ASSESSMENT OF LEARNING IN THE WORKPLACE: A BACKGROUND PAPER

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Purpose and scope of this publication

This background paper is the first part of a three-stage project on Workplace Learning Assessment Structures. The overall purpose of the project is to explore the different models of workplace learning assessment used around the world and by Industry Training Organisations (ITOs) in New Zealand, and to consider the kinds of arrangements that are, and could be, used to support workplace assessors in their assessment role. ITO leadership in arranging and supporting training and assessment makes their structures and systems around assessment an important area because it impacts directly on the training and learning that can take place and can be measured.

The background paper is firstly designed as a standalone piece of research based on a very targeted review of the most relevant literature. It examines workplace assessment structures and systems in the context of understanding the roles and purposes of assessment and workplace learning. A second purpose of the paper is to inform the design and conduct of the next phase of the project—which involves a survey of key ITO staff, along with focus groups with ITO training managers, moderators and assessors. The final phase of the project will culminate in the writing, publishing and dissemination of a "good practice" guide. The guide will be designed to assist ITOs to make their workplace assessment structures more robust, effective and promoting of high-quality learning that fosters trainees' and employers' confidence in industry training.

The focus of this paper is on learning that is assessed *in* workplaces:

1. the role of assessment in workplace learning
2. different international approaches to assessment in the workplace
3. the experiences of workplace assessors.

This paper does not intend to exhaustively cover all the available literature on assessment and workplaces; it is a very targeted survey of the literature relevant to the specific purposes of this project. We have not reviewed literature on assessment in higher education or on VET (vocational educational training) (unless it is quite specific to workplaces). We have focused on literature about learning that is assessed in the workplace and counts towards a recognised qualification.

The following diagram shows the pathways through which learning that is used in the workplace can occur and can be assessed. For example, learning can be formal (deliberate and through recognised tertiary education and training courses), or informal (incidental and through life experience) or nonformal (occurring on the job or through structured programmes but not leading to qualifications).[1]

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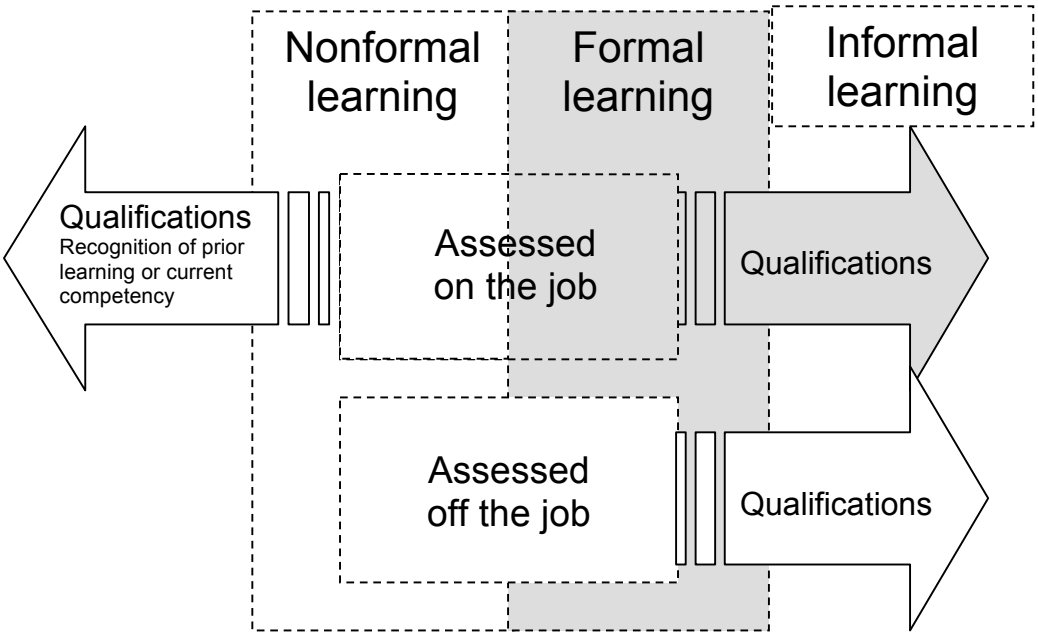
[1] Following the OECD definitions (Doyle, Simota, & Werquin, 2009; Misko, 2008), these forms of learning are defined as follows: formal learning is learning in courses or programmes leading to nationally and internationally recognised qualifications; nonformal learning is learning that occurs in structured programmes but does not lead to accredited final qualifications; and informal learning—learning acquired through everyday work and life. There is much disagreement about how to distinguish between the formal, informal and nonformal learning categories and evidence suggests that they are nearly always overlapping to some extent (Malcolm, Hodkinson, & Colley, 2003). We use dotted lines in our diagram since the categories are only

Any or all of these types of learning can occur on the job (in the workplace) or off the job (through education providers, at home, in the community or through relationships with people who are not work colleagues). The focus of this review, and the project as a whole, is on formal learning that is assessed on the job and leads to recognised qualifications—the diagram elements that are shaded grey.

