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Research Report

Singapore Workforce Skills Qualifications (WSQ), Workplace Learning and Assessment (Stage II)

Centre for Research in Learning

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Executive Summary

Understanding workplace learning is important because “people do not have competences independent of context” (Fischer, Rotenberg, Bullock, & Raya, 1993, p. 113). Being able to practice within a specific occupation is thought to be a process that is “holistic and significantly contextual, rather than atomistic and context-free” (Hager & Hodkinson, 2009, p. 625). However, findings from the first stage of this research project highlight that Workplace Skills Qualifications (WSQ) programmes have taken a predominately classroom-based approach to teaching and learning (Bound & Lin, 2010), meaning that much of what learners learnt through their WSQ programmes is separate from the context in which they carry out the practices they are learning about. This is despite there being little evidence to show that learning in class is easily applied to the workplace (Eraut, 2004b; Hager, 2004a). Therefore, in this second stage of the project we focussed on what is learnt in the workplace and what supports learning in the workplace. By better understanding the contribution of workplace learning, our hope is that the findings of this project will contribute to workplace learning being designed into WSQ programmes.

In this report we understand workplace learning as learning that takes place by being part of and therefore engaging in the activity of work through opportunities for practice, and receiving guidance and support as well as contributing. Workplace learning is described as a process which is informal, incidental and practice-bound, based on experience, shaped by the work tasks and context in which the learning takes place, and is shared with internal and external work teams and communities (Collin, 2006; Virtanen, Tynjälä, & Collin, 2009).

Our objectives for this second stage were to: recognise what is learnt in the selected workplaces and what assessment processes are used; identify ways in which learning and assessment is supported and constrained in the workplace and propose models for recognising workplace learning through the WSQ framework. We conducted this study by carrying our four case studies; in a food and beverage (F&B) site, in a hotel, in aircraft maintenance and in a nursing home. We used a semi-ethnographic approach for data collection by interviewing trainees and their supervisors, analysing the training and development documentation in each workplace and observing the trainees as they engaged in their daily work. We were also able to observe the aerospace technicians and baristas at their training centre during their scheduled classes, the chefs who were undertaking their workplace apprenticeships and the healthcare assistants who had completed their classes.

When understanding what trainees learn at work, it was clear that the five dimensions of competency task skills, task management skills, contingency management skills, job and role management skills, and transfer skills are evident in

the workplace. This suggests that the workplace, rather than the classroom, provides adequate opportunities for assessing these aspects of competency. However, it should be noted that the dimension of transfer is problematic. Within the WSQ, transfer skills are thought of as the ability to transfer knowledge, skills and attitudes to new tasks and situations. In this report we conceptualise "transfer" not as a thing but as a process, and use Evans et al. (2010) conceptualisation of recontextualisation. It would be worthwhile for the Workforce Development Agency (WDA) to reconsider what they mean by "transfer" skills, as this is now an outmoded term and considered very problematic in the literature.

In addition to evidence of the dimensions of competence, there are other ways of categorising what is learnt. We identified generic skills, technical skills and knowledge, learning about the working environment or climate of the workplace, and the organisation of work and workflows; these are, of course, related to the dimensions of competency. Generic skills learnt included a range of communication and teamwork skills, organising and planning skills and meta-cognitive learning to learn skills such as asking appropriate questions and managing their own learning. Trainees built on and added to the technical skills and knowledge they learnt in school. Not surprisingly, the depth of knowledge learnt in the workplace varied according to the nature of the work, and trainees' roles and responsibilities. Those trainees who moved between school and work or simulated environment with the support of trainers and/or workplace experts and supervisors entered into a process of knowing, that is knowledge for them was dynamic and integrated into their practice.

Clearly by being in a workplace you learn about the nature of that workplace climate, workflows and the organisation of the work. With this knowledge comes a requirement for negotiation between what was learnt in school and what is required in the workplace with its requirements for production or service provision, its policies and procedures, the ways in which the work is organised, the provision of support for each other and so on. The healthcare trainees had to cope with using a method of lifting patients different to what they learnt in school: one that was potentially unsafe for them and hard on the patients that is, by pulling them up the bed by grabbing their collar and pants. This technique was used at the nursing home partly because it allowed for staff to work individually rather than in pairs. The division of labour into the smallest individual tasks possible also meant that there was less opportunity for dialogue between trainees and experienced staff for trainees to deepen their knowledge. The result is a clear division between different types of knowledge limiting opportunities to develop praxis (a dynamic movement between and integration of theory and practice).

Taken together, what and how trainees learn and the assessment processes that they are part of contribute to their overall sense of becoming professional chefs, healthcare assistants, baristas and aerospace technicians. Workplace affordances

for learning that contribute to this process of becoming include providing opportunities for trying out new processes and procedures with adequate support from a range of sources, including supervisors and fellow co-workers. As trainees experiment and engage in trial and error with knowledgeable others, they take ownership for their own work and learning, develop their skills and knowledge, and gain a sense of confidence in their own abilities. In addition, trainees also need to be provided with opportunities to actively contribute to individual and collective learning processes. While this is can be thought of as a natural aspect of the discussions at work, it can be better incorporated into the culture of the workplace.

In all four workplaces we looked at, informal and unstructured assessment took place but to varying degrees. In the F&B workplaces, supervisors and trainees worked on the same or similar tasks and this allowed supervisors to assess trainees through observations and provide them with feedback that they can then go on to incorporate into their work processes (e.g. while trainees prepared food and drinks for customers). This assessment of trainees would eventually contribute to formal work appraisals, and included assessing skills and knowledge as well as attitudes towards work and learning which is an important aspect of workplace competencies that cannot be easily captured through formal assessment processes. In both workplaces, there was an obvious valuing of learning at work and an allocation of space and time for this learning to take place. There were fewer opportunities for the informal and unstructured assessment in the nursing home and aircraft maintenance company due to the way in which work was structured by the organisation (e.g. primarily individualistic work tasks) and the ad hoc nature of support provided. These barriers and enhancers for assessment are closely linked to the way in which learning takes place.

We identified five models of workplace learning for competency-based training programmes from our data. We called these:

- Apprenticeship model
- In-house traineeship
- Post-training placement
- Work experience as part of an academic programme
- Building on workplace learning

The first four reflect what is taking place in the WSQ programmes undertaken by trainees in our case studies, but are also typical of other instances where there are workplace components in WSQ programmes described in our Stage I study (See Bound & Lin, 2010). Apprenticeships are common in other countries but not so here in Singapore. The post-training placement, otherwise called train and place, is more common here. Building in work experience as part of an academic programme is less common. In-house traineeships, where the company is also a registered training provider, allows for movement and coordination between workplace and

classroom learning, and assists with induction and early training of new employees. The final model we have, called building on workplace learning, brings together lessons from the case studies and analysis discussed in previous sections of this report to emphasise ways in which learning in a workplace – whether or not it is accompanied as part of a WSQ programme – can be supported and leveraged on. This model also gives Training Providers a guide of what to look for and value in companies they seek to establish partnerships for placements, work experience or apprenticeships.

Learning and development for individuals, teams and the organisation can work well when organisations:

- Recognise that the workplace is a learning site.
- Integrate learning and development of staff into the highest levels of documentation, part of strategic visioning as in Hotel Co. The visioning needs to cascade, as it does in Hotel Co, to all levels of documentation and is to be lived, not shut away in a drawer and forgotten.
- Value staff members as they are in the Hotel Co and Cafe Co examples.
- Structure in and give access to a wide variety of tasks and responsibilities (this will vary considerably depending on the nature of the work and the position of the staff member).
- Design in learning challenges such as rotating staff through different sections and providing opportunity to undertake challenging tasks/responsibilities while providing support.
- Give permission for staff to try new things and experiment as new products, services and ways of working can emerge from this permission and support of these activities.
- Support learning from mistakes and allow for debriefing to address the mistakes made. Mistakes will be made, so we need to make the most of these opportunities for learning.
- Provide opportunities for working with and alongside others with different expertise. This allows for observation of expert practice and dialogue.
- Give permission for staff to make decisions, as appropriate. We saw how limiting a lack of decision making power is from the Nursing Home Co case study. Having to constantly pass up requests for decision and problem-solving are causes of client/patient frustration.
- Provide mentoring, coaching and guidance. In industries where there is a high turnover, it becomes particularly important for a cycle of teaching and learning to be engendered in the workplace.
- Accept, recognise and reward ideas, attitudes and behaviours that support a people development orientation.

1.0 Introduction

1.1 Background and Context

This report builds on Stage I of the WSQ, Workplace Learning and Assessment research project (Bound & Lin, 2010). The first stage provides a broad overview of the extent and type of workplace learning found in Singapore's Workplace Skills Qualifications (WSQ) system. The definition of workplace learning constructed for the research project is the learning that takes place by being part of and therefore engaging in the activity of work through opportunities for practice, and receiving guidance and support as well as contributing. While we found that teaching and learning within the WSQ is predominantly classroom-based, we were also able to identify leading practice examples of workplace learning, specifically within the Community and Social Services and Food and Beverage (F&B) WSQ frameworks. These frameworks offer programmes with links between classroom and workplace learning. The three main types of WSQ workplace learning arrangements are: work attachments with some links to classroom learning, highly simulated workplaces and structured workplace visits. In the leading practice examples of work attachments with some links to classroom learning, trainees engage in relevant tasks at work, use learning tools (e.g. logbooks and journals) to document what they have learnt and participate in reflective discussions with their trainers and other trainees on their work experiences. Drawing from our initial findings, this second stage aims to understand the mechanisms of workplace learning, including identifying what and how trainees learn at work and are assessed, support and constraints for learning, and assessment processes.

1.2 Why is Workplace Learning Important?

It is generally recognised that the development of competence for the workplace should include some form of learning *in* the workplace because "people do not have competences independent of context" (Fischer, et al., 1993, p. 113). Being able to practice within a specific occupation is thought to be a process that is "holistic and significantly contextual, rather than atomistic and context-free"(Hager & Hodkinson, 2009, p. 625).

However, findings from the first stage of this research project highlight that WSQ programmes have taken a predominately classroom-based approach to teaching and learning (Bound & Lin, 2010). This narrow focus on developing bite-size competence within the confines of a classroom can be contrasted with the competency-based vocational education in countries such as Australia and the UK, where immersion in actual work environments and tasks are fundamental aspects of

apprenticeships and traineeships. Within the WSQ, factors that contribute to a privileging of classroom learning include an overemphasis on the products of knowledge and skills at the expense of attitudes (WDA, 2010). While all three components are acknowledged as needed and used by an individual in an occupation, the additional description of being "observable and measurable" shifts the focus away from attitudes and tacit knowledge in general (WDA, 2007, p. 18). In addition, within the WSQ (and most competency-based training packages), competence is predefined and packaged neatly into competency standards that assume the transferability of competence statements. While being observable, measurable and transferable are important, this makes it easy for training providers to require learners to passively learn knowledge and skills out of context (i.e. solely in the classroom) instead of in the workplace. However, there is little evidence to show that the learning which takes place in class is easily transferred to the workplace (Eraut, 2004b; Hager, 2004a).

Besides the problematic nature of transfer, taking the context of work processes and procedures into consideration is important because competence is not only about completing a task, but doing it "to an appropriate standard" (Gonczi, 1999, p. 182) or "to the expected standards" (Eraut, 2003, p. 117). This relationship between work and competence has been acknowledged by the national competency-based training systems in Australia and the UK:

Competency is the consistent application of knowledge and skill to the standard of performance required in the workplace (NQC, 2010, p. 5)

People need skills to be competent, but competence is about applying skills (and knowledge) to achieve a work function. (Carroll & Boutall, 2010, p. 8).

In WSQ, the performance standards delivered and assessed in class "are validated and endorsed by industry to be the minimum performance standards for the industry" (WDA, n.d., p. 10). However, these standards would undoubtedly vary from one organisational context to the next. It is by being in a work environment, engaging in work tasks and interacting with colleagues and clients that trainees are able to appreciate and adjust their understandings of standards learnt in class to perform according to what is expected of them at work. Opportunities for such experiences are available through training programmes that incorporate apprenticeships or traineeships, where trainees spend extended periods of time in a workplace. Sandberg (2000) also commented that while competence statements may be able to provide descriptions of the types of competencies required for work, they fail to address which aspects of these competencies are actually used and how they are used when individuals undertake specific tasks. As such, he proposed that competence is not viewed as "consisting of two separate entities; instead, worker and work form one entity through the lived experience of work" (Sandberg, 2000, p. 11). For us, it made sense to understand the possibilities and constraints for developing competence in the workplace where individuals have opportunities

to familiarise themselves with different contexts and appropriately apply what they have learnt in class to these different contexts.

1.3 What is Workplace Learning?

We instinctively know that we learn at work; we learn through doing our jobs and through observing and working with and alongside others. In this report, we will argue that opportunities for enhancing this learning can be deliberately designed into the ways in which work is organised and the development of workplace structures and cultures. Yet despite knowing that we learn our jobs and become competent in them by *being in the workplace* and *doing the work*, these opportunities may go unrecognised. Instead, what we hear about is training, be it formal classroom training related to our work or on-the-job training. We will be using the term workplace learning as an umbrella term that encompasses these examples of formal training as well as what is often in the literature referred to as "informal learning". Workplace learning is described as a process which is informal, incidental, practice-bound, based on experience, shaped by the work tasks and context in which the learning takes place, and shared with internal and external work teams and communities (Collin, 2006; Virtanen, et al., 2009). It is because the learning that has just been described is not tangible, unlike training, which has clear outcomes and structured arrangements to support it, that it may be undervalued and underdeveloped in organisations. In this report, we will explore how both informal and structured on-the-job training take place and what is learnt through these processes.

1.4 Research Questions

The three research questions for this research project are:

- Recognise what is learnt in the selected workplaces, and what assessment processes are used.
- Identify ways in which learning and assessment is supported and constrained in the workplace.
- Propose models for recognising workplace learning through the WSQ framework.

1.5 Data Collection

We carried out in-depth case studies in four workplaces (see Table 1). These workplaces were selected because their trainees are involved in the leading practice examples of workplace learning identified in the first stage of the project (Bound & Lin, 2010). The trainees were training to become hotel chefs, healthcare assistants, baristas and aerospace technicians. In total, we interviewed and observed 10 trainees who had either recently completed or were completing WSQ programmes. We also talked to eight workplace supervisors and analysed each organisation's training and development policies. Details of the questions from our semi-structured interviews can be found in Appendix 1.

Table 1. Participants

Workplaces	Trainees (pseudonyms)	Supervisors (pseudonyms)
Hotel Co	3 (Eric, Wei and John)	1
Nursing Home Co	2 (Min and Jo)	4 (Centre Manager, Head Nurse, Supervisors Zara and Michelle)
Cafe Co	2 (Yin and May)	2 (Supervisors Sharon and Mark)
Aircraft Maintenance Co	3 (Mike, Henry and Lila)	1
Total	**10**	**8**

Our semi-ethnographic approach towards data collection involved being in the actual work environment and observing the trainees as they engaged in their daily work. After each session, which lasted between 30 minutes to an hour, we clarified what we saw and heard with the trainees and their supervisors. The amount of time we spent in each workplace varied from one session at the aircraft maintenance company to 11 sessions at the cafe (see Table 2). We observed the aerospace technicians and baristas at their training centres during their scheduled classes, the chefs who were undertaking their workplace apprenticeships and the healthcare assistants who had completed their classes.

Table 2. Number of observations

Trainees	Observations at Work	Observations at Training Centre
Chefs	5	0
Healthcare Assistants	9	0
Baristas	11	1
Aerospace Technicians	1	3
Total	**26**	**4**

The data collected from the interviews, observations and organisation documents was analysed in two ways. First, individual case studies were written to obtain an overall picture of the learning in each workplace. Next, the data was coded in NVivo based on a coding schedule (see Appendix 2). Naming of the coding categories was sourced from the research questions, the literature and the data itself.

1.6 Structure of the Report

This report is divided into five chapters. This first chapter is the introduction. The second chapter provides a literature review on the following areas: understanding workplace learning, how learning takes place at work, what is learnt at work, linking workplace and formal learning, assessment of workplace learning and models for workplace learning. This will be followed by findings from our case studies for each workplace and key themes in the third chapter. In chapter four, we will highlight the implications of our research project and three WSQ models for workplace learning. The final chapter will conclude with seven recommendations for the incorporation of workplace learning in the WSQ.

2.0 Review of the Literature

2.1 Introduction

In this chapter, we explore what is known about workplace learning from the literature to address our research questions:

- Recognise what is learnt in the selected workplaces and what assessment processes are used.
- Identify ways in which learning and assessment is supported and constrained in the workplace.
- Propose models for recognising workplace learning through the WSQ framework.

Before addressing these questions from our literature search, let us first explore how we understand workplace learning as there are many theoretical perspectives, each privileging certain dimensions or aspects of workplace learning. We also need to keep in mind that not everything we learn at work is exemplary or even correct.

2.2 Understanding Workplace Learning

As discussed in Chapter 1, workplace learning is undervalued and often misunderstood. Indeed as Vaughan (2008) notes, there is a shortage of literature comparing workplace learning and other forms of learning due to a lack of recognition of learning that takes place in the workplace. It is problematic to think learning at work from the perspective of learning in formal educational settings or learning as a product, that is, as acquisition of specific knowledge and skills. When we consider learning as a product, that is, as specific sets of knowledge and skill rather than a process, we make assumptions that knowledge has stability and is replicable. While there is a need for processes to be replicable in highly regulated industries and workplaces (e.g. pharmaceutical and aircraft engineering), knowledge (and therefore processes) changes and is emergent. An assumption of learning as product is also problematic because in practice, it means a theory-practice divide is often accompanied by a front-end, loading model of delivery. Whereas understanding learning as a process introduces learning as a construction (or reconstruction) metaphor, and participation and inquiry metaphors instead of acquisition (Hager, 2004a). The advantage of viewing learning as a process is that it incorporates important social, cultural and political dimensions (Hager, 2004a). Both work practices and the learning that accompany them are processes.

Beckett and Hager (2002, p. 155) summarise the features of practice-based informal learning from work in the following way:

- It is organic/holistic.
- It is contextual.
- It is activity and experience-based.
- It arises in situations where learning is not the main aim.
- It is activated by individual learners rather than by teachers/trainers.
- It is often collaborative/collegial.

As Beckett and Hager (2002) note, when conceptualising learning at work, it is important to remember that production, not learning is the primary object of work. In addition, the way we think about learning in a workplace context needs to reflect the complexities of work, the workplace and the socio-political and economic context of the nature of the work. While formal classroom or e-learning might typically (but not necessarily) deal with abstract ideas and knowledge disassociated from context, workplace learning is context-dependent, inclusive of multiple forms of knowledge, skill and relations. Indeed Hager (2004b, p. 246) suggests that:

rather than being simply a change in the properties of the learners ... the main outcome of learning is the creation of a new set of relations in an environment. This is why learning is inherently contextual, since what it does is to continually alter the context in which it occurs.

Hager's point about "the main outcome of learning is the creation of a new set of relations in an environment" is an important one in understanding learning. Learning is not just that which takes place inside the head of an individual; it is about change in the collective sense and is embedded in the social relations *between* people. Specifically, we need to look into the social relations between the learner, their practical work activities and social and cultural relations in the workplace (Evans, Hodkinson, Rainbird, & Unwin, 2006). Workplace learning brings together multiple aspects of theory, practice and being. As Hager notes, learning is therefore "inherently contextual". This understanding raises issues about transfer and shifts us towards thinking of it as process or as Guile and Okumoto (2008) note, a process of recontextualisation. In summary, workplace learning is complex and diverse (Hager & Hodkinson, 2009). As learning in workplaces is embedded in social relations in the workplace, the content of what is learnt in different workplaces differs as does the ways in which learning and affordances for learning are embedded in the social relations in different work settings, vocations and professions, and industry contexts.

2.3 How Learning Takes Place at Work

In considering how learning takes place at work, we need to account for the complexity of workplace learning, that it is based in practice and highly contextual. We know from the literature and from our own studies (Bound & Li, 2011a, 2011b, 2011c; Bound & Lin, 2010; Bound, Lizaso, & Li, 2010) that the following mediate workplace learning:

- Different industries have different cultures, domain knowledge and ways of knowing (Bound & Lin, 2010).
- Systems of production and ways of organising work (Ashton & Sung, 2002; Felstead, Fuller, Jewson, & Unwin, 2009), including the division of labour (Daniels, 2010), offer different affordances and mediate what is learnt.
- Availability and structure of regional infrastructure (Evans, et al., 2006; Kilpatrick & Bound, 2005; Leadbetter, et al., 2007) and industry infrastructure (Kilpatrick & Bound, 2005) also impact on possibilities for exchange, support and partnerships between enterprises, providers, industry bodies and so on.
- Workplace cultures and structures (Billett, 2001a; Bound & Lin, 2010; Alison Fuller & Unwin, 2004) and their discourses, and the interaction of these discourses with professional discourses (Daniels, 2004) mediate, for example, perceptions of possibilities, what is considered important, what experts 'do', access to expertise, tools and symbols.
- Understandings of learning such as learning as acquisition, learning as participation (Sfard, 1998), learning as co-construction (Felstead, et al., 2009), and learning as action in the world (Tynjälä, 2008) also mediate what is learnt, the how and where of learning.
- Disposition of individuals (Billett, 2001a, 2004; Evans, et al., 2006) and the interaction between dispositions and workplace affordances (or lack of) are also part of the complex processes of mediation of workplace learning.

If we understand how learning takes place at work through the lens of individuals engaging in activities, then we explore motivations, dispositions, affordances and constraints for engagement. Affordances and constraints include workplace pedagogies and what is valued and considered important not only by the particular workplace but by the profession or vocation and by the industry. If we understand how learning takes place at work through the lens of the organisation, a human capital perspective is one option, but another option is the focus on the different modes of employment within an organisation, structures, cultures, including dominant discourses in the workplace, the flow and organisation of work, the nature of the work, the division of labour, and how these factors impact on issues of access to learning opportunities and development (see Engeström, 1987). These different lenses can be said to be different angles looking through the same eyeglass. So the lens of the organisation can be equated to affordances in the

workplace, but it is more than workplace affordances. There are the added dimensions listed above of different industry infrastructures, workplace cultures and understandings of learning.

