>7. Induction</strong></td>
<td>C, P</td>
<td>Low to mid</td>
<td>Novices (new to the organisation)</td>
</tr>
<tr>
<td>This refers to the orientation and training of individuals in the organization culture showing how they are interconnected to (and interdependent on) others in the organization. Ideally, this should be done as much as possible on the job with a well thought through checklist.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>8. Scaffolding and fading</strong></td>
<td>C, P, D</td>
<td>Mid to high</td>
<td>Novices</td>
</tr>
<tr>
<td>(adjustable, temporary support that can be removed when no longer required) Assess if learner is ready and able to take more responsibility for the task. Remove support gradually.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>9. Empowerment</strong></td>
<td>C, P, D</td>
<td>Mid to high</td>
<td>All</td>
</tr>
<tr>
<td>People rise to responsibility, if supported with clear goals and roles. People learn when they apply thinking skills such as analysis and evaluation during decision making. Delegate tasks and responsibilities to staff but final accountability rests with the leader.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>10. Guided reflection</strong></td>
<td>C, P, D</td>
<td>Low to high</td>
<td>All</td>
</tr>
<tr>
<td>Encourage reflection on what has been learnt. Assist them to understand the breadth of what they have learnt and how and where it can be applied. Facilitate the abstraction of leaning from one situation to another.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workplace Learning Method</td>
<td>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</td>
<td>Possible level of retention?</td>
<td>For novices, competent practitioners or experts?</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
<td>------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td><strong>11. Active noticing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ask what learner has noticed while they observed /listened to others / looked at their products.</td>
<td>C, P, D</td>
<td>Low to mid</td>
<td>Novices</td>
</tr>
<tr>
<td>Probe for their understanding.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify gaps and together plan how to address these</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>12. Gradual release of responsibility</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequence the learning, building theory and practice together.</td>
<td>C, P, D</td>
<td>Mid to high</td>
<td>Novices</td>
</tr>
<tr>
<td>Sequence tasks to build confidence. Devolve responsibility gradually.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over time sequence responsibility to identify gaps in performance (theory and practice)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>13. Feedback</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use the sandwich method (praise is the bread, the filling is what can be improved)</td>
<td>C, P, D</td>
<td>Low to mid</td>
<td>Novices and competent practitioners</td>
</tr>
<tr>
<td>Praise – what is good about the work</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What can be improved – what is not up to standard, or what is missing, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Praise – something else that is good about the work or encouragement e.g. keep at it you will get there, you are doing well.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>14. Asking questions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use open questions, not closed questions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open questions examples:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. What do you think is happening here?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. How would you explain what the problem is?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. What do you think we should do from here?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed questions require 1 or 2 word answers: e.g.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Did you learn the procedures?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Have you completed the e-learning?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Can you tell me the name of…</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>15. Using diagrams / models</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Draw, make or use a model to explain or show what is happening or going to happen.</td>
<td>C, P</td>
<td>Low to mid</td>
<td>All</td>
</tr>
<tr>
<td>Workplace Learning Method</td>
<td>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</td>
<td>Possible level of retention?</td>
<td>For novices, competent practitioners or experts?</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>----------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td><strong>16. Teaching others</strong></td>
<td>C, P, D</td>
<td>Mid to high</td>
<td>Novices and competent practitioners</td>
</tr>
<tr>
<td>To teach is to learn twice. Assign people with budding expertise to teach newcomers or others who are seeking to develop further.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>17. Spaces for sharing</strong></td>
<td>C, P</td>
<td>Low to mid</td>
<td>Novices and competent practitioners</td>
</tr>
<tr>
<td>Provide spaces (e.g. tearooms, open spaces, meeting rooms, online spaces) for both formal and informal sharing. The dialogue that takes place is often about work e.g. information sharing, problem solving, identifying resources, issues etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>18. Shadowing</strong></td>
<td>C, P, D</td>
<td>Low to mid</td>
<td>Novices</td>
</tr>
<tr>
<td>Build confidence and awareness by following a competent team member or supervisor for a couple of days to get a better idea of his or her role, as well as understand the particulars of the role without the commitment of the responsibility.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>19. Assign buddies</strong></td>
<td>C, P</td>
<td>Low to mid</td>
<td>Novices</td>
</tr>
<tr>
<td>Assign a new person to an experienced worker. The role of the buddy is to show how things are done in the organisation, point out who to go to for what, what resources are available and how to access them.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>20. Setting challenges</strong></td>
<td>C, P, D</td>
<td>Low to high</td>
<td>All</td>
</tr>
<tr>
<td>Stretch your team, give each individual and/or the team a challenge. This should be something that is a little out of their comfort zone but within their ability to achieve it. Debrief and reflect on the process and on the completion of the challenge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>21. Teamwork</strong></td>
<td>C, D</td>
<td>Low to high</td>
<td>All</td>
</tr>
<tr>
<td>Working in teams requires dialogue and shared problem solving – important aspects of learning. Understand that team members may possess different strengths and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workplace Learning Method</td>
<td>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</td>
<td>Possible level of retention?</td>
<td>For novices, competent practitioners or experts?</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
<td>----------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>C, P</td>
<td>Low to mid</td>
<td>Novices and competent practitioners</td>
</tr>
</tbody>
</table>