Figure 1 **Pathways for workplace-related learning and assessment**



As the original proposal for this research identified, there is very little international and New Zealand research on learning (and assessment) in on the job settings.[2] This is partly because workplace learning is often seen as "just doing the job" rather than learning (Vaughan, 2008). So close is the association between the word "learning" and formal classroom settings in people's minds, that it is difficult for people to consider that learning might occur in other, often less formal, settings such as the workplace (Eraut, 2000).

Why has workplace assessment been overlooked as a research focus?

There are several, interwoven reasons why there is very little literature dealing directly with workplace assessment. Firstly workplace assessment is closely related to forms of learning that are not recognised or understood as learning, which means that such learning is less likely to be

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distinct in academic definition. In reality, it is very likely that any learner will be drawing on their informal (life) learning as part of their formal or nonformal learning (and assessment on the job).

[2] We note that there is Australian research that takes up assessment issues for VET. However this literature is not included in the main text of this paper as the focus is not specifically on assessment *in* the workplace. Research reports about VET do call for VET practitioners to have the skills to undertake assessments in workplaces (Mitchell, Chappell, Bateman, & Roy, 2006) and have good industry knowledge and links (Australian National Training Authority, 2003; Department of Education and Training, 2006). There have also been calls for relevant assessments to take place in industry contexts wherever possible (National Quality Council, 2008).

assessed. As a recent CEDEFOP (European Centre for the Development of Vocational Training)[3] report points out, around 94 percent of workers' time spent learning is through performing tasks on the job, which suggests that there may be some learning that is never assessed (Gruber, Mande, & Oberholzner, 2008). Yet workplaces are potentially a rich source of learning, just as educational institutions are (Ryan, 2008), and much of the learning that does happen on the job occurs through explicit activities that make use of a range of pedagogical methods (Fuller & Unwin, 2002).

In some cases assessment is "invisible" as a topic for attention because it is subsumed within another process. This point is underscored by a New Zealand study of school teachers which showed that many teachers framed some of their assessment as teaching, rather than as assessment, because it took the form of feedback during the process of learning (Hill, 2000). It is possible that assessment goes unrecognised in workplace learning discussions for similar reasons. However, given that workplace assessment tends to occur at the endpoint of a learning process and for purposes of accountability and selection, it is more likely that the lack of literature reflects a taken-for-granted assumption that assessment is an unproblematic activity.

Another reason that workplace assessment has been so (comparatively) underresearched has to do with having to reconceptualise educational relationships when there is a tension between business imperatives and learning imperatives. Some writers (Billett, 2001; Unwin, 2004) have been critical of employers' commitment to workplace learning, noting that employee participation in learning frequently comes second to other workplace imperatives. In workplaces, it is perhaps not surprising that learning comes second to other imperatives such as making products and/or delivering services. However, employer receipt of government funding for training does come with some obligations to the learner and these may not always be well understood. The failure to promote and set up systems and processes to allow employees to successfully undertake learning towards qualifications may contribute to the low completion rates of Advanced Modern Apprenticeships in the UK (Unwin, 2004).[4] Hence one of the greatest drawbacks of some traineeships is that unless employers are provided with accurate information about their obligations, and with advice and support in fulfilling these obligations, training and assessment processes may fail (Misko, Patterson, & Markotic, 2000).

A final reason for the lack of literature is likely to be a result of political positionings of industry and education, which have seen the differences between the workplace and other educational settings emphasised far more than the similarities, and resulted in workplace learning being left out of general educational (learning and assessment) research and discussion. Industry has tended to emphasise its advantages over other education settings and arrangements—for example, no

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[3] CEDEFOP is Centre Européen pour le Développement de la Formation Professionnelle.

[4] We note that the New Zealand Ministry of Education (Mahoney, 2009a, 2009b) recently reports low qualification completion rates for apprentices and trainees. However, as numerous ITOs and other interested parties have pointed out, the statistics are misleading as they are taken from individual-employer Training Agreements which do not follow the learner-worker as they move from employer to employer. Hence as an employee changes jobs, their Training Agreement is terminated and they contribute to noncompletion statistics, even if they complete the qualification with another employer and through another Training Agreement. The statistics are also misleading in that they do not recognise learner motivations and that some learners set out to achieve credits and learning in certain areas but not an entire qualification.

student debt is accrued by the individual learner, the training delivery can be more flexible, work experience is gained concurrently, no entry qualifications are needed and the knowledge and skills are real life, up to date, and immediately relevant. Education tends to emphasise its advantages—for example, learners are part of a learning community which is highly motivating and generative of further knowledge, there are no production imperatives overriding the learner's needs and aspirations, teachers often have a research background and can pass on knowledge at a deep level and qualifications may be high level and broad enough to be easily transportable.