The limitation of understanding how learning occurs through the lens of individual engagement is that it privileges and focuses on individual dispositions and motivations, whereas the limitation of using an organisational lens is that it can minimise the role and contribution of individual engagement. We need a way of understanding workplace learning that considers both the macro and micro dimensions, and how social relations between people, resources, institutional discourses, and structures and power mediate learning. This prompts us to consider what is the unit of analysis? Neither an individual perspective nor the organisation as a unit of analysis provides us with a satisfactory approach to analysis, as neither on their own provides us with the whole picture even though each of these units of analysis contribute to our understanding of workplace learning. Engeström's (1987) use of activity as the unit of analysis helps in that it has the potential to consider both the subject (the individual) and the setting in which the activity is situated (its intent, trajectory, tools, division of labour, rules and communities of practice in which its members are engaged, as well as its modes of consumption, distribution and exchange). However, subjectivity in activity theory is underdeveloped, as is the ways in which contextual conditions are embedded in the actions of individuals (Bound, 2007).

Despite these limitations, if we accept that learning is embedded in the social relations *between* people, we need to look into the social relations between the learner, their practical work activities, and social and cultural relations in the workplace. Activity theory provides a tool to do this. In particular, we need to understand the processes of mediation because mediated activity is the space and the glue of social relations with others, and with tools and processes.

It is not only the immediate social relations we need to understand, but economics, politics, societal values and beliefs also need to be taken into account. It is not just the immediate setting, but also the global structures and dynamics of the systems that constitute what we become. These factors are what Bound (2007) refers to as contextual conditions: mode of production, history, discourses, infrastructure and resources, policy and institutional arrangements.

For this reason, I will argue that taking the activity of learning as the unit of analysis is the way forward as it provides a means to not only acknowledge the multiple dimensions of learning but to understand them as part of the whole. Having established a conceptual framework for analysing how learning takes place at work, we will now examine specific components of activity beginning with participation and engagement. While participation and engagement are not a named component of the Engeström (1987) version of activity theory, they are inherent in the community component.

2.3.1 Participation and Engagement

The community of practice literature (e.g. Lave & Wenger, 1991; Wenger, 1998) tells us that participation and engagement in activity are important for learning. But what does participation and engagement look and feel like, and what does it mean in practice? Engagement is defined by Wenger (1998) as involvement in actions where meaning is negotiated with others. In the process of participation, we encounter and engage in social relations, power structures and dynamics, and the learning processes related to the cycles of activity and production. Through engagement and participation we learn how to talk, how to act, how to relate to others and therefore ultimately, how to be (Lave & Wenger, 1991). Access to diverse activities, experiences, expertise and resources are important in learning how to be. How to be is inclusive of evolving ways of knowing and sense of self that in turn shape ways of engaging, which then contributes to changes and events in a workplace (Billett, 2011). Asking relevant questions is not always easy and requires some knowledge about the work process as a whole or the current problem solving situation. Feelings gathered in these situations are gut feelings and intuition which can be used in new or future situations (Collin & Paloniemi, 2008).

Other factors also mediate access to opportunities for participation such as the type of work, for example, women in lower status jobs (Smith, 2008). Increasingly, there is a discourse of individualisation which makes subjects individually responsible for their own construction and redefinition of their work identity (Eteläpelto, 2008), which assumes access to knowledge, ways of being and choices that are generally not available in particular types of work and workplaces. A subject's experience of learning in the workplace then is perhaps initially mediated by the type of work, the classification of that work (e.g. low paid, low status, or alternatively, high paid, high status) and the mode of employment. Owen and Bound (2001), for example, note that workers external to an organisation have far less access to opportunities for engaging in professional development compared to their permanent counterparts. The mode of employment, structures within the workplace and the flow of production mediate the subject's perceptions of opportunities afforded within the workplace (Billett, 2001a; Vaughan, 2008). The employment relationship with the employer is not symmetrical; rather, there is a strong power dynamic that can result in contradictions and tensions. It is not only the employment relationship in which power relations are asymmetrical but the culture of the workplace also embodies power relations, shaping opportunities and access. For example, if informal experience sharing as a participatory practice is seen as a waste of time, then innovation and a relaxed work atmosphere will be jeopardised (Collin & Paloniemi, 2008).

From our discussion above, we can conclude that the complexity of participation, our contribution, how we act, what decisions we make, the ways in which we

participate, engage and contribute are mediated by the environment in which we are situated. Lemke (1997, p. 38) uses an ecological perspective to explain:

[As people are participating in everyday practice they are] functioning in microecologies, material environments endowed with cultural meanings; acting and being acted on directly or with the mediation of physical-cultural tools and cultural-material systems of words, signs, and other symbolic values. In these activities, 'things' contribute to solutions every bit as much as 'minds' do; information and meaning is coded into configurations of objects, material constraints, and possible environmental options, as well as in verbal routines and formulas or 'mental' operations.

To discuss participation and engagement only as an individual experience is to ignore the embeddedness of all that constitutes the situated environmental context as listed by Lemke (1997) above. Tools, language and symbols are important mediators of context. Lemke (1997) argues that biography, history and culture act *in* everyday activity and thus mediate learning. These authors suggest that the dynamics of any "ecosystem" depends on the networks that link, couple and connect this element with that and make this interdependent with that.

The literature on workplace learning rarely brings together all these threads and the recognition of their dynamic interdependency. For these reasons the discussion here on participation and engagement will focus on the individual subject while noting the social relations that subjects engage in and are part of.

2.3.2 Dimensions Mediating Participation and Engagement

Vaughan (2008) lists a number of factors that mediate how organisations might want to engage with workplace learning:

- The socio-interactional requirements (whether one needs to work in and interact with teams).
- The importance of the job within the organisation (impact that a specific task has on larger work process, the organisation, and relative prestige of worker).
- The access to characteristics of knowledge (sometimes this is a technical question: where is the knowledge located and what do you need to read or understand, and sometimes this is a political question, who is and is not allowed access?)

In addition, Cullen et al. (2002) and (Alison Fuller, Unwin, Felstead, Jewson, & Kakavelakis, 2007) add different market conditions (competition within same niche), regulations (work rules, licensing, government) and technology (pace and nature of change in technologies used in organisations and difficulties of mastering new tools). These two lists resonate with factors listed in Section 2.3, including systems of production and organising work, the division of labour, workplace cultures,

structures and discourses and structures of knowledge within the workplace, and the profession and the industry sector. In this section, we will take a closer look at the ways in which the nature of the work, as it is situated in particular workplaces, mediates affordances (Billett, 2001b) for learning.

We know that what are sometimes referred to as "organisational factors" are important for enhancing or constraining workplace learning (Eteläpelto, 2008). For example, Festner and Gruber (2008) note that factors that support workplace learning common across organisations include support from superiors and colleagues, a reasonable workload, participation in decision making and a positive overall learning culture in the organisation.

Participation and engagement indicate there is considerable sharing of experience. Barriers to experience sharing include lack of time, trust and a relaxed atmosphere for sharing, and supervisor's attitudes to sharing (Collin & Paloniemi, 2008). Collin, Paloniemi, Virtanen and Eteläpelto (2008) in their study involving a questionnaire to final year technology and transport, social services and healthcare students (n=1125) and interviews with engineering (n=10) and nursing (n=10) vocational students, note that the following factors constrain opportunities for learning:

- Problems in the dissemination of information and knowledge, for example, individuals were not willing to share knowledge due to bad chemistry, or employees do not know who might have the required knowledge of who to ask about work-related issues.
- Problems related to cooperation and team work, for example, it can be hard to pass on/share information with those whose values are different from your own or when you mostly work alone and/or when communication at work is largely in the form of e-mail and internet.
- Problems related to the appreciation shown towards employees, for example, workers with a long history and their varied and wide range of knowledge about different procedures and products are not used to their full potential and a lack of shared responsibility in getting all the work done, which may mean an excessive work load for some employees.

These authors (Collin, et al., 2008, p. 205) conclude that:

The most necessary conditions for workers' and students' learning are related to the feeling of "we-ness" that arises from individuals' active participation in the social community. This implies that the lack of active membership acts as a serious constraint not only on social togetherness, but also on learning at work.

Vähäsantanen and Billett (2008) had similar findings in their study of Finnish vocational educators involved in educational reform. They found that teachers adopted one of five different strategies: a professional development strategy, passive accommodation, active participation, a balancing act or withdrawal. These

authors argue that adoption of these strategies is a dual process involving individual learning, which is inclusive of involving the formation, and transformation of identities that is, active, self-creating subject with the individual will to act and be recognised as an actor. Teachers' choices in this study were made against the background of many management decisions to change approach and direction, but also, choices are not one-dimensional. Teachers also talked about where they were in their career as influencing the strategy they selected for managing the latest change. For example, those close to retirement turned away from finding meaning and identity through work, finding it instead in activities outside of work. Participation and engagement are mediated by perceptions and meaning made from experiences of work and the workplace.

Thus, to separate what is learnt (products) from how (processes) is problematic. Knowledge is culturally and socially shaped (see Beckett & Hager, 2002, p. 163); the dualism of the theory-practice divide fails to capture the holistic nature of what Beckett and Hager (2002, p. 187) call "workplace judgements". Judgements, they explain, are about acting in the world and going through the consequences of your judgement(s). This is why practice/experience is important and why people identify doing the job or experience as a primary way of learning in the workplace. Beckett and Hager (2002, p. 177) suggest that practice-based learning seamlessly brings together human reasoning, will and emotion, that is, "cognitive, conative and emotive capacities of humans are all typically involved in workplace practical judgement". This raises questions about how we understand knowledge. Lave and Wenger (1991) state that knowledge is embodied in the practice holistically; it is not separated as different types of knowledge. However, Eraut (2004b) clearly delineates different forms of knowledge. Billett (2001a) further notes the importance of the workplace as a site for learning theory implicit in vocational practices. These matters are further discussed in Section 2.4, following the next section on workplace pedagogies.

2.3.3 Workplace Pedagogies

Bailey, Hughes and Moore (2004, p. 182) define workplace pedagogy as "the social organisation of the process by which participants in an activity encounter and engage various new forms of knowledge – that is, by which they learn". These authors' reference to "knowledge" limits what we know and has been discussed in sections above about workplace learning. We learn not only "knowledge" but ways of acting, being and becoming. Furthermore, learning through practice is not only cognitive but embodied. How we understand workplace pedagogies is important, as it mediates our engagement and structuring (or not) of opportunities for engagement and participation. In addition, this assists in the recognition (or not) of the ways in which production and work are organised, and the type and status of the work.

Immediately when we think of pedagogies, we think of a teacher in control in a classroom setting. As learning is embedded in the work activities we do, workplace pedagogy requires a more nuanced understanding. In a workplace, there are many "teachers", including people and things: co-workers, peers, managers, supervisors, the tools we use, the stories we hear, events, and the structures we work within, to name a few. Learning in the workplace involves the use of objects and events (Resnick, 1987). The experience of learning can range from deliberate instruction by a peer or supervisor, such as demonstration and reflection (of which there are many forms e.g. reflecting on what happened, why and how to improve or transform practice). Individuals in a workplace can deliberately use pedagogical strategies such as demonstration and asking questions; a company may establish systems and cultures to provide opportunities for engagement and support (e.g. through performance management systems, recognition, acknowledging mistakes as ways of learning and so on) and/or as practitioners in the workplace, we may seek to use our initiative, learn from trial and error from doing the work and engaging with others. In these ways, we see that learning is embedded not only in work activities but in social relations.

Eraut (2011) focuses on the individual and their learning, noting that learning can be a by-product of work processes and includes participation in group processes, working alongside others, consultation, tackling challenging tasks or roles, problem solving, trying things out, consolidating, extending and refining skills, and working with clients. Billett (2001a), on the other hand, includes multiple levels from individual to collective forms of learning. He notes that workplace pedagogies include affordances for learning such as team meetings, internal communication systems, time allocation for group learning, opportunities to solve problems, acquiring systemic knowledge of the workplace, shared responsibility for learning and achieving organisational goals, timely access to assistance from others and making appropriate use of assessment.

Workplace pedagogies therefore need to account for the social, embodied nature of practice and as noted by Tynjälä (2008), individuals, groups, teams and the organisation must learn as do networks within and between organisations. Therefore, we should think of workplace pedagogies as teaching and learning beliefs and values, and their implementation in practice (with all its contradictions) for individuals, groups, teams, organisations and networks. Workplace pedagogies then are far from didactic, although they may include didactic strategies, such as demonstration, but will often be about problem identification, naming and solving at multiple levels: individuals, groups, teams, the whole organisation and networks.

Much of the literature on workplace pedagogies focuses on strategies for supporting the individual learner. Bailey et al. (2004) for example consider strategies within the dimensions of:

- Timing: Did the activity occur before, during or after work? Was it front-loaded, on-the-job or back loaded?
- Direction: Who was in control of the learning activity? Supervisor, co-workers and/or learner?
- Intent: Was learning an explicit purpose of the activity or a by-product?
- Activity: Was the learner passively receiving information or actively participating in the work activity?

A supervisor or co-worker may control what is learnt and the access to opportunities by deciding what is important to teach, demonstrating, explaining and leading a trainee through initial trials or embed learning in the work process, allowing the learner to figure things out for themselves or collaboratively. Bailey et al. (2004, pp. 183-184) also note that structured workplace learning occurs:

- After completion of the work activity (back loading) e.g. de-briefing, learners seek their own information or co-workers volunteer feedback. This can include checking, quizzing, reminding of task elements and so on. Less formally, supervisor and/or co-workers can give critical feedback, telling the learners what they have done wrong. This can include teasing and jokes that carry messages about work practices and customs. It may take the form of storytelling, narratives about past events or personalities that convey significant knowledge about the organisation and the work.
- Mentoring: a holistic relationship where the mentor explains the culture, models appropriate behaviour and supports a learner's development. A mentor is different from a supervisor; they can be the same person, but the relationship is different.
- Front-end loaded instruction includes delivery of information before a task starts, laying out the picture of the whole activity and knowledge and skills demands within it. Modelling and demonstration with a running commentary, "here's what you do, this is why..." There might be a dry run for the learner.
- Doing the work: pedagogies can include giving orders to the learner, sometimes the learner is helping out but watching the whole operation. The learner can take primary responsibility for performing the task but simultaneous feedback and advice are given.

In other cases, on-the-job learning is not controlled by the supervisor but emerges from the work itself. Trial and error is an example of a pedagogical tactic allowing the learner to make adjustments along the way and initiate questions. Practice is another tactic, performing the task over and over again, coming closer to the expected or ideal level of performance.

Billett (2001a) suggests a range of specific strategies used in a variety of workplaces, including getting learners to think for themselves, the mentor encouraging the learner to reflect on their work practices, encouraging the learner to locate a variety of information sources (physical and in people), guided support, sharing how to problem-solve collaboratively and providing one-on-one instruction. Sandberg (2000) adds that deliberately setting challenges is important for developing competence.

Specific learner support investigated by Eraut et al. (1998 in Timma, 2007) included:

- The use of rotations and shadowing, where the learner worked alongside a practitioner for an extended period before taking over the job.
- The use of designated 'experts', where learners, as part of the socialisation process, established who the experts were and how to utilise them.
- Ongoing consultation and observation, which entailed seeking another perspective on a problem, from a colleague.

There are forms of intentional, structured and organised learning on the job that have an explicit pedagogic strategy. Structuring of workplace learning through for example, job rotation, a group working together for certain periods of time and focussed on work-based issues brought by each individual to the group, new ways of thinking about feedback, questioning, talking, reflecting and making sense of experience; individuals sharing their learning with others in the team and that shared learning being used to make changes in the organisation. Such approaches lead to people framing and reframing experiences, seeking and integrating perspectives, and experimenting with different ways of doing things (Simons, 1995, cited in Cullen, et al., 2002).

The importance of these collective forms of learning is exemplified in an example from a study undertaken by Collin and Paloniemi (2008, p. 176), where they note that experience sharing in the horticultural nursery in Finland is not always about sharing experiences verbally, rather it includes having opportunities to work alongside colleagues, but not necessarily together with colleagues:

This requires to some extent assessment of and reflection on one's perceptions but is also automatic in a way that one does not especially need to think about it. Collegial networks are important, for example, in gaining assistance with problem solving from "old-timers", or in sharing with others stories/experiences of unpleasant, puzzling or stressful situations.

These authors note that knowledge of who knows what and who responds to what type of dilemma in sought-after ways in the organisation is important to be able to tap into this knowledge and experience in the organisation. The importance of being part of a collective was highlighted by Lewis (2005) in his study of truck drivers and

their learning. He noted that barriers to developing deeper knowledge for these workers include social isolation, a lack of expert guidance and limited peer contact.

In a study of work placements in the jewellery industry in England, Guile and Okumoto (2008) noted the use of heuristic devices as artefacts within the company to enable a practitioner, Shona, to consider how and/or whether to incorporate various techniques into her own practice. In this study, Shona's story is told as her being part of the social relations of production; of being given access to tools such as heuristic devices and production processes as they relate to her design of wedding rings. Guile and Okumoto (2008, p. 14) observed that Shona "progressively recontextualised her use of those techniques so she was able formulate and instantiate a new range of wedding rings that exhibited some continuity with traditional designs whilst simultaneously introducing new design elements into what is a fairly staid artefact." This example of inferring from other people's practice indicates the complex cognitive processes and ways of being embedded in social relations.

2.4 What is Learnt at Work

"Workplace learnt know-how grows and develops with appropriately structured experience of practice" (Beckett & Hager, 2002, p. 175). As noted in Section 2.3.2, knowledge is embodied in the practice holistically; it is not separated as different types of knowledge. Wittgenstein (1961), cited in Beckett and Hager (2002, p. 148), provides us with a rationale as to why this is so:

- The basic case of teaching (training) is not about mentalistic concepts being connected to objects. Rather, it is about being trained into pattern-governed behaviours, i.e. learning to behave in ways that mimic activities licensed by practice or custom, learning to act on a state set by others.
- Genuinely normative practices are social. A period of training or learning is necessary to become a practitioner.
- All use of concepts presupposes a background technique of using the concept, a technique that cannot be expressed as a set of concepts or rules. So the concept (rule) is not foundational of all else. Technique is not reducible to concept (theory not reducible to practice).
- Training in techniques creates the regularities of behaviour necessary for any judgement of sameness, in this way the process of learning is constitutive of what is learned. So the judgement of sameness is not based on a mental state.

Wittgenstein's (1961) dot points highlight the holistic nature of work and vocational practice; that in reality there is no theory-practice divide, that learning over time and practice and the way we learn in itself provide something of what is learnt. Like Lave

and Wenger (1991), Beckett and Hager (2002, p. 185) conclude that the components of practical judgements at work (the cognitive, the practical, the ethical, the moral, the attitudinal, the emotional, and the violational) "are seamlessly present in holistic performance". Yet Fuller et al. (2004) remind us that it is important to distinguish between different types of knowing as different knowledge has different values and uses in different settings and that different groups have different levels of access to knowledge.

These components may be "seamlessly present" but we continue to commonly categorise knowledge in different ways depending on our purpose (e.g. as human resource practitioner or training provider) and perspectives of knowledge and learning. Eraut (2004b), for example, describes different types of knowledge such as codified knowledge (e.g. information about the organisation), cultural knowledge and personal knowledge. Eraut and his colleagues (2004a, p. 265) present the following typology of what people learn at work:

- Task performance, including sub-categories such as speed and fluency, range of skills required and collaborative work.
- Awareness and understanding, involving understanding of colleagues, contexts and situations, one's own organisation, problems, risks, etc.
- Personal development with aspects such as self evaluation and management, handling emotions, building and sustaining relationships, and the ability to learn from experience.
- Teamwork with subcategories such as collaborative work, and joint planning and problem solving.
- Role performance, including prioritisation, leadership, supervisory role, delegation, crisis management etc.
- Academic knowledge and skills, such as assessing formal knowledge, research-based practice, theoretical thinking and using knowledge sources.
- Decision making and problem solving, involving, for example, dealing with complexity, group decision making, and decision making under conditions of pressure.
- Judgement, including quality of performance, output and outcomes, priorities, value issues and levels of risk.

The authors note that although presented as a typology, they view it more as a heuristic device for use in research and consultancy to remind people of possible aspects of learning present in their own context. The use of heuristic devices, as opposed to knowledge descriptors, for example, to aid sense-making gives some acknowledgement to the holistic nature of work activity and performance.

Tynjälä (2008), on the other hand, summarises Eraut's (2004a) heuristic into three basic categories which form the basis of vocational and professional expertise: conceptual and theoretical understanding (2 and 6 in Eraut's classification),

practical skills or competences, including both domain-specific and more generic skills (1, 4, 5, 7, and 8), and self-regulative skills such as self-evaluation and management (3). When identifying what we learn at work, one of the dangers of separating out the 'what' from the 'how' is that we potentially miss learning processes. Tynjälä's (2008) category of self-regulative skills can be expanded to include other aspects of learning to learn and lifelong learning approaches. In their study of work placements in the jewellery industry, Guile and Okumoto (2008) note that one participant, for example, learnt what questions to ask, how to ask questions, the implications of different designs on cost, time and difficulty of production, as well as the domain knowledge and skills of how things are made. Domain knowledge, theoretical knowledge about fabrication processes, business realities, planning, prioritising and also an evolving identity about her career trajectory were formulated for this participant all through the process of doing the work. We learn a lot about self and agency at work because:

Vocations and occupations have their own historically constituted roots and traditions, which have shaped their cultures and styles of working as well as the habits of those people working in the field (Eteläpelto, 2008, p. 237). For example, there are clear differences between human and technology driven fields, female and male-dominated occupations, and fields with hierarchical power relations and those with more equal relations. Some learners adopt a developmental orientation (Eteläpelto, 2008). Eteläpelto (2008) considers that we actively construct our identities, conceptions of who we are and what we belong to, that we are willing subjects actively making choices about what is important in our lives and for our futures. While this claim cannot be denied, it fails to recognise the power of being immersed in dominant discourses, physical and cultural settings and the ways in which these actively contribute to our evolving identity and how our agency contributes to the remaking and/or subtle changes in these settings and discourses.