22. Checking for understanding
Asking questions such as “Do you understand?” may not be very helpful in checking for understanding. Instead, you can do the following:
Ask open questions that require the person to create their own understanding or come up with something different. E.g. How could we /you do this differently? How would you suggest we /you improve on this? Any thoughts about why this is happening? A good time to ask such questions is after an observation of the final product or delivery of service; as part of making improvement.

23. Tricks of the trade (Shortcuts / Heuristics)
Learn methods that help do a job faster or better. Observe a skilled professional and ask questions to uncover “shortcuts” / how to think about the process that make things easier.

24. Mnemonics
Use techniques and memory aids that help information retention. Associate the learning content with ideas, people and things that you are familiar with.

25. Goal Setting
Provide a goal setting method such as SMART (Specific, Measurable, Achievable, Relevant, Time-bound) to guide staff in setting goals.

26. Meetings
Meetings can be a powerful source of learning, informally and formally. Informally participants learn information about what is happening in the organisation or team.
Workplace Learning Method | Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge? | Possible level of retention? | For novices, competent practitioners or experts?
--- | --- | --- | ---

Formally, you can structure part of the meeting for participants’ to share or provide input, or invite individuals from outside the team or organisation to share their expertise.

27. **Sequencing of tasks**
   The way tasks are ordered (sequenced) provides a natural structure for a curriculum for learning. Use the way tasks are sequenced in the workplace to gradually introduce the participant to more complex work and greater responsibility.

<table>
<thead>
<tr>
<th>Workplace Learning Method</th>
<th>Suitable for learning of Conceptual (C), Procedural (P) or Dispositional (D) knowledge?</th>
<th>Possible level of retention?</th>
<th>For novices, competent practitioners or experts?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequencing of tasks</td>
<td>C, P</td>
<td>Low to high</td>
<td>Novices</td>
</tr>
</tbody>
</table>
# Sequencing of Curriculum / Instruction