These kinds of differences derive historically from the emergence of schooling and industrialisation. They have often manifested as a debate about the role of schools in producing people who are "work ready" and what this would mean in practice if they did. The upshot is that there is comparatively little crossover literature between the two "camps" of education and industry. It is certainly true that workplace settings and classroom settings are different and that workplaces vary greatly.[5] However, the most important question now is perhaps about how we might understand their different imperatives—employer–employee versus teacher–student, and business imperatives versus educational ones—and make the most of combining their different strengths.

Since the "transfer" of learning and assessment issues and principles between workplace learning literature and the wider education literature is rare, it has not been easy finding material on workplace assessment (let alone workplace assessment *structures*, with which our overall project is concerned). For example, in several recent major pieces of research, there is no mention of assessment systems or practices. A recent Australian overview of research messages in five key workplace-related areas cites 59 research reports and, apart from an article on assessment of literacy and numeracy programmes, makes no mention of assessment (National Centre for Vocational Education and Training, 2009). In another Australian research overview almost 50 people were interviewed about practitioner-driven changes to teaching and learning in professional VET practice, yet few people made any mention of assessment, despite overwhelming research evidence in the wider education literature that assessment is central to learning (Figgis, 2009), not just a process that "credentials" the learning that has occurred. And in a major survey of UK employers on training practices, high-performance working practices, perceptions of vocational qualifications and perceptions of Sector Skills Councils, there was no mention at all of assessment (Shury, Davies, Riley, & Stanfield, 2008).

Therefore our approach in the background paper has been to take account of the limited literature but also to think beyond this about the issues underpinning workplace learning assessment. Much of the research that we located on assessment derives from the schooling and formal institutional tertiary education sectors;[6] it is barely starting to feature in the workplace learning and vocational institutional literature. So in addition to covering what workplace assessment literature is available, we will also refer to vocational education and training, school classrooms, adult learning and professional development where principles may be applied to industry-related

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[5] It should also be noted that there is variation within schools as a group.

[6] Although industry training is part of the tertiary sector in New Zealand, industry training has not figured in academic debates about assessment.

workplace learning assessment. We will discuss general assessment purposes and roles, the relationship between learning and assessment, and the nature of knowledge and competency—because these issues have direct relevance to the principles of workplace assessment, and therefore also the assessment structures and systems which contain implicit messages about what is most important to measure and how to do it.

Overall assessment of learning in the workplace is characterised by several tensions. The first two—tensions between validity and reliability and between formative and summative forms of assessment—are recurrent issues for assessment in any setting. However, we will discuss the particular slants these take for workplace learning. The third tension—between business imperatives (the needs of the organisation or enterprise) and learning imperatives (the needs of the learner)—is one that is unique to workplace learning. Discussion of these three issues is woven through the sections that follow.

The characteristics of learning and assessing in the workplace

Our focus on the assessment of workplace learning comes at a time when learning is increasingly important to the productivity[7] of individuals, businesses and nations in emerging knowledge societies. Despite the many different aspects of knowledge societies discussed by various authors,[8] a common theme is that people need to be able to adapt and innovate throughout unpredictable and rapidly changing times. In other words, workers, employers and industry representatives need to be able to learn things now *and continue* learning throughout their lives, as technologies, relationships, roles, tasks and business strategies change. The demand for ongoing learning has implications for workplace assessment.

This foregrounding of learning might at first seem counterintuitive given that workplace assessment is frequently driven by business imperatives rather than learning ones. Although learning is not the core business of any company, learning is becoming more and more relevant to companies and to the context of workplaces; learning is becoming part of the core. This is because learning is no longer the front-loaded and school-based opposite of being productive; it is now a key indicator and driver for productivity (Vaughan, 2008). This means that workplace and employment relations practices that incorporate learning are a positive contributor to economic development, not a constraint on the ability of firms to grow (The Office of the Prime Minister, 2002). Furthermore, productivity gains appear to be highest in workplaces with *cultures* that support and promote learning (Vaughan, 2008) and also when other changes that support learning

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[7] In its simplest form, productivity is based on an input/output ratio. The more that inputs (resources such as labour and materials) can be converted into outputs (goods and services), the higher the productivity.

[8] For example, changes in knowledge production and the implications for education (Gilbert, 2005); the rise of a new "creative class" of knowledge workers (Florida, 2002); new mindsets and capacities for the 21st century (Pink, 2005); "accelerated flows" of people, ideas and money between nations (Appadurai, 1996); fragmentation of structures and institutions and a heightened calculation of life risks (Beck, 1999); and new identities based in patterns of consumption rather than in social class (Kenway & Bullen, 2001).

"are made in skills, innovation, workplace organisation, management capability and employee engagement and motivation" (Harvey & Harris, 2008, p. 7).