Tynjälä's (2008) reference to generic skills, domain knowledge and conceptual understanding can be said to be within what Beckett and Hager (2002, p. 188) call "workplace judgements":

Workplace practical judgement often starts with a judgement about what the problem is. Judgements are socially and politically shaped. There are three orders of judgement: generic judgements (judgements about similarity, difference, identity), mediating judgements (judgements of causation, value, fact, relevance and others) and culminating judgements (ethical, social, scientific, technological, professional and aesthetic judgements).

These authors note that a significant part of developing workplace practical judgement is learning to identify and respond to problems as a relatively autonomous practitioner. We look for patterns in workflow, peaks and troughs, standards, nature of interactions and so on. We must not forget that we also learn bad habits and negative knowledge (see Beckett & Hager, 2002; Eteläpelto, 2008).

2.5 Linking Workplace and Formal Learning

Expertise takes time to develop; it requires time for practice. In fact, a necessary condition for developing expertise is that "learners deploy their achievements in different settings for different purposes" (Knight, 2001, p. 371). It follows then that there needs to be time and opportunities built into the design of training programmes or noted in over-arching curriculum documentation that learners practise in different settings with different kinds of authentic problems. This is why Billett (2003) asks that curriculum ensures adaptability through multiple experiences of different instances of the practice in order to understand the diversity of the vocational practice. Such an approach assumes that development towards expertise is deliberately built into programmes. Therefore, there is a sense of progression appropriate for the learners. Linked with the notion of coherence is the need for messages to be consistent across the programme over time and that modules or units link and build into and onto each other. There is also a need for the building in of cognitive challenge and complexity with each round (Schwartz, 2006) indicative of Bruner's (1960) spiral curriculum.

Wheelahan (2009) concludes that it is necessary for vocational education to involve both workplace and classroom learning. There should be an appropriate balance between practice (inclusive of embodied learning) and the development of cognitive capacities to make judgements indicative of the vocational practice. Issues with facilitating and connecting practical and theoretical learning include ensuring that trainees are given opportunities to engage in work tasks and interact with knowledgeable others, and recognising that learning processes at work are different from the ones trainees may have been used to at school and training centres (Guile & Griffiths, 2001). Some ways in which trainees need to learn at work include learning on the fly and through collaboration and observation, but they may not be familiar with these ways of learning based on their previous educational experiences (Beach & Vyas, 1998).

However, if the issues mentioned above can be resolved, then as found in the study by Bailey et al., (2004) of interns involved in programmes with relatively intensive workplace learning, the dialectic between workplace and classroom experiences "can produce a powerful educational dynamic" (p. 169). They propose that the goal of adopting a workplace learning programme in combination with classroom learning can include the following factors (p. 196) and these need to be made explicit:

- *Cognitive growth* to encourage the learner's capacity to think effectively and critically, deepen skills learnt in school as well as participate in problem defining and solving in team and individual work, and in diverse ways of linking and relating aspects of what has been learnt in school with what is learnt at work.

- *Building practical skills and knowledge of careers* to help learners develop the generic and specialist skills needed when they enter the world of work in that career for the first time. Learning about the reality of a career for the first time is quite different to learning about it abstractly in a classroom setting.
- *Personal and social development* is often a key benefit of workplace learning as it provides the opportunity to develop maturity (if young), build confidence and self-esteem, as well as social skills such as teamwork.
- *Opportunities for reflection* by learners which classroom trainers can draw on to assist learners make links with classroom learning, connections between experiences and more abstract knowledge and knowledge of self. It provides opportunities for development of meta-cognitive skills.

Reflection is intrinsic to learning. The learner can learn to analyse work experiences through academic concepts but also as a result of work experience, critique these concepts. In addition, learners are able to make links between what they were learning off and on the job (Smith, 2000) and this supports the perception of an apprentice as a "mediator of, while simultaneously a client in... different learning environments" (Harris, Willis, Simons, & Underwood, 1998, p. viii).

Different places of learning take on different thought patterns and ways of being, and we often accept these without thinking about them so they are not necessarily visible. As such, educators need to find ways of making these explicit and cross-fertilise concepts and experiences. Their role therefore is not to impart information but to initiate critical and reflective discourse where students learn to imagine and think of other possibilities. For this to take place, workplace learning educators who are the trainees' classroom trainers and also workplace supervisors need to have a shared understanding of how trainees are progressing through their learning journeys. This would place them in better positions to identify and leverage teachable moments that constantly relate to and build on previous moments, regardless of whether they were constructed in class or at work.

2.6 Assessment

Despite assessment being an important part of and integral to the learning process, there is limited literature on workplace assessment (Vaughan, 2009). Assessment is often treated as separate from learning when it should be considered a part of learning. For the purposes of this review, the paucity of literature on workplace assessment makes this topic worthy of its own section.

In a workplace setting, formal assessment is used when there are structured arrangements between a workplace and a training provider or indeed when a workplace is itself an accredited provider. Formal assessment may also be part of systems such as performance management reviews. If we understand the purpose

of assessment as supporting learning, then we may more readily recognise it as a constant in the workplace where feedback and shared, collaborative approaches are used in undertaking work activities. In these processes, we are constantly self-assessing as we undertake work activities, therefore as learners, we need assessment skills (Poikela, 2004). People learn best when they can assume control of their own learning and they can only do this if they develop the capability to assess their own learning (Absolum, Flockton, Hattie, Hipkins, & Reid, 2009), and, as a result, track their own development and create their own learning targets. These characteristics contribute to what is referred to as dispositions for learning and engagement (Billett, 2003; CEDEFOP, 2010; Edwards & Daniels, 2004), and dispositions to use and seek "knowledge" (Glaser, 1991).

In order to ensure that learners develop the knowledge and skills needed to perform assigned tasks and to support their development while they do so, trainers and supervisors need to engage in continuous assessment of and with trainees. When the topic of assessment for vocational education is discussed, it is important to recognise that there can be many different assessment arrangements within the workplace. While it is helpful that the setting and tasks at work are authentic, it is important to consider the types of knowledge and skills that are assessed and how this assessment takes place. Like the informality of workplace learning, the informality in assessment practices seen both at training centres and workplaces has the potential to enhance trainees' learning outcomes. This could be through the mentoring of trainees by external assessors who fill in the gaps left by trainers and supervisors (Colley & Jarvis, 2007) or through the daily interactions between trainees and internal assessors that offer evidence of trainees' progress (Timma, 2007).

Another aspect that requires consideration is who carries out the assessment, as trainers, supervisors and assessors may be the same or different people. While having more than one assessor can provide broader and more valid judgements, this arrangement can lead to inaccurate assessments if the assessors involved are not aware of how they and other assessors contribute to the learners' overall assessment (Vaughan, 2009). This is another reason why it is necessary to establish clear links between workplace and classroom learning. Our earlier research on workplace learning arrangements showed that such links can be formed through open communication between training providers and employer partners, as well as the use of learning tools such as training journals that are used by trainees, trainers and supervisors to document learning experiences (Bound & Lin, 2010). However, as mentioned earlier, trainees themselves can reflect and make their own links between workplace and classroom learning. In her article on workers' perceptions of on-the-job learning and assessment, Timma (2007) goes on to highlight the need to involve trainees in the assessment of their own learning, and this includes (Timma, 2007) discussions on suitable methods of assessment and types of evidence collected. Workplace learning educators also need to help their learners

"assume 'ownership' for monitoring changes in their work practices, following assessment" (ibid, p. 9). This form of holistic assessment is in line with Billett's (2001a, 2003) reminder that curriculum should focus on vocational practice, which is not just about separate, atomised tasks and pieces of knowledge and skills, but about wholes and relationships. However, in reality, assessment is often a one-off judgement of an individual's learning even though much of what takes place at work is of a collective nature and learning is embodied in the social relations at work. Other issues with assessment, as highlighted by Sluijsmans, Straetmans and van Merriënboer (2008), include a lack of alignment between instructions and assessments and norm-based approaches towards assessment even though no two learners are the same.

The view that the purpose of assessment is to support current learning and foster further learning has not tended to be the primary purpose of assessment in relation to industry training. However, it is likely to be an emerging focus, given the kinds of social and economic changes and their impact upon the workforce and the workplace, which we discussed earlier in this review. Assessment can be used to "enhance learning by putting in place policies which are clearly informed by the desire to create more motivated and skilful learners" (Broadfoot, 1998, p. 450). However, it is also true that sssessment structures and processes can limit learner options or foster unhelpful approaches to learning, for example, being overly preoccupied with getting things "right" and avoiding activities that are challenging (ibid). Again, we are reminded of the purpose of assessment. A preoccupation with getting things right and therefore avoiding challenges can be as a result of a system that views assessment as something in its own right, rather than as being part of the learning process.

2.7 Models for Workplace Learning

Although there is considerable literature on the ways in which workplace learning is linked with or part of vocational or higher education study, the education literature, as opposed to managerial or human resource literature, is very limited on models for the ways in which workplace learning is leveraged. For the purposes of this study, we limited our search to the educational literature.

Bailey et al. (2004) suggest there are two models of workplace learning, one being the functionalist model and the other the reflective or critical approach. Depending on the preferred model, this will inform the purpose and shape of the learning experiences designed into the programme, and the structure and mix of workplace learning and classroom learning. The functionalist model sees the core purpose of workplace learning as preparing students for certain functions in the economy by giving students the requisite skills, knowledge and attitudes required. It assumes that the social relations are given and stable, the required skills can be identified,

and proper teaching methods will prepare the learners for the work role (Bailey, et al., 2004, p. 198). The reflective or critical model regards the structures and practices of the workplace as socially constructed, as potentially flawed and open to questioning and critique. Therefore, the goal is not only to prepare students for work but also to create potential for the students to understand and reflect on the existing alternatives, imagined alternatives and become active participants in the construction of their workplace and society (ibid).

In Australia, the apprenticeship model is generally a functionalist model characterised by a regulated, employment-based training agreement, a commitment by the employer, the employee and a Registered Training Provider (RTO) to an agreed training programme in a specified occupation; a vocational programme that consists of a concurrent combination of employment and training that leads to a recognised qualification and to employment (McDowell, et al., 2011). The apprenticeship is about skills formation in an employment context; it is both a training relationship and an employment programme. The on-the-job element is highly valued by Australian apprentices and industry (ibid). Traineeships are similar to apprenticeships (but with a shorter time span and lower level of qualification) and have been found to be particularly important in non-trades industries such as aged care, where they have been successful in attracting and retaining staff. Challenges in these arrangements include ensuring high quality experiences for apprentices and trainees with their employing organisation.

In the higher education sector, Evans et al. (2010) describe a programme where KLM Royal Dutch Airlines and Kingston University jointly designed a Bachelor degree for aspiring maintenance engineers. The significance of this partnership is the coming together of industry and an academic institution. To design an effective programme, each of the parties involved had to work through their scepticism of the other, language use and the valuing of what they considered important, and also address licensing requirements within the degree framework. Student engineers can complete their studies after the "'practice" year with a foundation degree or proceed to a further one year full-time or two years part-time, with two years of further practice required in each case for the full license.

Although this is a degree programme, it offers an interesting model for vocational institutions because of the way in which they sequenced the programme – academic elemental units of Mathematics and Science come first. However, this knowledge is recycled and developed in subsequent modules. These modules are followed by practice-based and academic modules, which build on the content of the academic elementals units. Unlike the academic elemental units, the practice-based/academic modules are subject to change as a result of the introduction of new technologies or materials. The final set of modules is systems/skills modules, which draw together and build on all previous modules, increasing the learner's orientation to the operational environment. This last group of modules requires

constant monitoring for changes in the operational environment. The messages here are that modules:

- Are deliberately designed to change in order to reflect what is happening in industry, that is, there is inbuilt flexibility.
- As learners progress through the course, the curriculum is designed to overcome the theory-practice divide with a focus on using and integrating theory in practice.
- Allow for incremental steps towards working on aircraft as a whole system.
- Build on each other; the programme is developmental in nature; it does not consist of isolated modules that require learners to somehow make connections between and make sense of the whole, rather there is knowledge interdependency between the modules (Evans, et al., 2010, p. 248).

These authors describe the ways in which learners strengthen their repertoires of knowledge and skill:

- The level of work tasks and standard of workmanship expected increase progressively.
- Learners learn by making mistakes in a controlled, closely supervised and sheltered environment, but one that progressively resembles the workplace itself.
- Dummy stage is simulated – it is a safe, transitional stage.
- Learners move from predictable to more unpredictable tasks where some of the complexities of real-life work (and its artefacts) are built into the learning experience.
- Students keep a log book of all the practical work completed.
- As a result, learners learn to operate under the pressures of the operational environment.
- Feedback is tailored to workplace and academic criteria with the aim of learners being able to operate under time and unpredictable pressures of the workplace. Debriefing focuses on developing confidence, stretching learners and engaging them in learning conversations (Evans, et al., 2010, p. 249).

In the following example, industry and academic institutions work together to supervise adult entrants to an industry or career switchers through the Knowledge Transfer Partnerships (KTP) (Guile & Okumoto, 2008). The KTP is aimed at companies to encourage the introduction of product and/or service innovation; companies are offered people (adult entrants, post their qualification or career switchers) and funding to support this development. Guile and Okumoto (2008) explain that in the jewellery sector, there are a number of intermediary agencies to bring together small and medium enterprises (SMEs), freelancers and networks to forge partnerships. The funding programme accessed in the following example was

seen as having flexibility required for innovation development as it did not require government training targets. Using the Design Network Placement, the Birmingham City Council worked with the Jewellery Industry Innovation Centre (JIIC). The Design Work placement Project was based on a three-way partnership: manufacturers provided recently qualified jewellers an opportunity to produce a new range of products, the jewellers worked for a small bursary in order to learn how to create, cast and monitor fabrication of their designs and the JIIC acted as mentors to the jewellers and as project managers. Company Directors also acted as on-site mentors for each design. The scheme ran for six months and involved 10 companies and 10 designers, providing enough time for design and production. The JIIC, the Company Director and the jeweller jointly put together a brief that outlines the time plan, expected number of designs and forms of support. The outcome for the company was a new set of designs that helped reposition them in the market and also served as a recruitment process as they ended up offering the jeweller a freelance contract at the end of the six months. The jeweller learnt about different ways of working, the appropriateness of design ideas for production and time frames. In general, it added greatly to the development of her professional practice and also provided a stepping stone for the next step in her career, helping her to think about where she wanted to place herself in the industry. Lessons from this example include the flexibility of funding requirements and outcomes such that industry sector needs and particular company needs can be met along with the learning needs of budding practitioners. The mentoring support in the case outlined by Guile and Okumoto (2008) was highly successful, with the Company Director being an important player in the jeweller's success.

Work experience is based on management arrangements between an educational institution and a workplace. The assumption is that these workplace environments are stable contexts in which students learn about work. However, Guile and Griffiths (2001) suggest that given the rate of change globally, this is no longer a reasonable assumption to make. They therefore suggest that there is a need for curricula that provide "frameworks that encourage students to make links between work experience, its underlying knowledge and skill and its context" (ibid, p. 116). Such curricula require an understanding of the purpose of work experience at a context *through which* students can learn and develop. This results in a focus that has developmental intent rather than only content or skills intent and requires the workplace to deliberately provide opportunities for learners to discuss and try out different practices. However, the extent to which organisations do this may well depend on their Human Resource strategies.

Guile and Griffiths (2001, p. 120) provide five different models of work experience:

- Traditional Model
- Experiential Model
- Generic Model
- Work Process Model
- Connective model

Each of these models requires different roles for students and trainers, and each model has different purposes and understandings of work and theory, and of the mediation of context. The authors note that the first four models all have their strengths and weaknesses and therefore, recommend the connective model. The connective model requires curriculum that calls for learners to relate different forms of learning in context and to conceptualise their experiences in different ways. The role of the teacher is one where they pose problems to encourage learners to "analyse their experiences and arrive at a critical understanding of their reality (Guile & Griffiths, 2001, p. 125).

Where work experience is part of an academic-vocational programme, there are assumptions that need to be examined about the purpose of the work experience, the role of learners, workplace supervisors and teachers, the design of curriculum and linkages between different sites of learning.

2.8 Summary

In this review, workplace learning is understood as a process. We consider learning not just as change in the individual, but learning as resulting in a change in social relations of production. Consequently, we need to consider a unit of analysis that addresses the macro and micro dimensions of workplace learning; specifically a unit of analysis that addresses how social relations between people, resources, institutional discourses, and structures and power mediate learning. Mediated activity happens in the space of social relations between people and tools (cognitive, symbolic and physical), processes and contextual conditions. In this review, we suggest an activity as an appropriate unit of analysis provided we address the limitations of such an activity theoretical perspective.

Participation and engagement are important for learning, but also problematic as this claim assumes participation and engagement are always possible. However, we know this is not the case. In fact, some types of work and workplaces preclude such opportunities, for example, engagement with others and observing the experts Participatory practices are a norm in some workplaces but not in others where the extent of asymmetry in power relations and the organisation and/or nature of the work make it difficult or impossible for participation and engagement. The degree of

"we-ness" in a workplace can enhance learning or if not, presents serious constraints for learning.

We can understand specific approaches to learning in the workplace through conceptualising how we learn in these sites as workplace pedagogies. In this context, pedagogies are conceptualised quite differently from formal structured learning where there is a teacher in charge. In the workplace, learning opportunities are distributed amongst individuals, teams, sections, workplace communication tools (e.g. meetings, staff room exchanges) and the tools (physical, conceptual and symbolic) you have access to, in addition to the organisation and flow of the productive process. Workplace pedagogies include didactic techniques such as demonstration to informal exchanges, observing expert others, asking questions and so on, but typically will also include problem identification, naming and solving problems individually and/or collectively. Much of the literature on workplace pedagogies is about individual learning but because of the distributed nature of opportunities (if they are present), we need to think both about individual and collective strategies, including the deliberate structuring of work and workflow to enhance learning.

What we learn at work is contextualised practice, pattern-governed behaviours and familiarity with using appropriate concepts and techniques; the way we learn also constitutes what is learned. To be more specific, we learn about the organisation, cultural and personal knowing, we learn about the boundaries of our role, the asymmetry of power relations and about the social practices and interactions between individuals and parts of the organisation. We learn conceptual and theoretical understanding (within the limits of the type of work and our role), practical and generic skills, and also self-regulative skills. All this and more can be learnt in a supportive work place learning culture where the work being undertaken beckons self-agency and supports the enactment of the agency.

Programmes that link formal, structured learning and workplace learning give some formal recognition to the time it takes to develop expertise and the importance of contextualised practice. Assessment in these arrangements requires careful consideration, as assessment is integral to the learning process. However, there is a paucity of literature on this aspect to assess such programmes. Assessment needs to be aligned to the design of the whole program and is likely to serve different purposes and assess different things depending on the model of workplace learning institutions are working with. For example, a model that assumes workplace learning is about preparing students for their functional role as part of the economy is likely to assess particular skills and knowledge, considering knowledge as static rather than as dynamic and embedded in social practices. Whereas an approach that understands the structures and practices of the workplace as socially constructed will encourage critical questioning and critique and it is these aspects that may be important components of assessment.

When training providers set up relations with workplaces and develop partnerships, the nature of the partnership is also reflected in models of workplace learning and approaches to assessment. Whether it is an apprenticeship model, a work experience model or some other model, the critical factor is the alignment of the workplace learning components with the overall intent of the program. Different models require different roles for students, trainers and workplace supervisors, as well as possible ways in which workplace pedagogies can be used effectively. All of which is dependent on the workplace culture and structure, the workplace and organisation of work. Indeed, such relationships and possibilities for learning are also mediated by the nature of the work, the market niche and industry, and professional ways of being and becoming.

3.0 Findings

3.1 Introduction

This findings section provides detailed descriptions of what and how trainee chefs, healthcare assistants, baristas and aerospace technicians learn in their respective workplaces, and how the workplace and trainees contribute (or not) to this learning process. We have written these case studies as standalone pieces as each workplace offers different insights into what is learnt and how learning takes place. In Section 3.5, we will explore these insights and draw out the similarities across workplaces.

3.2 Case Study 1 – Hotel Co

Trainees' pseudonyms – Eric, Wei and John

Hotel Co is committed to training and developing its employees. One of the foundations of its vision and mission is the Employee Promise which acknowledges the importance of its staff and places emphasis on developing their skills:

At Hotel Co, our Ladies and Gentlemen are the most important resource in our service commitment to our guests. By applying the principles of trust, honesty, respect, integrity and commitment, we nurture and maximise talent to the benefit of each individual and the company. Hotel Co fosters a work environment where diversity is valued, quality of life is enhanced, individual aspirations are fulfilled and The Hotel Co Mystique is strengthened.