<table>
<thead>
<tr>
<th>Sequencing Method</th>
<th>What is it?</th>
<th>Factors Affecting Choice</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronological</td>
<td>Content arranged by time sequence or order of events - Past to present to future</td>
<td>Chronological history is important. It shapes the present and helps predict the future. Subject matter well established (eg. economics, politics)</td>
<td>Usually new learners to the subject matter</td>
</tr>
<tr>
<td>Topical</td>
<td>Learners are immediately immersed in the middle of a topical problem or issue (eg. Ebola crisis) as the starting point of instruction. Learning about different facets of the issue then ensues (eg. history, future trends)</td>
<td>Important topics that may not be related. Often ever-changing and requires currency (eg. technology, finance, property market)</td>
<td>Usually learners who require different sets of skills for work. Also for learners whose work is dynamic and dependent on external events</td>
</tr>
<tr>
<td>Whole-to-Part</td>
<td>Learners are first presented with the complete product, or full description of the complexities of a piece of work; then instruction is carried out along the parts of that product or set of complexities that was introduced.</td>
<td>Important to see how an entire system functions before delving into the details (eg. car assembly)</td>
<td>Learners who need to see the big picture before going into the details</td>
</tr>
<tr>
<td>Sequencing Method</td>
<td>What is it?</td>
<td>Factors Affecting Choice</td>
<td>Implications</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------</td>
<td>--------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td><strong>Part-to-Whole</strong></td>
<td>Learners are introduced to small parts of an entire object or piece of work, with the formation of the whole taking place only at the end.</td>
<td>Building blocks that come together to form a coherent whole at the end (eg. creative activity like designing a webpage). Learners who are more hands-on in their learning.</td>
<td>All building blocks and tools are available to the learners. Plenty of time built in for the creation process, with constant feedback provided. Deep knowledge of process skills required. Facilitates learners in tapping on learners’ creativity where possible.</td>
</tr>
<tr>
<td><strong>Known-to-Unknown</strong></td>
<td>Learners are introduced to what they already know (possibly based on past learning or working experiences), and gradually led to what they do not know.</td>
<td>New knowledge or skills which are somewhat similar to existing common knowledge or skills (eg. learning to cook food from a new, unique culture, learning of new technology). Learners who have prior knowledge and experience with the subject matter. Also for learners who are fearful of the new subject matter – start with the familiar. Access to tools and artefacts related to both the known and unknown domains (so learners can compare).</td>
<td>Safe and reassuring to reduce fear as learners tread into the unknown. Accurate creation of the links and relationships between the familiar and new material. Familiarity with both learners’ known and unknown domains.</td>
</tr>
<tr>
<td><strong>Unknown-to-Known</strong></td>
<td>Learners are dramatically put out of their comfort zones to face an unfamiliar situation. The known is then discovered through the learning experience.</td>
<td>New angle / situation presented to learners so as to delve deep into knowledge and skills which learners think they ‘already know or can do’ (eg. physical training, soft skills). Learners who are not resistant to move out of their comfort zone or those who require to move out of comfort zone for impactful learning.</td>
<td>Ensuring safety (both physically and mentally) is key, hence careful selection of learning aids. Jolt learners by giving them an uncomfortable experience that then makes them question their own skills and knowledge. Ability to design learning experiences that stretch, but do not break, the learner. Hold the learning space / motivate learners to continue learning, especially when faced with discomfort or disappointment.</td>
</tr>
<tr>
<td><strong>Step-by-Step</strong></td>
<td>Learners are trained based on the steps of a job (psychomotor skills), or the series of cognitive process (knowledge) in order to master a skill.</td>
<td>For skills and knowledge that are discrete and sequential (eg. operating a machine, cashiering, handling transactions). Learners new to subject matter who require coaching and handholding.</td>
<td>Authentic tools should be used, where permissible (eg. where cost and safety is not an issue). Safe and conducive for learning (eg. hygiene factors like temperature, light and noise). Deep expertise needed, to build in not just the steps, but also considerations of a range of contexts where applicable. Ability to design learning from a novice’s perspective. Ability to see things and empathize from a novice’s perspective.</td>
</tr>
</tbody>
</table>
## Sequencing Method

<table>
<thead>
<tr>
<th>Method</th>
<th>What is it?</th>
<th>Factors Affecting Choice</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part-to-Part-to-Part</td>
<td>Learners are exposed to every part in a spiral fashion, from fundamental to difficult levels.</td>
<td>The nature of subject matter / skills to be learnt: For skills and knowledge that build progressively (e.g., literacy skills, product knowledge (from simple to complex))</td>
<td>Availability of resources: Range of learning tools / resources pitched progressively at different levels. Learning environment: Acquisition of competence at one level is required before learners can proceed to the next level. Instructional designer’s domain expertise: Ability to design instruction that allows learners of different abilities to access different levels of content. Facilitator’s level of experience: Ability to diagnose accurately the knowledge and skill levels that learners are at.</td>
</tr>
<tr>
<td>General-to-Specific</td>
<td>Learners are introduced to general, foundational topics; and subsequently specialize on the in-depth, specific skills in a certain area.</td>
<td>Learners come with varying skill levels and can be grouped together by same ability level to learn to achieve the next level. Learning resources that cover foundational and specialized skills.</td>
<td>Range of learning tools / resources pitched progressively at different levels. Learning resources that cover foundational and specialized skills. Enough time afforded for learners to master the fundamentals before homing in on a particular area of focus. Breadth and depth of knowledge and skills across different specialization tracks is needed (usually a team of developers is assembled). Greater depth of expertise and skills expected of facilitators in the specialization stages.</td>
</tr>
</tbody>
</table>
The Institute for Adult Learning (IAL) is at the forefront of building capabilities and continuing professional development for an effective, innovative and responsive Continuing Education and Training (CET) sector. We work closely and support adult educators, businesses, human resource developers and policy makers through our comprehensive suite of programmes and services on raising capabilities and catalysing innovations in CET. IAL also champions research and CET decisions, as well as developing innovations through learning technology and pedagogy for informed policies and practices.

For more information, please visit www.ial.edu.sg