Assessment is an important part of the learning process and learning "product". Certain kinds of assessment can actually support learning (increase it, help it take root, help make it meaningful etc.). It 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, the converse is also true. Assessment 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 (Broadfoot, 1998).

If there is truth in the often-cited statistic that the majority of the workforce that we will have by 2020 is already in the workforce now, and that the greatest productivity gains for New Zealand as a whole are likely to come via the productivity gains of businesses already in existence (Workplace Productivity Working Group, 2008), then people already in workplaces are very important learners and contributors to productivity. These links between learning, assessment and productivity point to the critical role that ITOs play.

Although *informal* and *nonformal* learning are beyond the scope of this background paper, it is worth noting that workplace learning literature is increasingly arguing that managing workers' informal learning is important and that this should happen in ways that relate closely to the skills and dispositions needed for knowledge societies. There is:

> …wide consensus in recent research on the wide frequency among the European population of learning in *nonformal/informal* settings, as well as on the essential role of *informally* acquired competences for a continuous adaptation of vocational competences to changing requirements on the labour market. Furthermore, a paradigm shift from the dominance of traditional education institutions towards a diverse field of traditional and modern learning opportunities that are more process and outcome oriented and follow modular structures can be observed… This—and the recognition of the value of various forms of learning—also pinpoints the considerable relevance of learning taking place at the workplace. (Gruber et al., 2008, p. 6, emphasis added)

So although our focus is on the assessment of formal learning in the workplace, leading to qualifications, many of the relevant assessment issues that are explicitly discussed in relation to informal and nonformal learning are applicable.

Despite growing interest in informal and nonformal learning, formal learning (and assessment of it) still tends to take centre stage. This is because it is more visible, more measurable and easier to organise (for example, through public institutions). Formal learning is also the core business of ITOs; they are not funded to facilitate informal or nonformal learning. At the level of the workplace, assessment of informal learning is difficult for precisely the opposite reasons that formal learning is easier to assess—there is low awareness of informal learning (and this includes a lack of recognition by workers themselves), there is a lack of organisational structure to assess it, the cost of developing and maintaining those structures is prohibitive and there are doubts about how to assess in ways that are valid and reliable.

Nonetheless general educational literature, and increasingly workplace learning literature, is clear that informal and nonformal learning are often the source of skills and dispositions that are now recognised as very valuable in the workplace, and a need to consider ways of linking them (Vaughan, 2009):

> While the formal system is still very much focused on initial education and training, a lifelong learning system has to face the challenge of linking a variety of formal as well as nonformal learning areas … to meet the individual's need for continuous and varied renewal of knowledge and the enterprise's need for a broad array of knowledge and competences—a sort of knowledge reservoir to face the unexpected. Also … the question of identification, assessment and recognition of competences presents itself as crucial. Competences have to be made visible if they are to be fully integrated into such a broader strategy for knowledge reproduction and renewal. (Bjørnåvold, 2001, p. 29)

The possession of a qualification is no longer viewed as the culmination of learning—it is increasingly viewed as a passport for entry to a community of practitioners (builders, electricians, hairdressers etc.) who will informally build and shape their knowledge and skills *throughout* their working lives. Learning from work is "the knowledge and understanding needed to be effective in doing work in particular roles in particular contexts, that is, a 'learned worker' (Portwood) engaging in a curriculum driven by the exigencies of work" (Costley & Armsby, 2007, p. 26).