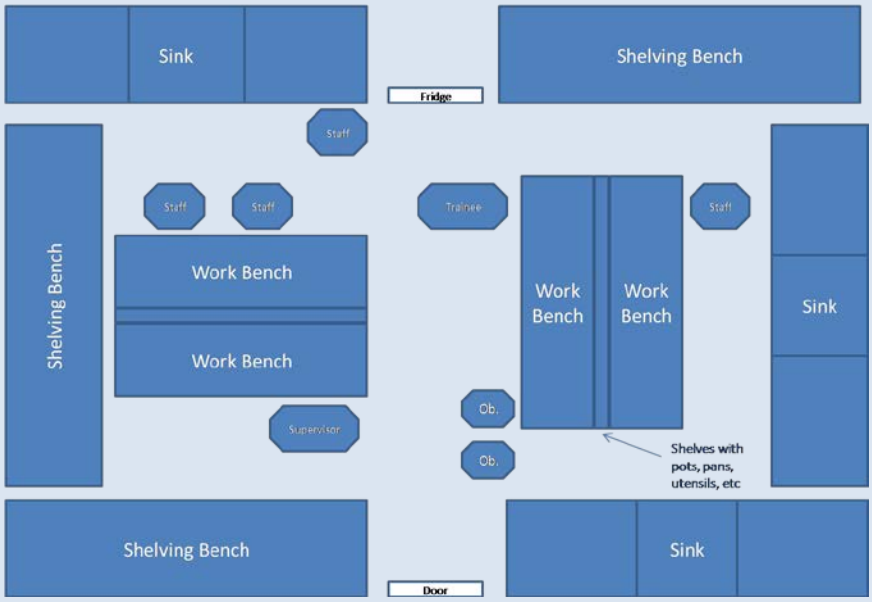
The terminology "*Ladies and Gentlemen*" for staff is indicative of the valuing of employees. The organisation also has a Learning Model in the shape of a pyramid with five levels. At the base is the purpose statement, "*linking learning with company objectives to ensure organisational effectiveness and return on investment*". On top of that are the learning strategies of "*assess, design, deploy, measure, evaluate, and share best practices*". The key factors make up the third level and involve "*learning, quality processes, and work environment*". This is followed by the key driver, "*strategically linking learning to business results*". Finally, the ultimate goal at the top is to "*positively impact Hotel Co's key success factors*". At Hotel Co, learning is integrated into the strategic statements at the highest level.

The Employee Promise and Learning Model has been translated into a variety of formal and informal training programmes. All new employees undergo an in-house corporate programme that involves both classroom and on-the-job training. Orientation takes place during the first two days, and over the next three weeks, they are paired with their department's learning coach or an experienced staff

member who guides them through their daily work tasks. On day 21, they return to the classroom for a problem resolution course. This is followed by an anticipation of guests' needs course on day 90. Last, on the 180th day of their employment, they go through a two-day WSQ module on interaction with guests. After six months of service, employees have the opportunity to attend external training programmes. A record of the programmes employees complete is kept in their learning passports. While this document is not linked to monetary incentives or promotions, the intention is for it to give employees a sense of pride and achievement. The effectiveness of the different training programmes undertaken is evaluated during formal biannual performance reviews or informal key review area sessions.

Chefs at Hotel Co can enrol in F&B WSQ programmes at one of WDA's CET centres. Since 2005, Hotel Co has partnered with the same training provider to train staff, host trainees, and employ graduates. The trainee chefs in our research project (pseudonyms Eric, Wei and John) were at different stages of their two-year WSQ Advanced Culinary Placement Diploma. This programme has six different modules, and each requires trainees to spend time in class and at work. Eric and Wei were full-time employees at Hotel Co and John was there for his apprenticeship. At the time of our data collection, Eric was stationed at the pool/room service kitchen, Wei at the cold kitchen and John at the main kitchen.

Figure 1. Cold kitchen layout and the positions of staff members at a moment in time during an observation



Hotel Co has a total of six kitchens and the management team has made a deliberate decision in the structuring of learning for trainees to rotate them from one kitchen to the next every four months. Trainees spend one month with the training provider followed by three months of work apprenticeship in the kitchen before returning to the classroom to start the same cycle for a different module.

Experiencing different kitchens ensure there are sufficient opportunities for practice, "*doing it more than once will help*" (John). Opportunities for practising everyday skills and activities are one part of being in a workplace as a trainee. Another aspect for these trainee chefs are opportunities to bring together what is learnt in school and what is done in the workplace to come up with new and improved ways of doing things. Eric's lessons on stock making have given him "*a different perspective of how to do it in a more refined way*". He now makes better sauces by incorporating the classroom methods to his current practices, "*I just fuse the two ways together like the last time how we do it and the new method that I learnt, so it's making much better sauces*". Hands-on experience in the workplace can also result in new insights. Even though Wei had gone through butchery training in class, it was only after working at the butchery section in the hotel for over a month that "*it surprised me how lousy my butchery skill was*". The opportunity to watch how butchery skills are used in Hotel Co, being guided by his supervisor along with being able to ask questions now means be can minimise the amount of meat left on the bones. According to him, the school teaches you "*the proper way*", but the hotel teaches you "*their method*". Giving the example of filleting fish, Wei explained that the difference between the two is in the order of the steps, but the butcher chef's method causes less tears in the meat.

Regular rotations to different kitchens provides immersion in different types of cooking styles and different work teams, but also places demands on the trainees that can be quite stressful as they work at learning about the new environment, each with their own cuisines, workflows and ways of operating. Initially, Wei found the process of becoming accustomed to a new kitchen challenging, leaving him feeling stressed. However, as he moves from one kitchen to another and begins to understand the environment and work, he becomes better at knowing what questions to ask:

"So you try very hard from the first day ask, ask, ask, ask, ask… I think I've pretty much got it down to; I know what questions to ask and then first is, where is everything kept? Tell me, this chiller is for what purpose? This trolley is for what purpose? This place in the chiller is for what? That place in the chiller? So at first when I just started of course, you know, I go in there and say, what do you do here? Now you know what the right questions to ask. What is your operation like? What's this? What's that? So I find that the assimilation time is shorter and shorter, you get accustomed to it faster."

Wei began by asking general questions such as "*what is your operation like*?", but learnt that these general questions did not help him much. He learnt to ask specific questions as indicated in the quote above about where various items in the kitchen are kept and what they are used for. The answers to his questions help him understand and become part of the flow of work rather than be disruptive of the flow. This example of a meta-cognitive learning to learn skill learnt in the workplace

is not only is part of a set of tools which Wei can use to understand how this large, complex workplace works but will serve him well as he moves from one place to another in the course of his career as a chef. Managing the learning that occurs at work is another aspect of learning to learn.

At work, trainees are exposed to additional insights that go beyond what is taught in class. As he was part of the butchery team, Wei was able to observe and assist with the preparation of food items for the hotel's Super Brunch, a special buffet spread that Hotel Co organises four times a year. Instead of perceiving it just another work task, Wei saw a learning opportunity:

"You can say it's like some kind of lost art maybe nobody in Asia or very few people in Asia do that or have a chance to learn such classic traditional European food, so that one I really appreciated."

The enthusiasm he showed towards his own learning can be seen through the effort he made to document and reflect on the processes used for the preparation of the Super Brunch, "*I kept taking [photos] and then asking for the recipe and then step by step, also go back, you take the photo, you document the photo and you try to remember*". He also went one step further and tried out the suckling pig recipe himself immediately after the chef demonstrated the process. While the dish failed because he missed one step, he was not discouraged, "*so I try to practise more often and then try to get it, but you do have to take notes and have some kind of document*". Taking notes and referring back to them at home and at work was also a learning strategy that John used, though the frequency of referencing gradually decreased as he familiarised himself with the various work tasks, "*techniques wise, usually I will write it down, but I mean personally, if I do it two or three times after, it just comes*".

Wei's experience with learning butchery skills and having opportunities to practice new dishes are indicative of access to support and guidance. Eric commented that while they worked, "*they [supervisors and other staff] will teach you along the way, they will take care of the trainee*" Opportunities for learning have been structured into the work trainees undertake, and the extent to which the kitchen culture is geared towards developing staff is evident in the day-to-day practices. John recalled that when they had to produce potato gratin, his supervisor demonstrated the layering process once and left him to complete the remaining trays. It would have been more efficient for the supervisor to delegate the task of peeling potatoes to John, but "*he wants me to learn, so I will handle the [slicer] machine, I will lay it out myself and I will be doing the more important stuff while he just peels it for me instead*" (John). While trainees worked on individual tasks, we observed their supervisors placing themselves strategically so that they could see what trainees were doing without looking over their shoulders. Once in a while, they walked over and checked to see how the trainees were progressing. If required, they would

quietly instruct, often in Chinese rather than in English. They mainly asked questions and gave instructions on the next steps required for the dish. The actions of supervisors and other chefs in the kitchens are indicative of a deeply ingrained valuing of developing trainees.

Trainees are also given a degree of autonomy over the dishes they are assigned or have selected to complete, "*discretion to do whatever you feel that is necessary*" (Wei). While keeping to the original recipe is important in terms of maintaining standards and budgets, the method of preparation and type of ingredients used can be adjusted. Trainees are given space to learn how to solve problems and make independent decisions on the spot when faced with unforeseen circumstances, such as running out of specific ingredients or receiving special requests from guests. Eric gave an example of how he had to prepare a raw vegan dish while working in the room service kitchen and noted that his supervisor "*trust(s)*" them. Another example of this trust was when John's supervisor gave him the task of testing out a new recipe for chocolate mousse within a limited time frame. While his supervisor was there with him throughout the process, it was challenging for John because:

"It's new, it's anxious to know that I don't do it wrongly because yeah, I mean I can say you don't have any more resources to play with and you have to get it done right, there and then. If not, no one is going to be able to do it tomorrow and the day is going to end and so make it right. So every step of the way or anything that is unsure, we always ask before doing it."

This example tells us a number of things. First, the work environment is demanding and you need to accept this as part of being a chef, so learning about the nature of the demands is part of the process of becoming a chef. The anxiety of doing something new, something for the first time, is part of being a trainee, but while the level and type of anxiety may be different, doing what is new is also part of being a chef producing high quality food. Second, as part of being in the workplace, trainees know a whole range of stuff' such as, what ingredients are available, although they may not know detail, they see raw ingredients come in, they know the menu, they are part of the preparation and understand what ingredients have been used at a point in time, they are part of the daily line-up or briefing, they know the rhythm of the day, they have access to the board where menus, rosters and so on are posted, and as they work together preparing ingredients as a team, they talk and share thoughts, ideas and issues and they overhear conversations between those in higher level positions. So in the workplace they learn 'stuff' beyond their immediate tasks; this knowledge is then used to bring an appreciation to all that they do. In this instance, John appreciated the requirements for the menu they were preparing for, issues of timing, the status of the ingredients he was working with. Thirdly, there is support. The supervisor did not ask John to undertake this task, give instructions and leave him to it; rather the supervisor appears to have

deliberately set up a structured learning challenge and was there to provide support. He too had an investment in John getting it right. Finally, all these pressures are powerful motivators to find ways of learning fast and doing a good job, so trainees learn to ask questions that are very specific to the task at hand, indicating there are multiple opportunities apart from rotating through the kitchens, to learn how to learn at work, and how to learn to become a chef.

The trainees' supervisor encourages them to try new things, "*we always say you can try*" and looks forward to seeing how creative they can be. However, while supervisors may allow trainees to experiment and innovate at work, they also have to ensure that the food they serve their guests meets certain standards. John described an incident in which he misread the decimal places on the weighing machine and added too much baking soda into the batter, "*all 10 loaves of it were being dumped... you learn hard and they will stay forever*" (John). There is a balance between producing high quality food and providing learning opportunities, and the kitchen allows for this through building in room for error, so that trainees are able to engage in independent learning without fear of negative consequences:

If let's say today I say I feel like, let's say making consommé soup, a kind of soup when you are doing Western cooking, it's a very precise one about temperature because the soup has to be crystal clear and the quality standard for a good consommé is once you pour it in the bowl, you can see the bottom of the bowl right from the top. So that takes a lot of practice as well. Let's say today for the buffet, I got three types of Western soup for lunch. I can choose to practise, even if it fails, I can just label it as a broth, you know chicken broth. If it is successful I can name it chicken consommé and so it's like you get a chance to do things like that and furthermore, you get to test yourself in a sense of making decisions, independent decisions. (Wei)

Apart from learning that trying out new things, experimenting is part of being a chef, as Wei utilises his technical skills in these situations, he builds up confidence in his abilities as a professional chef, "*you trust your skill and you trust your knowledge even more*", and this means that he is better able to handle unexpected situations when they arise. There is also space for additional practice without the pressures and demands of the daily work through preparing meals for the executive chefs to try during lunch, and informal competitions where everyone produces a dish and the best one is featured on their menu.

As trainees learn new processes and recipes, they are encouraged to share what they have learnt; another way in which the kitchen culture facilitates learning is through their openness and acceptance of inputs from staff. Eric gave examples of how his supervisor has taken on and implemented his suggestions on garnishes and stock making techniques. The processes in place for the dissemination of this information include writing down the new steps on the common board where the

menus and rosters are posted. Teaching and learning is a two-way process with trainees learning from more experienced staff and these staff learning from trainees. As they work together preparing ingredients for dishes, they talk and share thoughts, ideas and issues. In more formal settings, there are monthly training sessions where anyone can lead the discussion. Eric was given a slot to talk about organic food; his supervisor was not only very impressed but also found the information useful. The supervisor highlighted that trainees who show a positive attitude towards their own learning are given more opportunities to showcase their work. He also informed us that they assessed trainees on their attitudes towards work and learning, and discussed their trainees' learning needs with each other.

Trainees need to work successfully alongside colleagues. Wei explained that the team initially divide up work tasks at the start of the day, but after working closely with the same group of people, this division of labour soon becomes "*automatic*". When he steps into the kitchen, he checks the menu and looks around to see what other chefs are working on before starting on a new task. As a result of working closely together, trainees learn to 'read' what is happening and what is yet to happen and this enables them to participate fully in the workflow. When they work on different components for the same dish, there is a sense of trust in each other's abilities, "*everybody is competent in every aspect of the dish so I don't have to worry*" (Wei). This trust can be attributed to the inclusion of the whole team in the planning process for new dishes, "*everybody's got to think of something [to contribute] too, in the processes, yeah so it's the whole team*" (Eric). With an understanding of the thinking behind the various dishes, trainees are able to better appreciate not only 'how' to carry out tasks, but the reasons 'why' certain tasks are carried out in particular ways.

The process of becoming a chef involves not only learning how to produce high quality food, but keeping up with the demands of the work, and this includes ensuring that the food prepared for guests is ready on time and is of a certain standard. For John, who had been an accountant previously, this meant that he had to learn how to organise, plan and think ahead. There are layers of organisation involved such as setting up the workstation with the right tools, finding out the quantity of food that needs to be prepared, and co-ordination with other chefs who may be working on the same or different dishes. Trainees need to be aware of both the big picture plan and the details of their individual tasks. According to John, these work habits, initially developed in and for the kitchen, have now become "*innate*". A workplace routine that assists trainees with keeping up with the rhythm of the day is the daily line-up. During this 15 minute briefing, a chef from the management team updates the kitchen staff on the events at Hotel Co and the work that they will be involved in for the rest of day and throughout the week. After the announcements, the chef would ask if anyone had anything to share or add before dismissing the team.

Supervisors not only take responsibility for their kitchen's operations, but also for their trainees' learning. A long term view of developing future chefs for the industry, not just for the workplace, is part of the teaching and learning cycle at Hotel Co. Hotel Co's kitchens have a strong learning culture, evident in the three trainees' experiences described above, and in the ways in which supervisory staff interact with, guide and structure trainees' learning to support their development. Trainees appreciated the guidance they received from their supervisors, and spoke about feeling "*a sense of belonging*" at work (John). They indicated that that the planned to stay in the same organisation but move on to supervisory positions to teach new chefs. This positive learning culture, expressed not only in documented policies and procedures, but lived every day, encourages trainee chefs to develop their own passion for this profession.

3.3 Case Study 2 – Nursing Home Co

Trainees' pseudonyms – Min and Jo

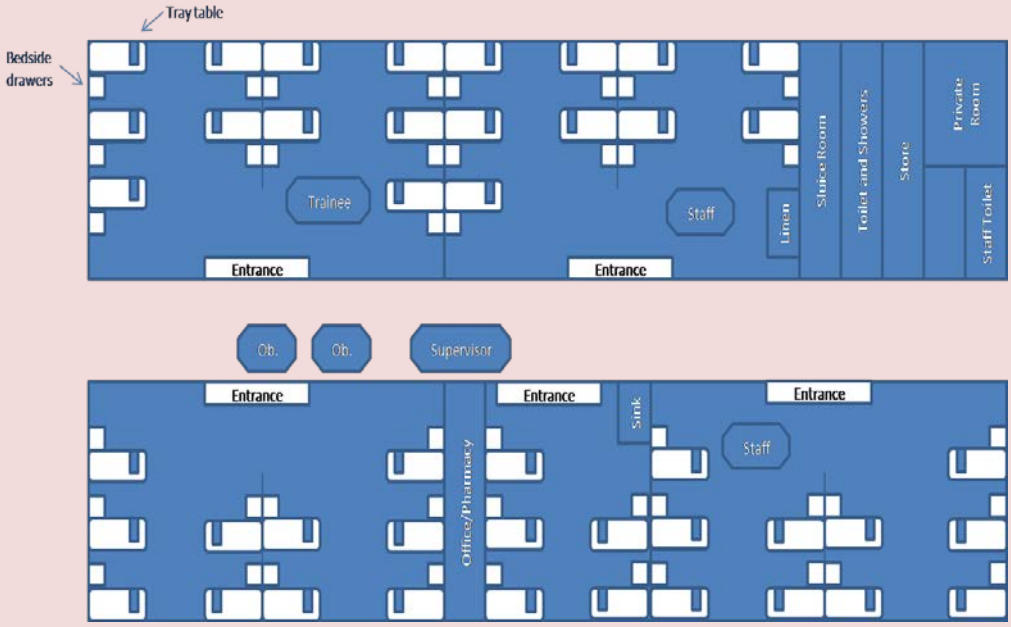
Nursing Home Co is part of a wider organisation that manages a total of eight local facilities (a hospital and seven medicare centres and nursing homes). The mission of the organisation is to "*provide high quality and customer-focused healthcare services*" by focusing on the five key areas of 1) sensitivity to customer needs, 2) improvement of services through research and skills development, 3) having systematic and organised service delivery and quality control systems, 4) building local and international networks with healthcare partners, and 5) caring and grooming staff to set and achieve high goals. One of the ways in which the development of staff takes place is through their own training centre. The centre trains healthcare personnel primarily for their own facilities, but also for other care centres as a challenge for the healthcare industry in general is the shortage of qualified staff.

The two trainee healthcare assistants (HCAs) in our research project (pseudonyms Min and Jo) recently completed a two-month HCA WSQ course at the training centre. For this WSQ course, the training provider adopted a Place and Train model in which they conduct interviews with trainees to ensure that they are suitable for placement at one of their facilities before admitting them into the programme for training. Trainees go through the six skills-based modules of 1) ability to monitor patients'/residents' health, 2) ability to do wound management, 3) ability to perform in feeding patients/residents, 4) ability to assist patients with personal hygiene and grooming care, 5) ability to assist patients in elimination needs, and 6) perform prevention of pressure ulcers. Training is mainly conducted in a classroom with facilities that simulate a ward. Towards the end of their two-month programme, trainees undergo four days of on-the-job training (OJT).

During their OJT, trainees are assigned to a nursing aide (NA) who gives them an orientation of the place and familiarises them with the daily work routines. Trainees observe how the work is carried out and are also given the opportunity to engage in hands-on tasks. Their OJT takes place in the care centre of their choice and it is where they will work for a minimum probation period of three months after completing their course. Having their OJT in their future workplace assists with the transition from class to work as trainees would have gained a better understanding of their work tasks, the organisation of work and workflows, and would have had the opportunity to interact with their future colleagues and patients. The four days provide them with a preview of their work and work environment, and trainees can then make a more informed decision on their 'fit' with the organisation. Min continued her stay at Nursing Home Co as it was "*not bad*", but Jo requested for a transfer from another facility as she had an unpleasant experience there. She explained that a senior staff had asked her to assist a bedridden patient, but

"*immediately when I transfer her to the toilet bowl right, the patient, both hands and legs were shivering you know. The moment that I saw this situation right, I know it's not right, I transfer the patient back to the commode and bring back [to] the bed*". When she reported this to the senior staff, she did not agree with her and tried carrying out the task herself, but was unsuccessful too. Jo recalled that she found the situation "*scary*" and did not think that she could continue working there. She also noted that during her OJT, she was not given a proper orientation, "*there's no briefing on where is the exit and what is the thing, you know when you go every centre they will brief you, that's the fire exit, that's the lift, that's the canteen, no one tell me*". This suggests that the organisation's mission to develop skills and groom staff is variable across the different facilities and is not well embedded into daily practices.

Figure 2. Ward A's layout and the positions of staff members at a moment in time during an observation



At Nursing Home Co, most of the residents are elderly and all of them require special care. In the promotional brochures found on the reception counter, emphasis is placed on "*human care and attention*", and on the "*caring and professional*" and "*qualified and experienced*" nursing staff. The staff comprises a centre manger who is in charge of the overall operations, several senior nurses who manage a few wards each, and within each ward, there is a designated nurse and several NAs and HCAs. Jo worked in ward A, an all-male ward and Min worked in ward B, an all-female ward. Their direct NA supervisors were Zara and Michelle respectively. Both wards have approximately 40 patients and 4 staff each. As they are Singaporeans, Min and Jo only work day shifts (either from 7 am to 3 pm or 12 pm to 8 pm). The training provider explained that in an effort to retain local staff, the trainees have been promised that they do not have to work night shifts.

Individuals in various positions have clearly defined roles with specific activities that they are expected to undertake. The role of a HCA is to carry out basic cleaning duties and assist the NAs with patient care, including feeding and changing patients. All tasks are very much structured around strict timetables, "*it's quite standard, I think when the first time I joined, I didn't know the timing, so I was a bit, ok why suddenly do this, suddenly do that, now since I'm used to it, I know the timing itself, what time they do*" (Min). Min initially wrote down the schedule of her ward in her notebook, but over time, as she familiarises herself with the daily workflows and work routines, she becomes better at knowing when to carry out various tasks, and is able to plan and anticipate for what is going to happen next. At the end of our observations, Michelle commented that Min is "*ok... now is she know the timing already, so she see the time is like this, a time to feed, she feed... she knows the routine already*."

Managing the various tasks they have responsibility for also involves an understanding of their patients' unique medical conditions and personalities. Jo can now know what her patients need by 'reading' their behaviours:

"Sometime he will just keep on pulling, sometimes he will keep on pulling and pulling non-stop and then you will know. But let's say if he can stop for awhile, he can sit down and he don't disturb you, then you know he's pretty fine. But let's say if he's very stiff and try to take his diaper, then you will check whether [he] has passed motion or pass urine or maybe his diaper is too wet for you to attend to him."

Understanding a patient's needs is also important for practical reasons:

"Some of the patients I can handle by myself, but some of them you have to have two staff handle one patient." (Jo)

"Some patients… they don't want [to be assisted by particular staff]." (Michelle).

As the medical conditions that patients have can change, staff members need to have a shared understanding of how each patient is doing; the sharing and documenting of patients' conditions took place daily during shift change. However, the trainees were not part of this process. While they did not attend the shift change meetings, they did make an effort to read the staff book which contained information about changes in the patients' conditions. Only senior staff wrote in the book, and trainees would read it before they start their shifts. Min noted that this was important for the care work she did, *"[when] it's my turn to do something to the patient, so I'll know what I am supposed to do*".

The strict division of labour at Nursing Home Co also means that staff members seldom work on the same task at the same time. Trainee HCAs work on specific tasks which overlap a little with the ones that the nurses and NAs who supervise them engage in; this has implications for the teaching and learning that takes place

at work. When we conducted our observations in the wards, we observed that trainee HCAs often worked on their own as they moved from one completed task to another. They had little or no interaction with other staff members. For example, during meal times, they would bring food out from the kitchen on a trolley, go around the ward to distribute the meals, feed patients who need assistance, collect the empty plates and cutlery, and bring them to the kitchen to wash with little or no communication with other staff around them. When trainees work alone, there are fewer opportunities for collaborative learning. Trainees are not able to clarify any questions they may have and receive feedback on the quality of their work. For example, Jo continued feeding a patient at the standard bed angle of 45 degrees instead of adjusting it based on his breathing condition, and insisted on feeding a semi-stroke patient even though he showed signs of wanting to do this himself, "*he moving it's a sign that he also has independence*" (Zara). This is problematic especially since Nursing Home Co's head nurse expressed concern at her observation that "*sometime(s) they just know how to like that in the book but the practice she would be very weak*".

Min reflected that the task-based skills she picked up in class has been useful for the work she undertakes, "*whatever I learnt from my course for the two months, I can apply it in my first day down there, means like turning patients, shifting them, feeding them or bring[ing] them to exercise*". However, trainees also experienced discrepancies between classroom and workplace practices, "*what we learnt and what we work is different*" (Jo). The method of transferring patients demonstrated in class differed from the one shown at work:

"What we learnt from the course itself was... the hand on the back then the leg, either under the leg or under the buttock, then you need to carry them you know, you have to use your strength to lift them up, but down here what we do is hold the collar, hold the pants, we shift them like that, but... it's actually not the proper procedure, it might be you know, injuring the patients." (Min)

"Normally we use our arm to carry, to transfer the patient, that means at least two persons must do it properly, let's say if the patient is totally bedridden... of course, here they say one person can manage, but I don't think so unless it depends on let's say the patient is totally bedridden but he's conscious, for example his upper body is strong but his lower body both leg is very, very weak." (Jo)

Even though both trainees felt that what they learnt in class was safer, they had to use the nursing home's technique of pulling patients by the collar and pants instead of lifting them and working alone instead of in pairs. The type of patients at Nursing Home Co (i.e. elderly and weak) and the shortage of staff (as noted by Zara) meant that:

"Sometimes you really can't even though no matter how you do, imagine if you do the proper way, you'd be hurting your own self and hurting your back and then the

other thing is even if you lift them by the collar and the pants also, you still can't lift them up, you use your whole total strength and after that you'd be out of energy." (Min)

This example illustrates how, in some instances, working with lightweight mannequins in an ideal classroom setting is an inadequate substitute for working with real life patients within the demands and constraints of a ward. The nature of the demands and constraints of the ward are indicative of the workplace culture and structure. The need to look after their own health and avoid back injury (a very common injury in this industry) is in sharp contrast to the practice of 'dragging' of patients and also contrasts with Nursing Home Co's claim of being "*caring and professional*". Despite raising the issue of the lifting technique to senior staff, trainee HCAs were told to adhere to Nursing Home Co's way; it appears that they have little or no power to contribute to or make changes.

Initially, nurses and NAs may demonstrate particular procedures such as tube feeding to trainee HCAs, "*for the new staff I think we need to one procedure by one procedure... we do first then ask the new staff to repeat*" (head nurse). After trainees observe the process, they carry it out themselves "*I just follow whatever they do, I'll just see and look, watch a few times and then I just do*" (Jo). Their supervisor then stands back and observes them when they make their first independent attempt, "*if wrong, I will tell her, not like this, like that*" (Zara). However, Zara also added that this one-on-one supervision takes place only once after trainees have been given a demonstration. The lack of staff and individual work activities means that trainees are not given constant feedback and receive little or no guidance and support on an ad hoc basis. For example, Min found bathing a patient for the first time challenging:

"Because I have never done, bathe the patient that way before so it's like, it's a bit shocking I had to do. And then the first day I think I went to bathe the patient, actually when I was bathing, nothing much, because she was helping me also. She was like, '*sit down there, put diaper down here, put cream'*. I was thinking never mind, at least she's there for me, to guide me through, then the patient was speaking in Malay, at least I understood her and that's it."

In this instance, it was the patient rather than a supervisor who guided Min through the process. She was not aware of where to position herself and the patient, and what the steps involved were. Min was only given a demonstration by another staff after her initial experience. Likewise, Jo's supervisor highlighted the need to flush feeding tubes with water after she reported that her patient had thrown up his milk. Jo explained:

"There're two types of tube feeding because as normally we do tube feeding, they go through the nose, then when I came here I realised that there is another patient that has stomach cancer, he had one hole inside the stomach and then you have to

feeding through his stomach, not through the nose. Then through the stomach, there's another issue that you have to do that's a bit different. When you're going to feed him at the time, you have to put some plain water before you feed. After you draw some of the plain water and the stomach is clear, then you have to lock. After locking the feed, you have to pour the milk to feed him. When it's finished, you have to lock again and after locking you have to give some plain water to wash it off. So there'll be, I think he's got stomach air, he will bloat if you keep on feeding him milk and no water to clear the stomach."

Jo was used to carrying out tube feeding through the nose, so when it came to tube feeding through the stomach, she was not aware of the difference and how this impacts the patient. The expectation of the centre manager at Nursing Home Co is that though trainees assist nurses and NAs with "*simple tasks*", they need to have some "*basic medical knowledge*". She explained that this knowledge is important because "*when patient condition change, they are able to predict, they are able to know how to react, how to carry out the nursing intervention*" (centre manager). However, without this knowledge, trainees have no theoretical knowledge to draw on to make sense of various conditions. They are therefore restricted to decision-making frames based on routine skill performance. Zara noticed that Jo was not responding to the feedback given by patients. The centre manager explained that because trainees only know how to carry out skill-based procedures without thorough background knowledge, they cannot manage unexpected situations and work independently, "*we don't put them alone, make them in charge of one ward of patients*".

There control over the tasks trainees work on and the amount of responsibility they are given can also be attributed to perceptions of risk and the consequences involved if things go wrong. There is a wider concern over the safety of patients, "*if they are not handle properly, maybe some mistake, I think this one no good for the hospital*" (head nurse). At Nursing Home Co, it appears that this concern also extended to simple tasks. When a patient asked Jo if she could provide his meal earlier than the stipulated meal time because he was leaving the centre for a doctor's appointment, she felt that she could not make this decision on behalf of the centre, and referred him to another staff even though she knew he could have his meal earlier.

In the nursing home, there are formal structures in place around assessment. Due to the distinct hierarchal nature of the workplace as well as concern over patients' safety, Trainee HCAs are trained and assessed on 30 different procedures. Interestingly, this task is given to the nurses even though they do not have direct contact with the trainees on a daily basis. The trainees themselves also appeared to be unaware that they were being '*trained*' and '*assessed*' as they were not informed of the process and did not receive feedback on their progress until their three month probation was completed. While trainee healthcare assistants and their NA

supervisors did talk about informal guidance and support while at work, as highlighted in the examples above, this took place on an ad hoc basis.

To assist with developing trainees' understanding of not only 'how', but 'why' certain tasks are carried out, Nursing Home Co organises training sessions every Thursday afternoon. During this time, one of the nurses would demonstrate how to carry out specific procedures (e.g. taking blood pressure and tube-feeding) or facilitate patient case study discussions, "*when we encounter complicated case... we teach them in future when they encounter the same case, how to handle this and how to apply more appropriate nursing equipment to [the] patient*". However, attendance at these Thursday sessions was not compulsory and trainees informed us that they hardly attended any of them. The learning culture of Nursing Home Co is one of individual initiative with limited structured support. The centre manager and head nurse placed the responsibility of learning on their employees, "*I think if you want to learn, all the way you can*" (head nurse).

When comparing the trainees, Jo appeared to be satisfied with learning through listening to and observing what her colleagues say and do, but Min took on a more proactive approach towards her own learning. It was Min's father who persuaded her to work in the healthcare industry. She was not too keen at first, but after starting at the Nursing Home Co, she realised that it was something she could pursue as a career. Min actively took down notes about her schedules and new procedures she observed, and read up on different processes that would help with the care work she did. Trainees' individual orientations can also have an impact on their learning. We observed that Jo was more task-orientated while Min was more people-orientated. Even though she could not speak the same language as them, Min made an effort to interact with her patients and respond to their needs, "*I just smile and they will smile back*", and addressed them by their Chinese names. She also attended Chinese dialect lessons at Nursing Home Co in order to improve her communication with them. In contrast, Jo hardly interacted with patients and often referred to them according to their bed numbers instead of their names. However, while she was keen to learn, Min was not given adequate guidance and support by the staff at the nursing home. She also felt that though she was trying her best, her efforts were not being appreciated, like how her lifting techniques were perceived as being ineffective:

"Lifting patient I think because the staff thinks I'm not lifting properly or maybe not enough strength to lift up the patient, but [I'm] actually using my own effort, my own energy to actually do that, but I think they think I'm not using." (Min)

Finally, when Jo was confirmed as a full-time staff and Min was not, she (Min) resigned from her position. In this example, the lack of workplace affordances for learning had a negative impact on Min's trajectory towards being and becoming a professional HCA, and developing her career in this industry.

3.4 Case Study 3 – Cafe Co

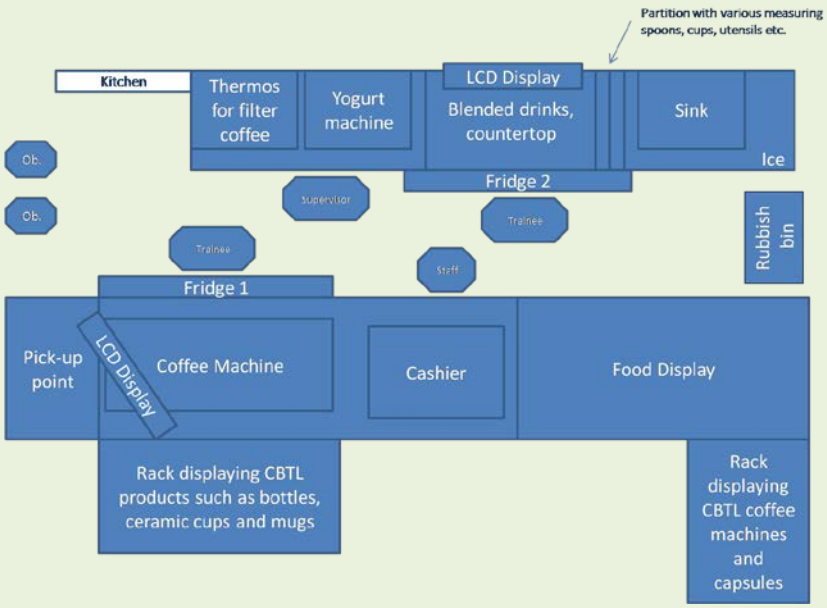
Trainees' pseudonyms – Yin and May

Cafe Co is a multinational company with more than 40 local outlets. Its vision is: "*To be simply the best roaster and global retailer of speciality coffee and tea, because we care about giving that total quality experience to customers, team members and the community*". The type of workplace experience for team members is highlighted in their mission statement: "*To create a spirit within our company that inspires our team members to provide our customers with a total quality experience: quality of product, service and environment*". The use of the term "*team members*" shows the valuing of employees not just as individual workers, but as part of a team that works together to accomplish the common goal of providing customers with quality experiences. Employees are also described as "*valued*" team members and as such, Cafe Co is committed to providing "*opportunities for personal and professional growth through training and development*".

One of the ways in which professional development for all new baristas (both full-time and part-time) takes place is through a structured 12-step in-house training programme. Both full-time and part-time staff members are expected to complete the three-month programme that includes classroom training and on-the-job training (OJT). Throughout their training, trainees update their progress in their training journal. The training date and number of hours trained are recorded and signed off by both the manager and trainee. Four WSQ courses (Espresso and Brew, Interact with Guests, World of Coffee, and World of Tea) have been included in the programme.

For the purposes of this research project, we focused on the Espresso and Brew WSQ course mainly because it addresses the practical skills and knowledge that baristas are required to have, but also because it was the only WSQ course with an OJT component. The Espresso and Brew WSQ course comprises nine hours of classroom training at a training centre and 36 hours of OJT at the outlet supervised by the manager or a senior staff (buddy @ outlet). The two trainee baristas Yin and May (pseudonyms) we interviewed and observed had recently started working at Outlet A. Their outlet managers were Sharon (pseudonym), who later moved on to a training position in the training centre, and Mark (pseudonym).

Figure 3. Outlet A's layout and the positions of staff members at a moment in time during an observation



There would usually be four to five employees (managers, senior staff and trainees) at Cafe Co's Outlet A. Each of them is responsible for one of four stations (ice blended station, customer seating area, cashier counter, and espresso and brew (EB) station), though this arrangement is flexible as employees often worked together at the same station and rotated their duties throughout the day. At Outlet A, there is a strong culture of teaching and learning, "*the more senior staff will train the junior staff, it's like a cycle... it's like a buddy training system*" (Mark), and this was evident in the day-to-day operations and practices.

As it was the holiday season and busy period when Yin and May first started their new jobs, they underwent their orientation at Outlet A instead of at the training centre. Sharon explained that while trainees are undertaking their three-month training programme, they are not left on their own. At least one supervisor would be stationed with them at all times, and because supervisors worked with trainees on the same or similar task, they were in a position to provide continual and purposeful guidance and feedback. Trainees are able to learn collaboratively through informal discussions with their supervisors and colleagues as they carry out daily work tasks. For example, when May received an order for a drink that that had just been launched by the cafe, she checked the steps involved with Yin and a senior staff before proceeding with the task. For trainees, having to work as a member of a team also means that they have the opportunity to develop generic competencies such as teamwork, "*this [is the type of] teamwork that we can't get in class*" (May), and communication skills. May described how she had to learn to work closely with other staff at the ice blended station in order to complete an order as each person was in-charge of a specific task (e.g. filling the cup with ice, blending the mixture,

serving the customer, and washing the blender). She also reflected on how the baristas are able to work together on the same task and across different roles by 'reading' each other's actions. Other than their own learning, trainees contributed to their team's learning by drawing on what they had learnt in class. In one instance, while they were preparing a drink, a senior staff instructed them to pour in cold milk. However, they were taught in class that the milk should be hot. As such, they approached another senior staff for assistance, and he agreed with them. Through the trainees, the first senior staff was able to correct her assumptions.

Sharon structured the trainees' learning in a way that eased them into their four main roles at the ice blended station, customer seating area, cashier counter, and EB station. Trainees were rotated in this order, starting with the ice blended station, so that "*they will more or less know what our drink is all about because that is our trademark*" (Sharon). Initially, trainees learn how to prepare drinks by observing demonstrations given by senior staff who taught them each step in sequence (e.g. ice in cup, coffee extract, powder, and blend). These demonstrations did not take place outside of daily work tasks. Instead, they are incorporated into the work, and the products from the demonstrations are given to the customers who order and pay for them. During our observations, Mike gave a detailed demonstration on how to froth milk to receive the right consistency. He picked up a cold jug, checked its temperature with a thermometer, and released steam from the machine's sprout before frothing the milk. He then mixed the milk and foam, and showed the trainees how to pour the mixture into a coffee cup. The remaining milk did not go to waste as it was used by the trainees for other drinks they had prepared. After observing how different processes are carried out, trainees are given the opportunity to engage in hands-on practice. Both supervisors and trainees talked about the importance of learning through experience, "*every day you'll be facing new challenges, that's why I think for me, the best learning that I get is experience*" (Mark). Mark noted that a lot of the learning at work takes place through repetition, "*because you're doing the same thing every day*". While errors were corrected (e.g. drinks tipped out and remade), trainees were supported as long as they learnt from their mistakes, "*mistake is a part of learning and it's a part of training... if you don't commit mistake, then you don't know what's wrong from right*" (Mark). Trainees were also given the autonomy to make decisions on the quality of the food they served. We observed how Yin disposed of a single slice of cake because in her opinion, it was visually unappealing (e.g. the edges of the cake had hardened and fallen off, and it was smaller than the other slices). Sharon explained that all staff can make their own judgements, but have to notify their supervisors and update the tracking sheet.

Sharon described the espresso and brew station as being more intensive than the first three stations, thus trainees have to attend classroom training before they are allowed to use the EB machine. In the classroom, trainees learn how to operate the EB machine, what the ingredients for different drinks are, and try making these

drinks themselves. The knowledge trainees learn in class is reinforced at work. Mark would give pop quizzes and the expectation is that trainees are able to provide an "*automatic response*". Having a good memory is part of a barista's role because "*the most crucial part that I know they're competent, you don't need to repeat their order for them [this] means when you ring an order, you just say once and they do it correctly*". It is important to note that task skills (and knowledge) also involve completing a task to the stipulated standards expected in the workplace. While classroom training can provide trainees with an idea of what these standards may be, the acceptable standards for these drinks, "*what is good and what is bad*" (Yin), become more evident to them when they start working in the store and preparing drinks for paying customers. Trainees are able to compare their drinks with the drinks prepared by more senior staff, and learn how to recognise the differences and similarities. They use their sense of sight "*if it's over blend, you can see that's very watery, then if it's under blend, when you pour it out, it will be very chalky and very hard*" (Yin), and learn how to make adjustments to the drinks they make through listening to feedback from the customers, "*drink is not good, so redo it for them*" (Yin). Trainees also learn how to use their sense of hearing as we saw Sharon guiding May while she steamed the milk by telling her to listen to the different sounds that were being made.

Once they know how to make different drinks (i.e. type and quantity of ingredients needed), they are given the space to work independently, but their progress is monitored in the form of casual observations, "*it's actually everyday assessment*" (Mark).

"So when she's doing the cashier, we'll be able to listen, we'll be able to see what she's doing, so if we understand that she's missing out on a certain step or she's not doing very well, not up to the standard, we will actually step in after that, and we will actually train her again, you know on that particular part that she's not doing very well, we will do that training again, we will actually probably revise with her, or probably go through again the steps and make sure she understands further and she's doing the correct standard, so that's for every station basically." (Sharon)

Supervisors stationed themselves strategically so that they could see what trainees were doing and provide inputs where necessary. When one of the managers noticed that there was too much foam in a glass of latte, he mentioned this to the trainees, and they removed the drink from the tray, discarded the existing foam, and added a new layer before serving it to the customer again. Besides managers, senior staff can also give inputs. When May was in the midst of preparing one of the outlet's new drinks, a senior staff noticed that she had missed out the vanilla powder and reminded her of this. May acknowledged her mistake and went on to make the same drink from scratch. Trainees' supervisors were able to provide valuable feedback because they made a conscious effort to observe and monitor the trainees. Yin reflected that when she first started at the EB station, she had

difficulty with steaming "*good*" milk, but through practice and guidance from other staff, she has learnt to "*handle the pot of milk so that the foam will come out*". This guidance from supervisors has been incorporated into daily practices. Both Sharon and Mark leveraged on teaching opportunities while trainees engaged in daily work tasks. We saw them timing and giving pointers to Yin as she prepared a cappuccino, and questioning May about the accuracy of her measurement when she dispensed hot water directly into a takeaway cup for an Americano instead of measuring it first. The examples of constant feedback in the cafe are of assessment as learning. They are not formal processes in and of themselves, but contribute towards formal assessment via training logbooks or work appraisals. Observing the development of trainees' competence over time was an implicit part of the daily practices in those two settings.