Delivery of assessment in the workplace

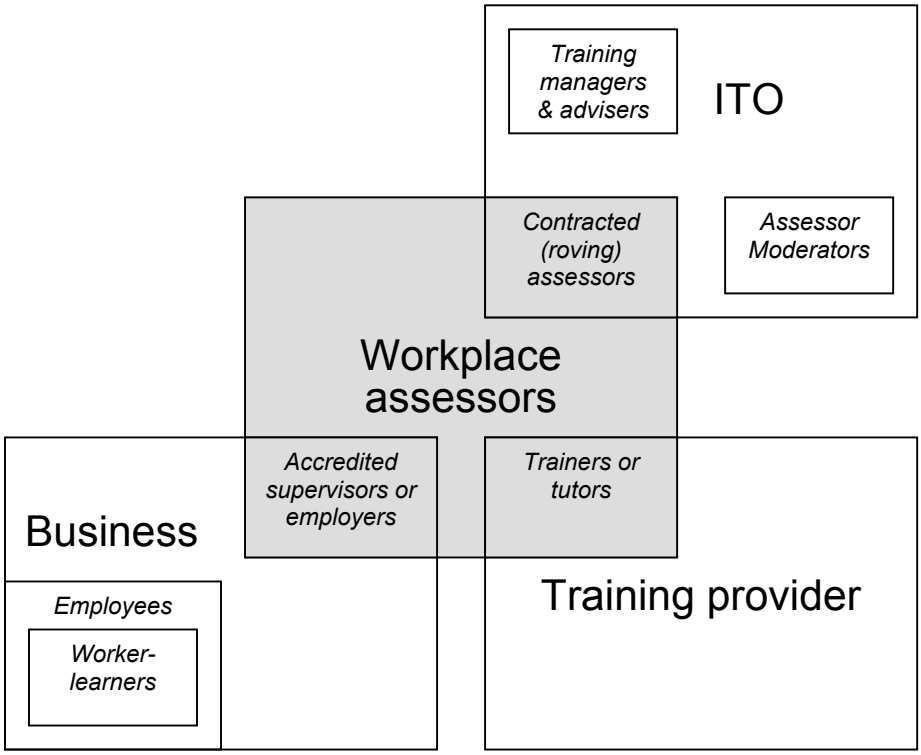
Perhaps the most striking thing about the organisation of assessment of workplace learning from an educational point of view is that trainers and assessors are not always the same people. In the majority of formal education settings, the people who teach are also the people who assess. There are variations in integration of the two aspects, but the functions are at the very least integrated within one person. This is sometimes the case with workplace assessment too. The trainers may be supervisors, managers, employers and trainers from external organisations who train on the job. These same people may also make assessments of the learning. However, there are also combinations of the role of trainer/teacher/tutor and assessor that may be spread across several different people. This can work as an assessment strength because different assessors can contribute to broader and potentially more valid judgements of achievement than the judgement of an individual assessor. However, multiple assessors can work against a fair and accurate assessment of an individual unless they are informed about their roles and aware of how their judgements contribute to the overall assessment of an individual's achievement.

The New Zealand Institute of Economic Research's report on the Building and Construction ITO's (BCITO) training and skill needs provides a good example of variation in the way assessment are linked to National Certificate in Carpentry Level 4 training programmes. When teaching and assessment are facilitated by BCITO, the teaching and assessment may occur on the job by the employer. When teaching and assessment are facilitated by the Industry Training Association for Building, teaching is on the job by the employer but assessed by a polytechnic tutor. And when the teaching and assessment are carried out by a polytechnic or technical college,

teaching is mainly off the job but includes some on the job work experience and is assessed off the job by polytechnic tutors (Pells, 2006).

In New Zealand, workplace assessors may be ITO-based, business staff members accredited to assess their own staff, or trainers/tutors. As well as working directly with individual learners, assessors work with trainers, industries, businesses and ITO moderators. In other words, individual New Zealand workplace assessors have different affiliations and may or may not combine assessment with training. The following diagram illustrates the role and affiliation combinations in New Zealand.

Figure 2 **Workplace assessor affiliations and roles in New Zealand**



The purpose of this background paper is not to map all the different combinations, though we certainly note them. We especially note that more and different combinations are possible and likely as workplace learning options become more popular and as training providers, employers, worker-learners and ITOs continue to "tweak" the delivery and assessment of learning to suit individual workplaces and their imperatives, and individual groups of learners and their needs. However, the rest of the paper will foreground the issues raised by different models, approaches and experiences.

Different purposes for assessment

It often seems that the "how" and "why" of assessment should be self-evident. Somebody learns something and somebody else assesses that they have learnt it. We want to know if people really have learnt. It is surely obvious whether or not the learner "can do it" or "knows it" and to what level of competence.

In reality, however, assessment is not nearly so straightforward. The role of assessment "is a function of society's needs at the time" (Gipps, 1999, p. 356). Most commonly, the role of assessment has been one of selection. Selection has also often been tied to forms of certification that admit entry or grant status. For example, the National Certificate of Educational Achievement with credits in particular subjects gives entry to university; the National Certificate in Industrial Measurement and Control Level 4 gives entry to the occupational status of instrument technician; and people typically say "I got my trade" after the final stage of formal learning and receiving a certificate. In these instances assessment of the learning that has taken place is not necessarily about supporting learning but is a statement about performance or competence at a point in time. It measures the outcomes of learning, or the achievement of learning outcomes. Hence assessment methods that support assessment for the purposes of selection are referred to as *summative*.

Formative assessment, on the other hand, has been shown by a wealth of educational literature to be particularly conducive to learning. Unlike the examination or reporting model of summative assessment, formative assessment focuses on learner progress *during* the process of learning. It is associated with increasing learner understanding and motivation, and building better learning-to-learn skills. Common formative assessment strategies include the use of open-ended questioning, discussions between teachers and learners or amongst learners, self- and peer-assessment and feedback that assists the learner to identify gaps and areas to work on in the future. In other words, formative assessment methods support assessment for the purposes of learning.