As shown in the previous paragraphs, in the workplace, trainees learn how to '*become*' baristas, and they learn by '*being*' baristas, "*whatever they see from other people, they will copy [and do], and they will learn*" (Mark). This iterative process is facilitated by hands-on engagement with everyday work activities that involve not only the task itself, but also other essential elements such as workflows, time pressures, and work relationships. Sharon also emphasised the importance of ensuring that trainees understand the culture of Cafe Co, and of Outlet A. One aspect of this is recognising and adhering to the behaviours that are acceptable and valued in a particular work environment. During our observations, we noticed that the trainees were constantly on the move. When there were no customers and drinks to prepare, they would clean the counter tops and restock the supplies (e.g. takeaway cups, powder, and milk). They later explained that standing around and doing nothing is not the image that their colleagues and customers would want to see. As such, they actively looked out for things to do, and carried out these tasks in the absence of orders. Mark observed that as trainees spend more time in the cafe and gain a better understanding of the work routines, their movements become more "*automatic*" (i.e. carrying out tasks without being instructed to do so) and they are also able to transition from one task to the next seamlessly. At the start of our observations, trainees appeared to be tentative when deciding which task to undertake next, but as the weeks went by, they started moving fluidly from one station (e.g. coffee machine) to the next (e.g. cashier station) to fill in momentary gaps, "*last time when they're new, they'll just stand there and wait for a command from you. "What I'm going to do?" They always ask that. "What's my station?" Now they come in, wear the apron, they know how to do, they know where to go*" (Mark). Such movement is possible because trainees have been trained in all stations, know the tasks and demands of each station, and understand how stations relate to each other. For baristas, their workload depended on the number of customers in their store at any one time. Yin pointed out that by working different shifts, she can now predict the days of the weeks and times of the days when the outlet would be at its busiest. During these periods, baristas are still expected to complete orders in a

timely fashion, and they cope by preparing their station for the next order in advance and multitasking when preparing orders. One multitasking tip that was shared with trainees was the use of both their hands at any one time (e.g. pouring two shot glasses into the cup at the same time instead of one shot glass after the other). Mark commented that besides task skills and knowledge, he also tried to pass on his management skills, "*how I deal with things, how I deal with stress and how I deal with big large group of customers*". Another important aspect of being a barista involves interaction with customers. Yin talked about how she has become familiar with different foreign accents and is now able to better meet her customers' needs, many of whom are tourists because Outlet A is located near a major attraction. At the end of three months of training, Mark observed that the trainees have gained confidence in terms of their interaction with customers, compared to "*when they started, they cannot even bring out a single word to their customer because they're very scared that they might commit a mistake and number two, they're not yet proficient, so they don't know what they're doing*". Trainees' confidence in their barista skills and knowledge enables them to engage with customers and assist them with their orders, "*before when they were new, the customer standing there and they're also standing there, and they're staring at each other... now they're able to approach the customer and ask whatever the customer needs*" (Mark). During our last observation, we also saw how Yin took the first step to help a customer decide which drink to order by narrowing down the choices to either hot or cold drinks.

Besides the supervisors and senior staff, trainees themselves also need to put in effort into engaging with their own learning at work. Yin talked about learning through practising and taking notes, which she rewrote when she went home, "*I will make changes so I can understand it better in my own way*." May demonstrated initiative towards her own learning by actively observing senior staff and asking them questions while they prepared drinks which were new to her. She also applied what she learnt to her work practices. For example, when Mark saw that May was refilling the grinder with coffee beans, he asked the team if they knew how long they could keep the beans there. After everyone gave their answers and Mark confirmed the right one, May proceeded to update the date on the grinder machine. The process of 'becoming' a barista also involves internalising certain mannerisms, "*majority will be [learning through] mentorship... this guy is one of my disciples, [and] that guy, all the habits I have, he also have*" (Mark). The way in which they handle the tools available to make drinks, move around the space that they are in, and communicate with co-workers and customers are learnt through being a "*disciple*".

The assessment of trainees at work went beyond the gauging of competency based on the number of hours trainees spend at a particular station. There was evidence of verbal assessment through supervisor Mark's on-the-spot pop quizzes. May updated the date written on the grinder's label. He also assessed trainees using indicators such as his observations of the extent to which trainees are confident in

what they do and are able to work independently. The expectation is that as the trainees become competent in their roles, they would go on and train other trainees, "*the buddy trainer will train me in everything, after I've been trained and certified to one of the stations, the new guy or the new girl or the new team member, I'll be the one training her, it's a passing of knowledge*" (Mark).

3.5 Case Study 4 – Aircraft Maintenance Co

Trainees' pseudonyms – Mike, Henry and Lila

Aircraft Maintenance Co services aircrafts that are on transit or have an overnight stop at Singapore Changi International Airport. The organisation's vision is "*to be the premier global MRO [Maintenance and Repair Organisation] player in the aviation industry, not necessarily the biggest, only the best*". Their mission statements relate to outcomes, "*provide superior aircraft engineering and maintenance services, on a global basis, delivering value-for-money to our customers, creating reasonable return on investments to our shareholders and ensuring healthy long-term career prospects to our staff",* and work processes, "*foster and maintain high standards of professional conduct and business ethics and shall act in a socially responsible manner in protection and conservation of environmental resources*". The fostering of high professional standards extends to individuals outside the organisation, but within the aviation industry, through Aircraft Maintenance Co's commitment to providing aerospace trainees with on-the-job training (OJT), even though the organisation is not the biggest and the work they engage in is heavily dependent on the number of flights that have been scheduled for arrival and departure, and the extent and types of defects that need to be rectified. Due to the uncertainty in workload, the dates for trainees' OJT is not definitive, rather the arrangement that Aircraft Maintenance Co has with the aerospace training provider is for trainees to undertake their OJT after they complete their maintenance practices module, if there is adequate work available. For this research project, we were only able to observe three trainees (pseudonyms Mike, Henry and Lila) during one of their day shifts due to the ad hoc nature of the OJT and also because of the tight security at the airport that involves police clearance and thorough screening.

Before our observation at Aircraft Maintenance Co, we were able to interview and observe trainees and trainers in the aerospace training provider's classroom and skills centre. All three trainees were part of the third batch of trainees enrolled in the two-year Foundation Degree in Aircraft Engineering that also consists of eight WSQ modules. They have the option of moving on to a BSc (Hons) in Aircraft Engineering at Kingston University after they complete their first two years here. As part of this programme, they attend lessons in the classroom, carry out hands-on tasks at the skills centre located in a hangar, and undergo on-the-job training (OJT) at aircraft maintenance and repair organisations. At the training centre, trainers usually start each class by teaching theories and concepts through PowerPoint slides and videos before moving on to practical sessions. Their aim is to ensure that "*knowledge and skill comes together*" (trainer). For Mike, such sessions are helpful, "*especially this kind of stuff, materials and hardware, maintenance practices, no matter how much you talk, until you see the real thing in front of you and [the trainers] doing it, you won't have a good idea or picture*". The comments by the

trainer and trainee Mike highlight the importance of not only having theoretical lessons but also hands-on practice because of the nature of the work that trainees will eventually engage in. Trainees are usually given a demonstration by their trainers before trying out and practising the new techniques themselves. We observed examples of this in the riveting and composite repair classes where trainees worked on small scale samples individually and in groups. Trainers also informed us that they have purchased a de-licensed aircraft that trainees can work on. Henry reflected that having time and space for hands-on practice is invaluable as certain processes may not be as easy as they seem.

When you get a chance to do [it yourself], I mean, that's when you will just remember everything, because when you see, when he do like, because they are professionals, so when he does it, "wah, it's very easy". But when it comes to your turn, when you just hold the piece, you will just be like, "Oh, what am I supposed to do with this?"

However, even with such affordances for learning, it is up to the individual to determine the extent of their engagement in the learning activity. For example, while Henry chose to observe instead of participate in an aircraft jacking activity as he felt that it was dangerous without prior practice, Mike decided to go ahead and try it out himself:

"One of the coolest things I did was I think aircraft jacking. It's very fun. Because we just pull with one hand, right? You see the aircraft like slowly moving up. So I think that's good… Some people are still not comfortable getting under the aircraft doing that, so they stayed out."

The skills centre at the hangar serves as a simulated work environment. Trainees are expected to observe workplace health and safety rules through their attire of white overalls and black boots, and adhering to strict processes when handling and returning tools. To facilitate and monitor their learning, trainees are given log books which contain records for practical tasks undertaken in the hangar and at the workplace. After completing a particular task, their trainer or supervisor verifies that they are competent by signing in their log books. The use of log books at the training centre mirrors what takes place at the workplace as the regulatory nature of the aircraft industry means that work tasks are constantly being recorded and signed off. The log books are also a formal record that helps to assure potential employers that the trainees have the necessary experience for the job, "*after what they've gone through here, when they go into the industry, they are on the professional ground, not an amateur*" (trainer). The trainer explained that the aerospace industry values and recognises learning through hands-on experiences. Nevertheless, the skills centre is not an actual workplace with real work tasks, as noted by Henry, "*what we are doing is not the real thing*".

Besides the difference in work tasks, "*everything is on a larger scale*" (Lila), at Aircraft Maintenance Co, trainees also learn the roles and responsibilities of different team members (e.g. aircraft engineers and aircraft technicians) and how they interact with each other (e.g. aircraft engineers usually work day shifts and carry out authorisations and aircraft technicians usually work night shifts and carry out repairs), the ways in which work is organised (e.g. specific tasks for day and night shifts), the length and timing of work days (e.g. 12-hour shifts), and hazards (e.g. noise and heat from aircraft engines) and how to manage them. During their OJT, trainees shadow either an engineer or technician on 12-hour shifts. In a week, they go through two day shifts where they carry out transit checks and fuel refills with the engineers, and two night shifts where they carry out maintenance and repairs with the technicians. Trainees wore the same white overalls and black boots but with the additional hazards on the runway, they also had to put on luminous vests and earplugs. Trainees learn about the environment in which they have to work. Lila reflected that she had to accustom herself to the loud sounds from the aircraft engine. When she first started her OJT, she could not participate in conversations near the aircraft because she could not hear anything except the engine, but as time went by, she learnt to distinguish and pick up on human voices which can be useful when her supervisor explains a particular procedure on the spot.

An important aspect of an aerospace engineer's job is to inspect the aircraft for damages. While in the car en route to the aircraft from the office, the supervisor went through some of the things that they should look out for according to his manual. However, looking out for damage on an aircraft is not a straightforward process. While trainees may know that they have to look for certain things at specific parts of the aircraft, there may be exceptions. The damage might look different or be at a different part of the aircraft. Trainees reflected that they will only be able to be like their supervisors and see through "*special lenses*" (i.e. carry out thorough inspections) after carrying out more inspections themselves. When they arrived at the runway, the supervisor used headphones from underneath the aircraft to ask the pilot how much fuel was needed. While this was underway, all of the trainees went around the aircraft checking various parts. They inspected the condition of the tyres and brakes, the air inlet valves near the engines, and the panels under the wings. As the trainees walked around the aircraft and inspected various parts, Mike appeared confident as he pointed out the safety issues associated with the build up of static electricity and explained the different components that assist with landing (e.g. shock absorbers on wheels). Compared to how he was in class, Mike appeared at ease walking around the aircraft and had a sense of pride at being knowledgeable. After a couple of minutes, the trainees and supervising engineer automatically gathered around the fuel panel as they monitored and discussed the fuel level. Lila brought out her notebook and started recording the numbers on the panel. She explained that they usually top up more

fuel than is required. Once the desired fuel level was attained, the supervisor signalled to the fuel tank driver to cease the refilling process. He then took some paperwork up to the cockpit for the pilots to sign while the trainees waited below near the car. When they returned to the office from the runway, Lila approached the supervisor and asked if she could look at the paperwork. The supervisor handed it to her and went on to explain how he calculated the fuel needed, and obtained signatures from the pilots. This process of calculating fuel for an actual aircraft and obtaining signatures from real pilots was something that Lila was only exposed to at work. Other tasks that were unique to their OJT included the use of a boroscope (flexible lens). The male trainees excitedly described an instance in which they used it to check inside the third stage of a high pressure compressor. They found the process interesting as it was the first time they needed to capture what they saw and did on video. Through this exercise, they not only learnt how to use the boroscope but also about the legalities associated with their job.

Besides learning technical skills and knowledge at Aircraft Engineering Co, trainees are able to experience the ebb and flow of work. Trainees commented that day shifts are more mundane. They do not always have transit checks throughout the day, so spend their time in the office reading the notes they have taken, or familiarising themselves with the standard operating procedures for transit, daily, and weekly checks found in work documents. Trainees noted that their supervisors did not bring these checklists with them when they are on the runway as they already have the processes "*in their heads*". The manager in charge of Aircraft Maintenance Co explained that as supervising engineers and technicians can be very busy with their own work, trainees are encouraged to be proactive by taking notes, asking questions and referring to the aircraft maintenance manual if they have any queries. The supervising engineer who was with us that day also felt that ultimately, it was "*up to the individuals to learn*". During night shifts, there is more variety in the work tasks trainees engage in as this is the time when aircraft technicians carry out more extensive repair work, and it appeared that this was an area that they were most interested in.

3.6 Workplace Learning and Assessment Processes

Across the four case studies, there are similarities and differences between what trainees learn and how they learn, and are assessed (see Tables 3-5). In the following sections, we examine the content of their learning, as well as the learning and assessment processes they engage in.

Table 3. What is learnt in the workplace

	Hotel	Nursing Home	Cafe	Aircraft Maintenance
Generic Skills	Yes	To some extent	Yes	To some extent
Technical Skills/Knowledge	Yes	Yes	Yes	Yes
Workplace Climate	Yes	Yes	Yes	Yes
Organisation of Work and Workflows	Yes	To some extent	Yes	To some extent

Table 4. Learning processes in the workplace

	Hotel	Nursing Home	Cafe	Aircraft Maintenance
Structured Training Sessions	Yes	Yes	Yes	No
Observing, Listening and Reflecting	Yes	Yes	Yes	Yes
Hands-on Practice	Yes	Yes	Yes	To some extent
Discussions	Yes	To some extent	Yes	Yes
Questioning and Feedback	Yes	To some extent	Yes	Yes
Documenting and Reading	Yes	Yes	Yes	Yes

Table 5. Assessment processes in the workplace

	Hotel	Nursing Home	Cafe	Aircraft Maintenance
Formal/Structured	Yes	Yes	Yes	No
Informal – part of work	Yes	To some extent	Yes	To some extent

3.6.1 Generic Skills

The generic skills that trainees developed while carrying out work tasks and interacting with their supervisors, colleagues and customers in the workplace include communication and teamwork skills, organising and planning skills, and meta-cognitive learning to learn skills (e.g. asking appropriate questions and managing their own learning). Compared to the trainee healthcare assistants and aerospace technicians, it appears that the trainee chefs and baristas were able to develop these skills to a greater extent. Trainee chefs learnt planning skills, for example, by being part of work teams that cook for 1000 guests. This can be attributed to a variety of reasons, including greater opportunities for collaborative learning that involves discussions, the asking of questions by trainees and the provision of feedback by knowledgeable others. Trying to isolate and comment on these specific skills outside the learning of technical skills/knowledge, workplace climate and organisation of work and workflows is both difficult and problematic because they do not exist outside the context in which they are utilised. Instead, they are implicit in the following examples of what and how trainees learn through work.

3.6.2 Technical Skills/Knowledge

In all four workplaces, trainees were able to build on their existing technical skills and knowledge (some of which were learnt during their classroom training) and also learn new ones. More often than not, this learning took place while they carried out work tasks alongside or with others. Depending on their individual motivations to learn and requirements by the training provider and workplace, some trainees would then go on to reflect on and document their learning. Structured training sessions, at or away from the work sites (but not with the training provider), were also useful as they provided trainees with a safe environment away from the pressures of work to practise, reflect, ask questions and receive feedback. An example of where this was successful was with trainee chefs who participated in in-house competitions with fellow chefs to produce new dishes for the hotel's menu.

Across the workplaces, the depth of skills and knowledge learnt varied according to the requirements (and perceptions) of the trainees' roles and responsibilities. With the chefs, we could clearly see that they were expected to not only know how to cook but also to understand the rationale (i.e. theoretical knowledge or know why) behind what they cooked. This was developed through the multiple opportunities they were given to be part of work activities that required higher-order thinking skills. Trainee chefs learnt to execute difficult dishes with adequate guidance and support, such as when John made the potato gratin and chocolate mousse, or try these dishes out themselves through trial and error, such as when Wei practiced making a consommé. Wei was able to distinguish the difference between a consommé and a broth, and was aware of how to achieve this difference, "it's a

very precise one about temperature because the soup has to be crystal clear and the quality standard for a good consommé is once you pour it in the bowl, you can see the bottom of the bowl right from the top*".*

The experiences of trainee chefs can be contrasted with those of trainee healthcare assistants who were primarily tasked with routine task performance. It may seem as though their job scope of keeping the wards clean, and feeding and changing patients, described by the centre manager as "*simple tasks*", requires little more than procedural skills and knowledge (i.e. the basic know-how). However, on closer examination, their work demands much more than just know-how. According to the centre manager, it is important for trainees to have "*basic medical knowledge*". She explained that this knowledge is important because "when patient condition change, they are able to predict, they are able to know how to react, how to carry out the nursing intervention". If trainee healthcare assistants are expected to not only recognise but predict changes in their patients' health and make decisions on how to manage these changes, they need to build on their theoretical knowledge. Like with the chefs, this requires opportunities for participation in activities that utilise higher-order thinking skills. However, the management of Nursing Home Co adopted a front-loaded approach to learning rather than providing opportunities for collaborative work and higher-order thinking. Unless and until trainees were deemed to have sufficient medical knowledge, they had to continue carrying out skill-based procedures. In addition, the onus was on the trainees to acquire this knowledge outside the confines of work.

3.6.3 Workplace Climate

Besides learning how and why certain tasks are carried out, trainees need to learn how to work within specific work spaces and how their roles and responsibilities contribute to the bigger picture.

The example with aerospace technicians shows the importance of immersion in actual work environments. Their experiences in the skills centre which had a hanger and a de-licensed aircraft could not have prepared them for working with the heat and noise emitted from aircrafts. Trainees noted that they could not hear each other initially because of noise from the engines but as they spent more time on the runway, they learnt how to adapt to the situation and to distinguish and pick up human voices. Being able to do this meant they were able to actively take part in on-site discussions with their supervisors and in the future, this would be useful when they communicate with other airport staff while on the runway.

Within the same workplace, there may also be differences between how things work in different departments. In the nursing home, each ward had its own unique layout, designated staff and type of patients, and trainees have to be able to work through these differences. Trainee chefs also faced a similar situation with the hotel's six different kitchens, each with their own team, type of cuisine and cooking style for

specific purposes (e.g. buffet or banquet). To cope, trainee chef Wei has learnt to ask the right questions. He began by asking general questions such as “what is your operation like?”, but learnt that these general questions did not help him much, so he went on to ask more specific questions about where various items in the kitchen are kept and what they are used for. The answers to his questions help him understand and become a part of the workflow rather than a disruption.

In addition to the general set up of the work environment, trainees learn about the ‘rules’ of the workplace. This involves knowledge of what is acceptable and valued (or not) under certain conditions. In all four workplaces, emphasis was placed on the productive outcomes of work activities, but in the beverage F&B workplaces, there was also a greater allowance for the teaching and learning of new skills, knowledge and processes. Supervisors in the kitchen and cafe not only had to ensure that things ran smoothly, but also took on responsibility for their trainees’ learning by taking the time to identify and leverage on learning opportunities. They gave demonstrations, provided guidance and facilitated discussions through reflection and feedback. They took the time to assess trainees not only on their skills and knowledge while they worked, but also on their attitudes towards their work and learning. There was a distinct hierarchy with trainees and other employees working on individual tasks, and supervisors in the support role, keeping a watchful eye over things and moving over to provide support where necessary. As trainee chefs and baristas worked, they could try out new processes, exchange ideas with others, and make mistakes and contributions. There was an expectation that they delivered food and drinks that met certain standards but also a confidence that they were able to do so.

Compared to the chefs and baristas, trainee aerospace technicians and healthcare assistants had different experiences. In the aircraft maintenance company and nursing home, trainees were responsible for their own learning with limited support. This can be attributed to the work arrangements that the organisations had with trainees. The aerospace technicians were not hired by the company and were there mainly to observe and ask questions, though it should be noted that they were in the initial stages of their on-the-job training and would probably have more opportunities for hands-on practice after spending more time there. They were also not formally assessed by their supervisors; instead their training provider went down to the work site regularly to check on their progress. With the healthcare assistants, they were hired by the nursing home after they completed their WSQ programme. As such, it was assumed that they were competent in their specific roles, though what they learnt in class was only a small part of their job scope. This was evident when we showed trainees a list of 30 procedures that the nursing home was assessing them on, and they informed us that they were not aware of this list and had only learnt about six of the procedures through their WSQ training. This example highlights the importance of communication and in this instance, it was to ensure that trainees were aware of what was expected of them, and that the

teaching and learning in class and at work complements and builds on each other. Unlike in the F&B workplaces, the hierarchal structures within the nursing home hinder opportunities for collaborative learning as there is a lack of overlap between areas of responsibility. The impact of this division of labour will be elaborated on in the next section on organisation of work and workflows.

3.6.4 Organisation of Work and Workflows

Part of learning about how their work fits in with the bigger picture involves learning about how their own work and other employees' work are organised and how they relate to each other.

Interestingly, all of the trainees worked shift work. This meant that they had to learn about the different work demands during different shifts and manage their work accordingly. With the aerospace technicians, though they were relatively new to the workplace, they are aware that day shifts are more hectic as the engineers had to complete aircraft checks and refuels within a specified period of time, and irregular because their work depended on the number of flights that arrive on a particular day. During night shifts, they spend their time with technicians who carry out extensive repairs, and it is during this time that they are exposed to new and interesting processes and procedures (e.g. their use of the boroscope). Here, engineers and technicians have different roles and responsibilities, and trainees have to recognise these differences in order to transition from one work role to another.

In any workplace, work is divided up among employees and this division of labour has an impact on what and how trainees learn. Where there is a strict division of labour and a lack of overlap between roles, there is less opportunity for learning from and with others. Picking up on the nursing home example at the end of the previous section, the shortage of staff in the healthcare industry has meant that work roles are more individualistic in nature. Healthcare assistants rarely worked on the same or similar tasks with other staff members, so are unable to ask questions on-the-spot, receive feedback and make changes to their practice based on discussions with others. Likewise, other members of the working staff do not have a clear idea of the challenges and issues trainees face. In contrast, when work roles and tasks overlap, supervisors are in a better position to understand trainees' learning needs and leverage on teaching opportunities using real examples. Leading practice examples of this were observed and made known to us through interviews in the F&B workplaces. As supervising baristas worked together with trainees on the same or similar tasks, they knew what trainees needed assistance with and were able to make use of actual orders from customers to show trainees how to improve their techniques (e.g. steaming milk), and monitor and give feedback as trainees practised what they had learnt.

Having an idea of the overall work process and what other staff members are responsible for helps trainees to move between tasks and fill gaps where necessary, as was evident in the F&B industry where trainees worked closely in teams. Trainee chefs and baristas had a good understanding of what they needed to do in order to facilitate workflows and processes. However, in the nursing home and aircraft maintenance company, trainees focused primarily on individual tasks that were relatively independent from what other staff members worked on.

3.7 Becoming

In conclusion, what and how trainees learn and the assessment processes that they are part of contribute to their overall sense of becoming professional chefs, healthcare assistants, baristas and aerospace technicians.

Workplace affordances for learning that contribute to this process of becoming include providing opportunities for trying out new processes and procedures with adequate support from a range of sources, both supervisors and fellow co-worker. As trainees experiment and engage in trial and error with knowledgeable others, they take ownership for their own work and learning, develop their skills and knowledge, and gain a sense of confidence in their own abilities. In addition, trainees also need to be provided with opportunities to actively contribute to individual and the collective learning processes. While this is can be thought of as a natural aspect of the discussions at work, it can be better incorporated into the culture of the workplace. This was done in the hotel kitchens through ensuring that everyone is given the opportunity to provide feedback (e.g. daily line ups) and effort is made to utilise this feedback.

4.0 Implications and Models

4.1 Introduction

In this concluding chapter, we use the findings in the previous chapter to address the research questions:

- Recognise what is learnt in the selected workplaces and what assessment processes are used.
- Identify ways in which learning and assessment is supported and constrained in the workplace.
- Propose models for recognising workplace learning through the WSQ framework.

4.2 What is learnt

Tables 3-5 and the accompanying explanations listed what is learnt in the workplace. In this section, we will explore what this means in relation to the competency-based training system of the WSQ by briefly examining the five dimensions of competency.

4.2.1 Competency

The five dimensions of competency in the WSQ are task skills, task management skills, contingency management skills, job and role management skills and transfer skills.

Task skills (and knowledge) refer to both adequate performance, which may be learnt in class, and superior performance, which is continuously refined in the workplace. The latter is influenced by the standards found in the workplace and these standards appear to be better learnt in the context of a workplace. In the classroom, trainee baristas Yin and May learnt how to operate a coffee machine, what the ingredients for different drinks are and tried making these drinks themselves. However, the acceptable standards for these drinks, "what is good and what is bad" (Yin), become more evident to them when they started working in the store and preparing drinks for paying customers. This also takes place through feedback from their customers, "drink is not good, so redo it for them" (Yin). Similarly, though trainee chef Wei went through butchery training in class, it was only after working at the butchery section for over a month that "it surprised me how lousy my butchery skill was". He has since learnt how to minimise the amount of meat left on the bones through practicing the new techniques taught by the butcher chef. According to him, the school teaches you "the proper way", but the

hotel teaches you “their method”. Giving the example of filleting fish, Wei explained that the difference between the two is in the order of the steps, but the butcher chef’s method causes less tears in the meat.

Based on the standards in their workplaces, trainees not only build on what they have learnt in class, but also learn new knowledge and skills. Trainee aerospace technicians Henry and Mike had the opportunity to use a boroscope (flexible lens) to check inside an aircraft’s high pressure compressor. They found the process interesting as it was their first time carrying out the procedure and capturing what they saw and did on video. Through this exercise, they learnt about the legalities associated with their job. Similarly, trainee healthcare assistants had to learn how to operate machines that measure pulse rates. Trainees may also have to relearn what they have been taught in class. Trainee healthcare assistants Min and Jo experienced some discrepancies between classroom and workplace practices, “what we learnt and what we work is different” (Jo). The method for lifting patients demonstrated in class differed from the one shown at work and though both trainees felt that what they learnt in class was safer, they had to use the nursing home’s technique (i.e. working alone and pulling patients by the collar and pants). Min explained that in the nursing home, “you can’t actually shift the patient up in a proper way [because] you will be straining your own self” (Min).

While the previous section focused on isolated work tasks, task management skills is about handling a number of different tasks within the job to complete an entire work activity. In order to do this, trainees need to be able to recognise what is happening around them and anticipate what is going to happen next. This requires knowledge of how their work is organised and what the daily work routines are. The work that trainee healthcare assistants and aerospace technicians carry out is very much structured around strict time and procedural schedules. Healthcare assistants carry out tasks such as feeding and changing patients at specific times throughout the day, and aerospace technicians have to adhere to standard operating procedures when they carry out maintenance work on the aircrafts. Similarly, the food and drinks that trainee chefs and baristas prepare have to be ready on time and have to be of a certain standard.

To ensure this, trainee chef John, who had been an accountant previously, has learnt how to organise, plan and think ahead. According to him, these work habits, initially developed in and for the kitchen, have now become “innate in me”. As the way in which work is organised differs from one kitchen to the next, trainees rotate between kitchens every four months so that they can familiarise themselves with the various operations. Wei found this challenging because every kitchen has its own processes, but over time, he has managed to cope by learning to ask the right questions, “so I find that the assimilation time is shorter and shorter, you get accustomed to it faster”. Moving from kitchen to kitchen allows trainees to gain an overview of how each kitchen works (e.g. workflow and standards) and helps them

understand where their tasks fit in the whole operation and develops their task management skills. For the baristas, their workload depends on the number of customers in their store at any one time. Yin pointed out that by working different shifts, she can now predict days of the weeks and times of the days when the outlet would be at its busiest (e.g. weekends). During these periods, baristas are still expected to complete orders in a timely fashion, and they cope by preparing for the next order in advance and multitasking. Mark (the trainees' supervisor) observed that as they spend more time in the cafe, their movements become more "automatic" (i.e. carrying out tasks without being instructed to do so) and they are able to transition from one task to the next seamlessly. We observed evidence of this when the trainees moved fluidly from one station (e.g. coffee machine) to the next (e.g. cashier station) to fill in momentary gaps. Such movement is possible because the trainees have been trained in all stations, knew the tasks and demands of each station, and understood how stations related to each other.

Contingency management skills are about being able to respond to problems and irregularities such as breakdowns and changes in routine. As in stipulated standards in the workplace, knowing what to do during unexpected situations is learnt through experiencing these situations. The development of contingency management skills is also determined by trainees' knowledge of the whole workplace (e.g. workflow) and the degree of discretionary power they have. In the hotel's kitchens, trainees learn how to solve problems and make independent decisions on the spot when faced with unforeseen circumstances, such as running out of specific ingredients or receiving special requests from guests. Eric gave an example of how he had to prepare a raw vegan dish while working in the room service kitchen, and Wei shared that he could practise making a chicken consommé and label it as chicken broth if he fails. Wei has "the ability to make decisions and to apply what I know, and to apply what I have learnt", and as he utilises his technical skills, he builds up confidence in his abilities as a professional chef, "you trust your skill and you trust your knowledge even more". In the same way, trainee baristas have the autonomy to make decisions on the quality of the food they serve. We observed how Yin disposed of a single slice of cake because in her opinion, it was visually unappealing (e.g. the edges of the cake had hardened and fallen off, and it was smaller than the other slices). Her supervisor, Sharon, explained that all staff can make their own judgements but have to notify their supervisors and update the tracking sheet. Unlike trainee chefs and baristas, trainee healthcare assistants do not manage unexpected situations because their centre manager did not think that they possess basic medical knowledge. With this knowledge, "when patient condition change, they are able to predict, they are able to know how to react, how to carry out the nursing intervention" (centre manager). However, without this knowledge, trainees are unable to provide patients with the care that they need. Supervisor Zara observed how Jo fed an asthma patient without adjusting the angle of his bed according to how he was breathing. The centre manager explained that

because trainees only know how to carry out skill-based procedures and do not have adequate underpinning knowledge, they cannot work independently.

Job and role managements skills relate to having the capacity to deal with the responsibilities and expectations of the workplace, including taking work-related responsibility and working with others. Trainees in the F&B industry learn how to work alongside their colleagues on real work tasks, *"this [is the type of] teamwork that we can't get in class"* (May). When they work on different components for the same dish or drink, it involves a sense of trust in each other's abilities, *"everybody is competent in every aspect of the dish so I don't have to worry"* (Wei) as well as understanding the responsibility of each person. May described how the baristas are able to work together on the same task and across different roles by 'reading' each other's actions. For example, more than one barista may be involved in preparing an ice blended drink (e.g. filling the cup with ice, blending the mixture, serving the customer, and washing the blender) and baristas also move between stations when necessary. Besides working alongside colleagues, trainee healthcare assistants have to learn how to work with their patients. Each patient has his or her own unique medical condition and personality, and through interacting with them, trainees are able to familiarise themselves with these characteristics. Supervisors stressed the importance of ensuring that trainees have this knowledge for safety, *"some of the patients I can handle by myself, but some of them you have to have two staff handle one patient"* (Jo) as well as practical reasons, *"to get along with the patient because some patients… they don't want [to be assisted by particular staff]"* (supervisor Michelle). The role of healthcare assistants is shaped by the way their work is organised. Much of the work is carried out individually, whereas in the F&B industry, trainees work as part of a team. Consequently, F&B trainees learn about teamwork and how to support and interact with others. While trainee healthcare assistants were aware of the kinds of tasks other staff (e.g. nursing aides and staff nurses) engaged in, they had limited opportunities for appreciating the levels of responsibility of these roles. This is related to the level of theoretical knowledge required in the field and the lack of access to this knowledge as in the examples already given.

Within the WSQ, transfer skills are thought of as the ability to transfer knowledge, skills and attitudes to new tasks and situations. The training that takes place in class is *"not the real thing, but it's still a good practice… at least to get a feel of what they're doing"* (trainee aerospace technician Henry). Transfer, as discussed in the stage one report (Bound & Lin, 2010) and in the literature, is a problematic concept. In this report we conceptualise "transfer" not as a thing but as a process and use Evans et al. (2010) conceptualisation of recontextualisation. In Hotel Co, for example, the rotation of trainees through different kitchens required them to learn to adapt and use their skills and knowledge in different settings. The skill of learning to ask what questions is an important skill in lessening the settling in time. Therefore, an important part of recontextualisation is the skill of knowing what the relevant

questions are. It would be worthwhile for the WDA to reconsider what they mean by "transfer" of skills as this is now an outmoded term and considered very problematic in the literature.

All of these five dimensions of competency are clearly present in the work trainees undertake in their workplaces. They are unlikely to be demonstrated in a classroom setting and therefore, it makes sense to assess these dimensions of competency in the workplace.

4.3 Assessing Workplace Learning

The trainees' assessment of their learning can be formal and structured (e.g. observing trainees at work and evaluating their competence based on a predefined list), informal and unstructured (e.g. working with trainees on the same or similar tasks and providing on-the-spot feedback that can inform their practice) or a combination of both. This decision depends on a variety of factors including the arrangements agreed upon between training providers and the workplace, and the culture of the workplace in terms of the valuing of teaching and learning at work.

Trainee chefs, healthcare assistants and baristas were assessed formally by workplace supervisors through written documentation (e.g. checklists provided by the training provider or organisation), either after or as they carried out daily work tasks. In contrast, trainee aerospace technicians were only formally assessed through their logbooks by their own trainers who visited them at their work site. These different arrangements are a result of the negotiations between the individual training providers and workplaces, and are also influenced by the status of trainees' employment with the organisation. For example, the aerospace technicians were the only trainees in our study (with the exception of new chef John) who were not employees of the workplace. They were there for a short period of time primarily for observation purposes. In contrast, Hotel Co has been working with the same F&B training provider since 2005. They send their own chefs for WSQ training, accept and nurture apprentices (e.g. new chef John) by providing them as support for learning, and go on to hire some of these apprentices as permanent staff after they have completed their course.

In all four workplaces we looked at, informal and unstructured assessment took place but at varying degrees. In the F&B workplaces, supervisors and trainees worked on the same or similar tasks and this allowed supervisors to assess trainees through observations and provide them with feedback that they can then go on to incorporate into their work processes (e.g. while trainees prepared food and drinks for customers). This assessment of trainees would eventually contribute to formal work appraisals, and included assessing skills and knowledge as well as attitudes towards work and learning, which is an important aspect of workplace competencies that cannot be easily captured through formal assessment

processes. In both workplaces, there was an obvious valuing of learning at work and an allocation of space and time for the learning to take place. There were fewer opportunities for informal and unstructured assessment in the nursing home and aircraft maintenance company due to the way in which work was structured by the organisation (e.g. primarily individualistic work tasks) and the ad-hoc nature of support provided. These opportunities for and limitations for assessment are closely linked to the way in which learning takes place to be discussed in the next section.

4.4 How Learning Takes Place – Barriers and Enhancers

In the literature review (Chapter 2), we suggested that using activity as the unit of analysis allows us to better understand the complexity of learning. The following two examples, of John from the Hotel case study making a dessert and Jo's work in Carnation Ward, have been selected to illustrate the mediation of situated and contextual conditions on opportunities for learning and of the learner's sense–making, their agency and the influence of their agency on the work practices.

Figure 4 sets out a work activity being undertaken by John, to make a dessert he had never made before (see Hotel case study). This activity was deliberately structured by the supervisor as a challenge for John, a challenge because John is required to complete the task close to the end of his shift. He had not made this dessert before and there was no room for error as the dessert was required the next day. Failure would mean either he or his colleagues would have to remake the dessert so there were considerable pressures on John to succeed. His motivation to do well in this area is related to his desire to run his own restaurant in five years' time. An ambition such as this means John is ready and willing to rise to any challenge that comes his way.

His object (his intent to meet a long-term need) is to learn and succeed in producing a high quality dessert. This goal is shared by his supervisor who had set this up. The supervisor's object is to teach and induct trainees into the industry and produce quality product. In this activity and in this environment there is no conflict over the goal and the motivations of each party coincide.

Similarly, with division of labour, it is clear that the supervisor has given John, the learner, the duty of making the dessert. The supervisor takes the roles of instructor, guider and coach. As the learner, the rules are for John to follow instructions, listen very carefully and seek clarification when he is uncertain about any aspect of what he is doing. The rule for the supervisor is to give clear instructions. Each party has access to tools, some of which are the same, some different. John brings to this activity tools for learning; having been in this environment for some time, he now knows what is expected: the workflow, the reason for this task, the way to behave

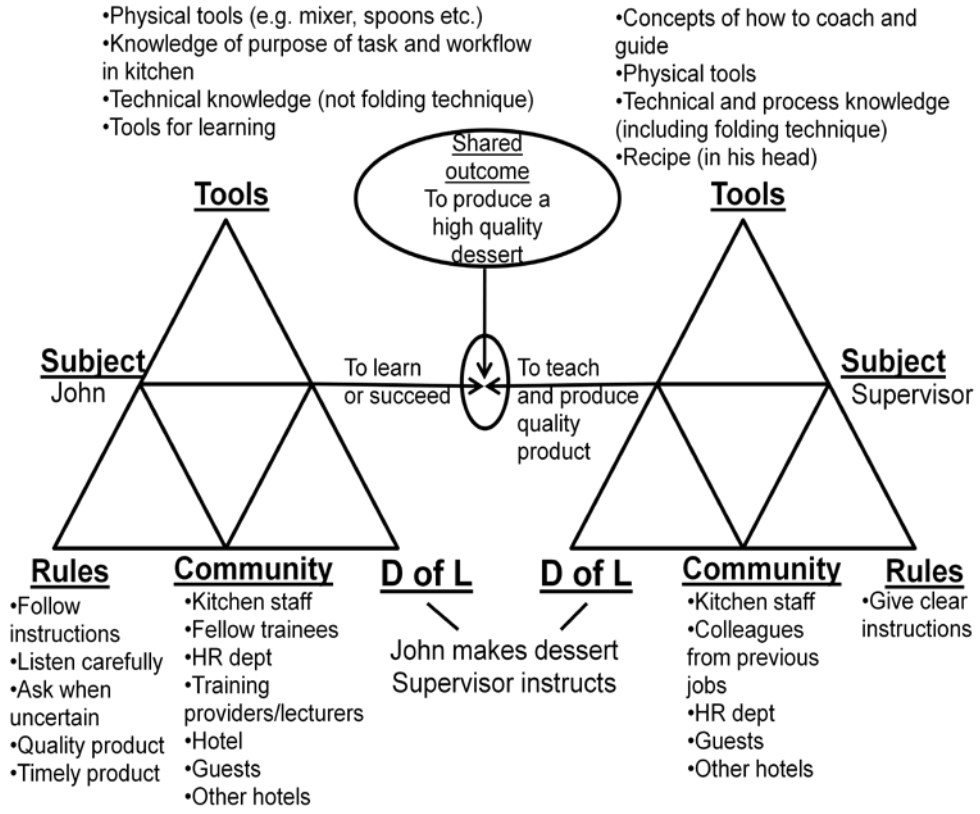
towards his supervisor (implicit in the rules listed above), how to ask questions and why you need to ask questions. He has the technical knowledge he learnt in school and on-the-job about the ingredients he is working with, although the process of folding in ingredients is new to him. The supervisor has technical and process knowledge, and he carries the recipe in his head. Both have access to the physical tools for making the dessert (e.g. a mixer, spoons, bowls etc.), although they are used differently.

The community component of the activity tells us quite a lot about the environment in which John and his supervisor work. Both bring to this task their dispositions and experience gained in other settings. Although in this task there is no direct interaction required, there is a relationship that connects with the things and processes in the kitchen. These are implicit in the expected standards: the need to succeed must not impinge on the work of others should the dessert need to be remade, the established workflow and rules and the trust established in each other through working together over time. There are also implicit relationships with the guests who will be consuming this dessert whose feedback on the quality of the food is valued. There is also the relationship with the Human Resource Department of the Hotel, in that the Hotel has a strong commitment to developing their employees and recognising good work. This network can be further widened. John is part of the School he attends, and therefore has access to his lecturers and peers as sources of knowledge and expertise. This Hotel has positioned itself at the high end of the market; both John and his supervisor have experienced food in other hotels and are aware of this market position and what is required to maintain it.

Typically, in mapping Engeström's (1987) depiction of an activity system, we will identify tensions and contradictions within and between systems. In this instance we did not do this. However, through extending our understanding of the community component of activity system, we can see how the social relations of learning and work, market conditions, the impact of the role of another department (human resources) and the role of the vocational school that John attends are embedded in a work activity. In this sense, we can see that contextual conditions (Bound, 2007) are embedded within our actions, motivations, responses, the tools we use and have access to, and social relations in the workplace.

In terms of John's subjectivity (Billett, 2011), his love of cooking led him to change his career from being an accountant to a chef and therefore has strong commitment and makes considerable efforts to be highly successful. We saw a glimpse in the previously mentioned activity of making the dessert but more so in other examples given in the Hotel's case study that John takes control of his own learning through recognising the importance of practise, writing down steps and techniques and learning from mistakes (e.g. misreading decimal places that resulted in dumping 10 loaves of bread). John is aware of his strengths and learning strategies, indicating a capability in assessing his own learning (Absolum, et al., 2009).

Figure 4. Activity Theory (John)



If we look at the work activity in the Nursing Home's Carnation Ward where Jo was working (see Figure 5), we can see a rather different picture of the support for learning and Jo's learning. Jo is in her mid-thirties and had worked in Australia in a nursing home, so she was not new to this work. However, she did comment that patients in Singapore are more dependent than those in Australia and that the pay is much better in Australia. Jo was quite definite about her role in caring for patients. As mentioned in the case study, she would often (not always) refer to patients by their number, rather than their names. She had become accustomed to this as it is the way in which nurse aides and those in charge of the ward referred to patients, when for example they asked Jo to take blood pressures. Jo took the instructions she was given very seriously, being quite literal in her interpretation of "this patient is bedridden" that patient must be assisted when moving and so on. This interpretation was particularly clear to us when she reminded her patients loudly a number of times from across the room to move their limbs (we need to remember that movement is important for circulation and should be encouraged). She was able to explain a little about most patients' condition, although she did not understand how some pieces of equipment worked and why it was important that certain procedures and processes were undertaken. The training she had received in the two months prior to being on the ward covered only procedures for hygiene, washing, turning, lifting, feeding and so on. There was no theoretical knowledge about medical conditions or physiology.

Opportunities for learning about patient conditions are through the nurse's notes when she reads them and what she is told or overhears on the rare occasions she worked alongside or with nursing aides. However, because the division of tasks in the Nursing Home is individual rather than team, and as a healthcare assistant she is not involved in shift handovers, opportunities are limited for learning through working with others. In addition, the rules by which she works are evident in the diagrammatic charts on patients bed tables, for example, indicating times when the patient had to be turned or tube fed. Jo's work (like others on the ward) is highly structured, resulting in a clear defining of what she is to be engaged with and what she participates in.