Sometimes summative forms of assessment can be used in formative ways—for example, written comments on tests or discussion of test results. The discussion occurs in order to further the learner's understanding of what (the test showed that) they do and do not know. Without that discussion, the learner simply receives a judgement with no explanations and is unlikely to learn further from that judgement on its own. Thus summative assessment can be thought of as assessment *of* learning and formative assessment as assessment *for* learning (National Research and Development Centre, 2008). John Hattie's (2003) soup-tasting analogy is useful: it is a summative assessment of the soup when it is tasted at dinner; it is a formative assessment of soup when it is tasted during the cooking.

Summative assessment clearly plays a major role in workplace learning because it focuses on testing for certification. Here assessment performs a reporting role and even an accountability one. It is likely that it involves judgements about the achievement of standards. When standards are rigidly defined it may create pressure for teachers and trainers to tailor their teaching to the narrow requirements of the system rather than the needs of learners (Derrick & Ecclestone, 2008).

There is a comparative dearth of literature on formative assessment in relation to adults (Derrick & Ecclestone, 2008) but it is likely that formative assessment may be particularly beneficial to adult learning (National Research and Development Centre, 2008). This is because it is more likely to support learners in the learning process. Broadfoot (1998, p. 451) quotes Coffield (1997) who argues:

> The most far reaching changes in pedagogy and forms of assessment will need to be introduced to respond to the needs of those most in need of lifelong learning i.e. those for whom traditional teaching methods have failed; those with low self-esteem who are also

> unused to working in groups—who camouflage their lack of self-confidence in a professed lack of interest in learning, (p. 16)—but the main barriers are structural rather than individual (p. 10) [therefore] individual, institutional and structural change should be introduced simultaneously (p. 17).

It is likely that identifying and articulating learning needs would be particularly challenging for industry-based learners. Their previous (school or workplace) experiences of learning are likely to have involved their learning needs being predefined or identified for them (and in ways that might not have built their confidence). In order to get around this, trainers and assessors would need to pay close attention to workers'-learners' previous experiences of learning (in schools, post-compulsory education settings and other workplaces) *and* workplaces would need to support the learning through affording real opportunities for practice and participation (Vaughan, 2008). Assessment that focuses only on measuring outcomes of action can actually be antilearning because learners are left alone with difficulties or questions and do not receive enough feedback. The developers of education are also likely to be left without relevant feedback on how they can best reach their learners and assess accurately (Poikela, 2004).

Formative assessment is certainly more demanding of teachers or trainers than summative assessment because it requires more frequent and more sophisticated teacher-learner interactions. It also requires a degree of learning on the part of the teacher or trainer as they adapt their teaching to better meet the needs of the learners, as they learn more about what those needs are. The continuous adaptation dimension is critical; without this high integration of the assessment and learning, the assessment would merely be frequent summative assessment, rather than formative assessment (Derrick & Ecclestone, 2008; National Research and Development Centre, 2008). There are implications for the model of workplace learning delivery here.

It should be noted that formative assessment strategies require a lot of the learner, as well as the teacher and assessor. In order to interact with teachers and assessors, learners need, to some extent, to be able to identify their own learning needs. Timma's (2007) Australian study of food production workers showed that their interest in learning was not only about developing skills and understanding for the job but also about personal fulfilment and self-improvement. So workers were keen to be self-directed in their learning and take some responsibility for arranging aspects of their assessments. However, in some workplace settings, workers struggle to articulate their learning needs, as a recent British study of nurses in advanced professional development showed (Moore, 2007).

Validity and reliability issues for assessing in "authentic" settings

The perpetually difficult assessment issues are to do with *validity* (does the assessment test what we want to test?)[9] and *reliability* (would the assessment produce the same result at different times or under different conditions?). This review is not the place to debate these issues in depth but suffice to say that balancing validity and reliability is very challenging in the design and carrying out of assessments, and they are as much an issue in workplace settings as any other educational settings.

New Zealand's National Qualifications Framework was designed to ensure that assessments are both valid and reliable, by tightly specifying the criteria that learners must achieve to be awarded credit. Thus to be awarded credit for preparing a site prior to placing concrete, a candidate for the National Certificate in Carpentry must demonstrate, among other things, that pipes and ducts are placed and protected in accordance with site documents and that a damp-proof membrane will be used before any concrete is laid. The assessment is considered valid if the criteria being assessed are those that are required to perform the task. In other words, a valid assessment is about ensuring that the right things are attended to before laying concrete. Reliability comes into play in decisions such as the consistency shown by the learner in performing these actions and the consistency of judgement on the part of the assessor in what constitutes acceptable performance.

Assessment is most valid when it is authentic. In many ways workplaces lend themselves to authentic assessments. This is because assessment is based on actual performance in the workplace, rather than by simulation or in the examination hall, and is also a potential source of information for educational purposes (supervision and feedback), as well as for evidence of progress and achievement (Postgraduate Medical Education and Training Board, 2005). In other words, assessment in the workplace allows workers to demonstrate their achievements directly rather than performance being inferred from other "performances" (for example, they can wire an electrical outlet, rather than drawing a diagram of the wiring and listing tools they would use).