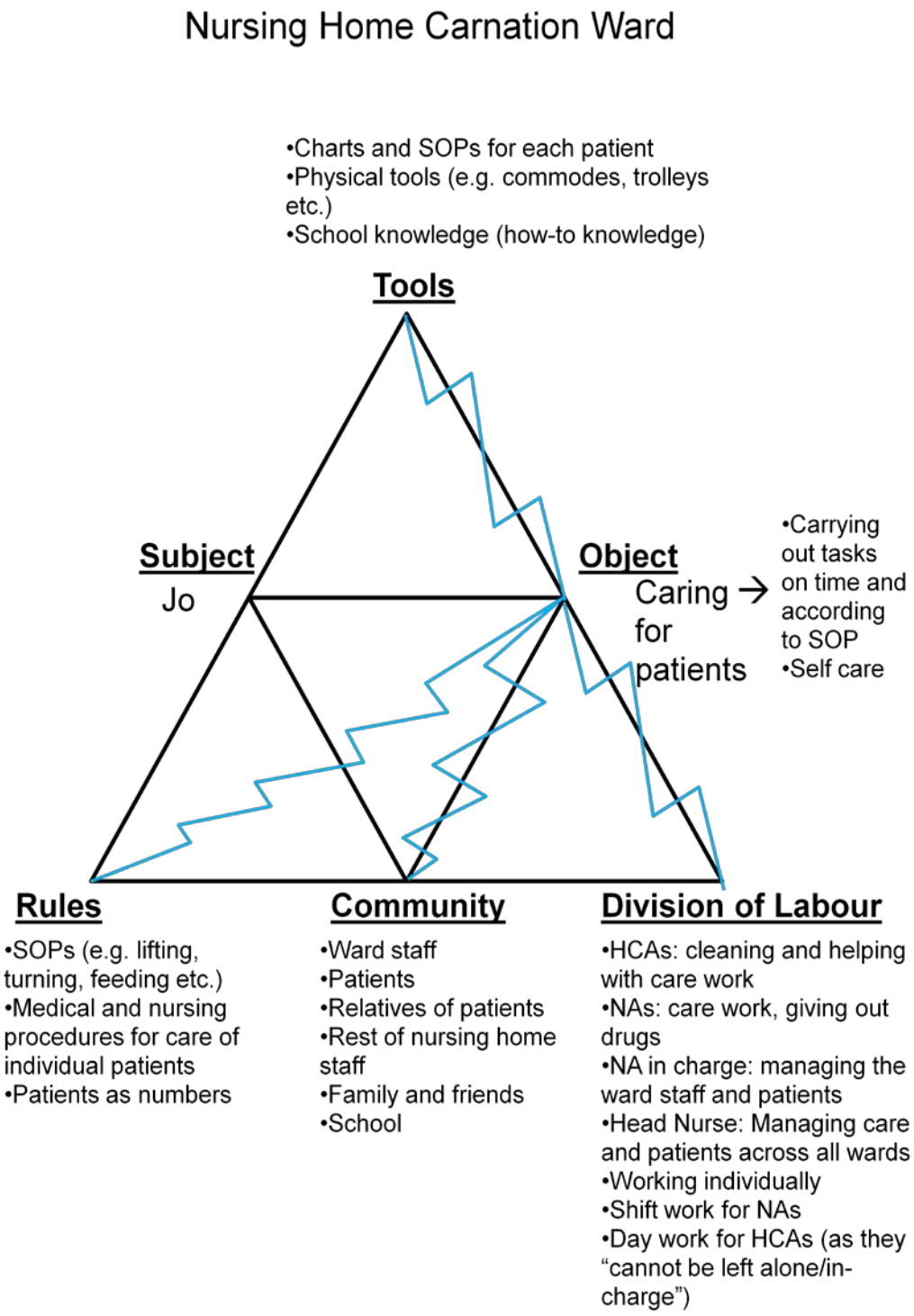
The ways in which the work of the HCAs is structured keeps them on the periphery of nursing practices, rather than engaging them and accepting them into these practices (Lave & Wenger, 1991; Wenger, 1998). These workers do not have access to theoretical knowledge, rather a discourse of individual responsibility for learning contributes to denying them access (Eteläpelto, 2008), despite the lament of the manager of the Nursing Home that HCAs need this knowledge. Such a perception also accepts the theory-practice divide of knowledge. The expectation is that staff members come to the Nursing Home with this knowledge, rather than the workplace being seen as a site for developing knowledge. A need for better understanding of what lies behind various procedures was evident in the story about tube-feeding a patient with asthma at the wrong angle, leading to breathing difficulties and the patient throwing up as his condition required a variation from the normal procedures. However, these stories also tell us quite a lot about the lack of support. Between the individualisation of tasks, strict rules and procedures, staff members who came from a number of surrounding Southeast Asian countries with different languages, there was limited opportunity to provide support and very limited encouragement to do so.

The difficulties in getting and keeping staff in this industry and hence its reliance on foreign workers explains in part the Nursing Home's strategy of physically surrounding staff with strict rules and procedures (e.g. in the form of charts kept on bed stands for turning patients). It may also explain the organisation of work as the division of labour is largely individual. Professional discourses from the medical model and the ways in which these discourses have been interpreted for patient safety and risk provide a rationale for the ways in which SOPs are used and displayed. In this example, we can see in an industry with a shortage of labour and professional discourses and their interpretation and enactment have contributed to limited support for learning. The situated cultural norms embedded in rules, referring to patients as numbers and limited access to shared dialogue is reinforced through the practices of individuals such as Jo. Her internalisation of these cultural norms and social practices through strict adherence to rules (e.g. shouting at patients who move, feeling unable to make a decision when asked by a patient if he could have his dessert early as he had a doctor's appointment) tells us her sense of agency

(Billett, 2011) is restricted. In these ways, the cultural norms and practices are reinforced. Unlike John from Hotel Co, Jo is not encouraged to develop a learning disposition; she is not challenged, actively encouraged nor does she have opportunity to develop in her workplace. Implicit in the structuring of her work is a requirement for know-how knowledge with limited deeper theoretical conceptual knowledge, despite the nature of her work calling for a better balance.

There are a number of tensions evident in this activity (as shown in Figure 5, jagged lines). In caring for patients, cultural norms (in the community component of Figure 5) lead to an emphasis on physical care as opposed to holistic care; school knowledge does not appear to adequately reflect knowledge needs in caring for patients, as there is limited or no understanding of effects of procedures and possible complications. In addition, the Nursing Home accepts practices where patients are wheeled out (on a commode) from the shower to the ward and left to sit there naked for a short period. The division of labour as individual and the breaking down of tasks contribute to these practices, raising issues about what is meant by the object of caring for patients. Tensions such as these, made visible to the organisation, provide possibilities for working with the Home to facilitate change and at a systems level and thus also for individuals.

Figure 5. Activity Theory (Jo)



4.5 WSQ Models of Workplace Learning

There are three models of workplace learning for competency-based training programmes evident in our data. They are:

- Apprenticeship model
- In-house traineeship
- Post-training placement
- Work experience as part of an academic programme
- Building on workplace learning

The first three reflect what is taking place in the WSQ programmes undertaken by trainees in our case studies but are also typical in other instances where there are workplace components in WSQ programmes described in our Stage I study (see Bound & Lin, 2010). Apprenticeships are common in other countries but not so here in Singapore. Indeed chefing is the only example we have been able to identify as apprenticeships in Singapore. The post-training placement, otherwise called train and place is more common here. Building on work experience as part of an academic programme is less common. The final model, called building on workplace learning, brings together lessons from the case studies and analysis discussed in previous sections of this report to emphasise ways in which learning in a workplace – whether or not it is accompanied as part of a WSQ programme – can be supported and leveraged. This model also gives Training Providers a guide of what to look for and what to value in companies they seek to establish partnerships for placements, work experience or apprenticeships.

4.5.1 Apprenticeships

The apprenticeship model has a long tradition in chefing. In the Hotel Co case study, apprentices move between periods of time in school and in the workplace over their 18-month programme. Trainees (Eric and Wei) were employed by the hotel while undertaking their Advanced Diploma and John was on placement though the organisation appeared to provide him with equal access to and opportunities for learning. The hotel is large enough to be able to provide a variety of experiences and cuisines for apprentices, rotating them through the different kitchens as they completed their stints at the school. In this model, apprentices receive a full induction into the industry; there are close links between the provider and the hotel, evident in the log books apprentices and supervisors are required to complete and sign off. Apprentices build learning to learn skills, constantly recontextualising (Evans, et al., 2010) their school knowledge with what they learn in the workplace. The notion of recontextualisation (as opposed to transfer) addresses the theory-practice divide, recognising that "concepts and practice change as we use them in different settings" (Evans, et al., 2010, p. 246). This concept provides a way of understanding knowledge in use, noting that concepts are an integral part of

practice and that practice varies from one part of a sector to another and from one workplace to another. The movement between school and workplace actively sets up opportunities for these processes and provide apprentices with a number of sources of support at different sites, the workplace and the school. The apprenticeship model gives apprentices well rounded and developmental introduction into or further development of their vocational practice.

4.5.2 In-house Traineeships

Traineeships are similar to apprenticeships, in that they include off and on-the-job training, but are usually shorter in duration. The trainee baristas in our study were engaged in in-house traineeships, which involved learning with and from work supervisors and colleagues, while engaging in work activities as well as a structured 12-step training programme. This programme, delivered by Cafe Co staff (one of whom used to be an outlet supervisor), took place at an off-site location. T his allowed for baristas from different outlets to interact and learn about other practices that may or may not be similar to what they are used to. New outlet managers are also required to go through the programme so that they have a better idea of what and how new staff members under their charge learn in this classroom environment. As with the trainee chefs, trainee baristas update their progress in their training journals and their entries are acknowledged and signed off by trainers and work supervisors. With regard to the WSQ courses that have been incorporated into Cafe Co's training programme, assessment was carried out by the trainer in the classroom at the end of each course, though their learning is supported through constant feedback given by work supervisors as they worked. In this in-house traineeship, trainers and supervisors operate under the same organisation; as such this facilitates the creation of close links between the learning that takes place in class and at work. Nevertheless, being part of the same organisation does not guarantee that such links will naturally form, as seen in the Nursing Home Co. case study elaborated on below.

4.5.3 Post-training Placements

The post-training placement model in this study was the Nursing Home Co case study. The trainees completed two months of study with the training provider and were placed with a facility under the same organisation for a three-month probationary period, which would determine their future employment. Once trainees complete their time with the training provider, there is no further contact and thus no support from the provider. There are considerable issues with this model for a number of reasons. First, there is no relationship between structured off-the-job training and learning in the workplace, resulting in lost opportunities in supporting the ongoing development of individuals who are placed. Second, providers have lost a valuable opportunity to ascertain if their curriculum is meeting the needs of the industry and individuals in the industry. Third, the arrangement institutionalises

the theory-practice divide between academic, school knowledge and practice-based, workplace knowledge, leaving it to the individual to recontextualise (Evans, et al., 2010) academic school knowledge to the workplace.

In our case study, the two trainees received very limited support for continued learning, despite being on probation and their continued employment being dependent on their success. As a result of the lack of support, one trainee, a local Singaporean, left the industry; an industry that is desperately short of local Singaporeans.

4.5.3 Work Experience and a Simulated Environment

The trainee aerospace technicians experienced this model and in addition, the programme was designed so that trainees spent time in a simulated environment becoming familiar with real tool, materials and processes in a safe and structured environment. The two-year programme consisted of basic theoretical units, followed by units that had a highly practical focus. In addition, trainees had a brief introduction to the workplace during a week-long work experience. Trainees spoke highly of their trainers in the simulated environment, respecting their wisdom from many years of experience in the industry and the level of support and guidance they provided to trainees. Having trainers with deep industry experience and skill in providing guidance is clearly an important aspect of the programme and its overall design.

The work experience we observed was one week in a workplace, exposing trainees to a real work environment to introduce them to ways of working, workflow and what expertise looks like in action. Our trainees spoke of the ‘special lenses” used by the engineers they followed, referring to the way these experienced engineers could look at parts of an aircraft, listen and use other senses to identify problems. They learnt that the “most interesting” work takes place during night shift, and they learnt to hear and talk with each other in dangerously noisy settings. This particular placement not only allowed them to learn about what working in the industry might really be like, but also to get a sense of what it is like to work on a whole aircraft as opposed to pieces of an aircraft. Evans et al. (2010, p. 249) describe a similar programme in the United Kingdom, where learners are expected to progressively increase the level and standard of the tasks they undertake in the course where they work in a safe simulated environment to increase levels of confidence and expertise, and where they had access to industry expertise and feedback aimed at building confidence and developing them. This process enables learners to constantly recontextualise knowledge and develop skills in different settings. Although we did not collect data on the aspect of learning to learn skills and knowledge and the role of different settings, it is likely that working across settings enhances capability in recontextualising knowledge between and across different workplaces. This would be an interesting topic for further research.

4.6 Building on Workplace Learning

In this section, we draw together some of the threads of what we learnt about what enhances workplace learning across the four case studies through our observations, interviews and analysis of training and development documentation. Because learning occurs in the workplace whether we recognise it or not, it is important to make the most of these learning opportunities and manage negative or destructive learning that results from non-supportive and/or restrictive environments.

While it is critical that we recognise that what is learnt, how and why it is learnt is different in different industry sectors and workplaces and indeed in different sections or teams within workplaces, there are some common messages that require adaptation within different workplaces and for different types of work. Learning and development for individuals, teams and the organisation can work well when organisations:

- Recognise that the workplace is a learning site.
- Integrate learning and development of staff into the highest levels of documentation, part of strategic visioning as in Hotel Co. The visioning needs to cascade, as it does in Hotel Co, to all levels of documentation and is to be lived, not shut away in a drawer and forgotten.
- Value staff members as they are in the Hotel Co and Cafe Co examples.
- Structure in and give access to a wide variety of tasks and responsibilities (this will vary considerably depending on the nature of the work and the position of the staff member).
- Design in learning challenges such as rotating staff through different sections and providing opportunity to undertake challenging tasks/responsibilities while providing support.
- Give permission for staff to try new things and experiment as new products, services and ways of working can emerge from this permission and support of these activities.
- Support learning from mistakes and allow for debriefing to address the mistakes made. Mistakes will be made, so we need to make the most of these opportunities for learning.
- Provide opportunities for working with and alongside others with different expertise. This allows for observation of expert practice and dialogue.
- Give permission for staff to make decisions, as appropriate. We saw how limiting a lack of decision making power is from the Nursing Home Co case study. Having to constantly pass up requests for decision and problem-solving are causes of client/patient frustration.

- Provide mentoring, coaching and guidance. In industries where there is a high turnover, it becomes particularly important for a cycle of teaching and learning to be engendered in the workplace.
- Accept, recognise and reward ideas, attitudes and behaviours that support a people development orientation.

Differences in what is learnt was perhaps most evident in the comparison between the knowledge and skills the baristas in the F&B industry were learning, and the need for much more complex knowledge and skills in the world of the aircraft engineers and the chefs. Baristas were learning formulas or recipes; they were using all their senses in assessing the quality of the drinks they made, they required fine motor skills in making quality cappuccinos and adding the decoration. They were also using aesthetic skills. The chefs too used aesthetic skills although in plating up dishes they were working with multiple ingredients, whereas the engineers are more likely to use aesthetic skills in relation to assessing the smoothness of a finish, the symmetry in repair work and so on. The HCAs were in an environment where they could have learnt and had access to knowledge that allowed them to understand why certain procedures are done, and what happens in complex cases (much care of the elderly involves multiple illnesses, not just one). This would enable them to identify what was/was not an issue and to exercise judgement in how they carried out standard tasks. However, they were denied access. Lack of access was not just about the workplace itself and the way it organised tasks and workflow on a largely individual basis, but also a factor of the industry and its trajectory of development. The reliance on foreign workers with a multitude of languages in a workplace, limited or broken English, and the structure of having nursing aides and below them the HCAs with just two months of training means the workplace reflects the industry and its valuing and positioning of these workers. Therefore, it may be worthwhile for the industry to reconsider the role, purpose and contribution of HCAs once it has a sound understanding of the ways in which these workers are used and valued in workplaces in the industry, and how these workers see their own trajectories.

In addition, we see in the Nursing Home Co case study that the theory-practice divide operates quite strongly. We therefore postulate that the social relations of production, through the division of labour and with it the atomisation of tasks, minimise opportunities for recontextualising learning. Learning dispositions that actively seek out connections and develop understandings are not necessarily encouraged or even recognised. The way the work is organised limits social relations that support learning and leverage on opportunities. Thus, motivations for learning are mediated negatively.

What we learn, how we learn and why we learn all contribute to becoming. By becoming, we refer to an individual's sense of belonging, commitment and acceptance as part of a vocation, profession or group. This concept involves self-efficacy, confidence, belief in one's capabilities, all of which are important to

nurture. A restrictive and/or negative working environment can quickly undermine confidence and with it, commitment and initiative.

5.0 Recommendations

The following recommendations follow from our analysis of findings (Chapter 3) and discussion of these findings (Chapter 4).

Recommendation 1

That the WSQ system requires programmes to include workplace learning, not in a train and place model, but based on the models of work experience or apprenticeship.

Recommendation 2

That in designing curriculum, where there is a workplace learning component or series of components, the curriculum deliberately states the purpose of the time in a workplace, and that there is alignment between each module and the intent of time in a workplace. This allows the experience in the workplace to be used and linked to each module; it is a basic principle of good curriculum design.

Recommendation 3

That where it is either not possible to put in place time in a workplace(s) or where there is considerable complexity of skills, that greater use be made of simulated environments (see Aircraft Maintenance Co case study). Simulated environments can provide a safe site for developing and building skills, recontextualising classroom and onsite experiences and knowledge, and can be important in supporting 'becoming' by building confidence.

Recommendation 4

That providers and curriculum designers identify what is best assessed in the workplace and use the workplace as a site for assessment. What is assessed and how it is assessed will be determined by the intent of the time in the workplace, the overall length of the programme and resourcing issues for the provider and workplaces in the industry sector.

Recommendation 5

That in establishing partnerships with workplaces for their learners, training providers assess each workplace by asking if the workplace:

- Recognises that the workplace is a learning site and accepts, recognises and rewards ideas, attitudes and behaviours that support a people development orientation.
- Values staff.
- Structures in and gives access to a wide variety of tasks and responsibilities (this will vary considerably depending on the nature of the work and the position of staff member).
- Deliberately designs in learning challenges.
- Gives permission for staff to try new things and experiment with new products or services, and ways of working.
- Supports learning from mistakes and allows debriefing and opportunities to address the mistakes made.
- Provides opportunities for working with and alongside others with different expertises.
- Gives permission for staff to make decisions, as appropriate.

Recommendation 6

That the competency dimension of transfer be revisited and reconceptualised to reflect current thinking.

Recommendation 7

That further research be conducted into:

- The ways and extent to which diverse experiences enhance learning to learn capability for recontextualisation.

How providers implement the inclusion of time in workplaces and the ways in which this mediates the practice of curriculum design, support and professional development of trainers, development of learners and issues of implementation and management.

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Appendix 1 – Interview Schedules

Questions for trainees	Trying to get at...
Can you tell me why you decided to take up this WSQ course/do this type of work?	Motivations for learning/working in the particular industry
I understand that the programme involves [type of workplace learning arrangement]. What did it involve? How did you find it?	Confirming our understandings of the arrangements, and trainees' thoughts/feelings about the workplace learning arrangement between the training provider and workplace
We now want to get a better idea of how [workplace's name] operates. Can you tell me more?	Context of the workplace – organisation of work, reporting lines, decision-making processes, culture of the place, the work trainees engage in, etc...
What are some of the things you have learnt in the last month? Can you remember when you first did this at work? What were you thinking and what did you do?	What is learnt at work, links between learning in class and at work, workplace affordances/individual agency for learning
How do they teach you new things here? What do you look, listen, smell, taste, feel for? How do you remember what they teach?	How trainees learn, support for learning at work, individual learning process
What would you say you have improved in the most in the last month?	Motivations for continuous learning/improvement, workplace support, learning processes, personal/organisational assessment
Tell me about a challenge you have successfully dealt with at work. What was it and how did you deal with it?	Opportunities for autonomous decision-making, support for trainees
If I was a new staff member with no experience, and you were asked to show me how to [describe a process], how would you go about doing this? Why? Is that the way you were shown?	Strategies for teaching and learning
What do you like most/least about working here?	Culture of the workplace
. Do you have any thoughts about what you hope to be doing in 5 years?	Commitment to the industry/job, motivations for staying/leaving
. Is there anything else you would like to add about your learning in relation to the work that	If we missed anything

you do?	
Questions for supervisors	**Trying to get at...**
We would like to understand how [name of workplace] operates. Can you tell me more?	Context of the workplace – organisation of work, reporting lines, decision-making processes, culture of the place, the work trainees engage in, etc...
How long have you been a supervisor of [name of trainee]? How many trainees have you trained since you started working here?	Role as a supervisor
How do you know what to teach the trainees? Have you seen the competency standards that [name of trainee] is working towards? Is there a training plan for the trainees? Examples of this? How do you support trainees to ensure competence?	What trainees learn, familiarity with what is learnt in class allows for links between classroom and workplace learning, support for learning at work
What have you been teaching [name of trainee] over the last month? Have there been things that you have learnt from the trainees? Examples?	What trainees learn, and what/how they contribute to the shared learning that takes place at work
How do you teach trainees? Why?	Teaching and learning strategies
How do you think [name of trainee] learns best? (e.g. demonstration, having a go) Are there opportunities for you to teach him/her in this way, or is it necessary to use other ways of teaching? (how do you think they learn/improve)	Supervisor's awareness of trainee's learning style and opportunities to teach accordingly
Give me an example of a new thing [name of trainee] has learnt or improved on over the last month.	Supervisor's understanding of trainees' learning
Is there anyone you particularly looked up to/admired either as a trainee or at any stage in your career? Why? Are there any experiences that made you feel uncomfortable, inadequate etc. as a trainee or at any stage in your career?	Supervisor's learning experiences/processes
To what extent do you think things like time constraints, work processes, etc, limit the learning opportunities for trainees? Examples? And what happens in [name of workplace] that	Supervisor's awareness of contextual factors, e.g. workplace barriers/constraints for learning

helps staff improve and develop new skill and knowledge?	
. What would you like to see change around here to further improve/help staff in their learning?	Recommendations for how to improve learning
. Anything else you would like to tell me about work/learning?	If we missed anything

Appendix 2 – Coding Schedule

- What is learnt (or not)
- How does learning take place – observing and listening, documentation, communities of practice, mentoring and coaching, hands-on practice, reading, discussions with others
- Workplace affordances for learning
- Individual agency for learning
- Context of the workplace
- Work activities staff in the workplace engage in
- Classroom lessons
- Motivations for enrolling in the course/joining the industry
- Assessment processes

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