Assessment is more likely to be authentic when:

- the content of the assessment aligns well with the task
- the environment in which learners perform the assessment is realistic
- the degree of interaction allowed during the assessment approximates that which would occur in the workplace

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[9] Validity of an assessment refers to the use and interpretation of evidence collected, as opposed to the assessment method or task. It is not simply a property of the assessment task. An assessment task that is highly valid for one use or context may be invalid for another. The reliability of an assessment is an estimate of how accurate or precise the task is as a measurement instrument. Reliability is concerned with how much error is included in the evidence. There are common sources of error associated with both objective tests and performance assessment. These are associated with the method of gathering evidence (i.e., the level of precision of the assessment task and the degree of standardisation of the administration and scoring procedures) and the characteristics of the candidate (e.g., fatigue if a long test). In performance assessment, there are additional sources of error: the characteristics of the assessor (e.g., preconceived expectations of the competency level of the candidate), the context of the assessment (e.g., location) and the range and complexity of the task(s) (e.g., the level of contextualisation) (Gillis & Bateman, 1999).

- the form of the assessment method also is valid
- the criteria used for the assessment are those which are valued by practitioners (Gulikers, Bastiaens, Kirschner, & Kester, 2008).

An Australian study of small business and office administration trainees and their employers stressed authenticity through the integration of training and assessment into one setting and coming simply under the auspices of "learning":

> The greatest strength of any traineeship is that trainees are involved in authentic learning … Learning at the place of work means that trainees are provided with real responsibility … must face the real consequences … deal with real customers, real deadlines and real obligations. (Misko et al., 2000, p. 275)

A more recent Australian ethnographic study of workers' perceptions of learning, training and assessment underscored the relationship between authenticity and assessment credibility in the eyes of the learners. The study of workers at three different food production companies found that they particularly valued the "real-life" dimensions of their on the job assessments, where they could not only describe their work or produce finished evidence of it, but also perform the work as part of the assessment (Timma, 2007). Similarly, a New Zealand study of ambulance workplace assessments found that the ambulance workers being assessed set great store by direct workplace evidence and felt that their scenario (indoor, examination-style) assessments were no substitute for assessments "in the field" (Hoy-Mack, 2005): "With scenarios you tend to set up a perfect situation, a textbook situation, that you never get out on the road" (Ambulance workplace assessor, cited in Hoy-Mack, 2005, p. 83).

Although the validity of workplace assessments can be praised on the grounds of the authentic nature of the assessments, authenticity is not enough on its own. Authentic workplace assessment is really only evidence of *face* validity; further evidence of content, criterion, construct and consequential validity is needed before the assessment can really be said to be valid (Gillis & Bateman, 1999). In other words, the real-world character and setting of workplace assessment makes it authentic (*face validity*). However, we still need to think carefully about *content validity* or what skills are going to be assessed and *criterion validity* or the criteria against which performance will be judged. We also need to consider *construct validity* or the overall design or method of assessing (e.g., by observation and discussion or by multichoice test) and *consequential validity* or what could or will happen as a result of the assessment (e.g., a credit that says someone is competent at a particular task or a qualification that gives someone access to a particular work role).

There is another tricky side to authenticity in workplace assessment. The very thing that makes it authentic—its attunement to actual performance "in the field" and the real tasks in each unique workplace—is also what makes it potentially overly specific. The highly contextual character of authentic workplace assessments may mean that something other than what was intended is measured (Bjørnåvold, 2001). For example, Hoy-Mack's (2005) study of ambulance workplace assessments found that the erratic nature of work in the field (real-life medical emergencies) did not always allow for demonstration of techniques, tasks and decisions in the ways described by standards. In an example of the same sort of issue from another angle, workers interviewed in

Timma's (2007) study were not always able to demonstrate their problem-solving skills (if a machine did *not* break down, or nothing much occurred, during the assessment).

These issues are closely tied to the issues of reliability and use of evidence in assessments. In some ways reliability may be more of an issue than validity because of the diversity of (on the job) learning and assessment environments (Bjørnåvold, 2001). Clearly, moderation processes are essential and there is conflicting evidence about the reliability of assessor judgements.

The evidence assessors use to make judgements

In keeping with the trend towards authentic assessment, there is a trend towards collecting evidence of competency through "normal work" such as team meetings, workshops and one-to-one coaching (Smith & Smith, 2008). However, these require judgements on the part of the assessor and valid and reliable judgements require expert knowledge of the domain being assessed as well as the circumstances in which the performance is to occur (Billett, 2004). As Jones (1999) points out:

> We have also to identify how many times the behaviour must be reproduced to be clearly not due to chance alone. An unskilled cook might make a good custard by accident. Without knowledge of basic facts like the behaviour of egg yolk at different temperatures, the same unskilled cook might ruin the custard the second time around. The assessor must decide in what context and how often the performance must occur in order to demonstrate intelligent performance. (p. 150)

Questions about validity and reliability are intertwined and sometimes in inverse proportion to each other. Generally, when fairness is discussed in research about assessment, the author(s) focuses on reliability and/or validity. It is beyond the scope of this review to discuss validity and reliability in more depth. However, we suggest that, generally speaking, validity is foregrounded, and reliability backgrounded, in workplace assessment: "A reliable type of evidence is not acceptable if it is not valid and a less reliable type of evidence might be preferable to a more reliable type of evidence if the former is more valid" (Greatorex, 2005, p. 152).

Assessor judgements require clarity about intentions. What are the limitations of their interpretations and for what purpose is an assessment being made? As Gillis and Bateman (1999) argue, assessment task developers and assessors need to make a judgement as to whether the evidence they have supports the intended use and interpretation of assessment evidence for the specified purpose(s). Ultimately, the validation of an assessment requires evidence of task development, clear and concise assessment criteria against the competency standards, appropriate task administration procedures, adequate scoring/decision-making rules and recording procedures.

However, there are concerns over lack of rigour and quality assurance in the training of workplace assessors and these affect the ability of assessors and the validity and reliability of assessments. New Zealand research has highlighted some concerns over moderation, assessor training and thoroughness of assessment and assessment evidence used (ETITO, 2006), assessment consistency, compartmentalisation of learning and assessment that does not promote learning (Pells, 2006).

An Irish study found a lack of transparency of work-based assessment, with no moderation of standards of training and assessment in the workplace, and a need for rigorous quality assurance to ensure consistently high standards, rather than the use of performance criteria with minimum standards (use of multiple-choice questions and short-answer questions in the theory tests)—findings that the Foras Áiseanna Saothair (FÁS, the Irish National Training and Employment Authority) has accepted in principle for a review (O'Connor, 2006).

Hoy-Mack's (2005) study of ambulance workplace assessment highlights a different struggle faced by assessors—standards that did not quite reflect the skills and knowledge needed to be a competent ambulance driver unless the assessor carefully interpreted and extrapolated out from the detail in the standard. Standards tend to be more than words on paper anyway and so the ambulance assesssors in this case had to negotiate the internal validity of standards (in the New Zealand Qualifications Authority descriptions) and their intimate knowledge of performance on the job.

Because assessor judgement becomes more critical in authentic and highly contextualised settings, consistency may become an issue. Establishing clear task specifications, including evidence to be collected and decision-making rules, will increase reliability (Gillis & Bateman, 1999). One method for establishing and maintaining consistency between assessors and reliability of their judgements has been to make standards highly prescriptive. In other words, to eliminate as much of the judgement as possible. This results in situations like the one described in an Australian survey of trainees, employers and Registered Training Organisations (RTOs) involved in on the job traineeships in small business and office administration, where assessment typically involved the assessor inspecting a finished product (Misko et al., 2000). The problem is that competencies that are defined in narrow, reductionist ways are competencies that are inadequate for a highly skilled workforce (Biemans, Nieuwenhuis, Poell, Mulder, & Wesselink, 2004). The risk is a "ping-pong" back to assessment that is disconnected from real tasks in the workplace. Such assessments would be highly *in*authentic.

Assessors certainly can reach different conclusions from the same performance evidence. However, Johnson's (2008) research on assessors of a health and social care qualification isolated four key values that appeared to inform assessor practice: a sympathetic and contextualised view of the whole learner; respect for supportive and positive relationships; valuing professional trust; and a commitment to "care". These are all far more difficult practices and positions for assessors if they are not also the trainers or teachers because in such cases they would not have relationships with the learners. There are also implications for moderation here and Johnson suggests promoting assessor consistency by understanding

> … *how* experts make judgements about learners' performances since this might help to make the assessment system more transparent and able to justify claims of fairness. This is particularly the case for vocationally related holistic assessments where assessors might attend to a variety of factors in different contexts when forming a judgement … the challenge for assessment agencies dealing with large numbers of assessors with differing experiential backgrounds across different contexts is to implement measures that structure, or perhaps calibrate, their judgements so that in the face of uncertainty they are basing their decisions on common comparators. (Johnson, 2008, p. 173, emphasis added)

Issues related to assessor training and support

While assessors are confident in their role as industry experts, they need support *as assessors*. They may have no expertise beyond the level of the course being assessed and may be unfamiliar with assessment requirements beyond a set of tick-box processes. For example, a number of New Zealand ITOs describe the minimum qualifications and experience needed to become assessor as a qualification at or above the level to be assessed, and participation in a short course (e.g., to gain NZQA Unit Standard 4098). Similar minimum standards seem common in UK Sector Skills Councils, the equivalent of New Zealand's ITOs. Several pieces of New Zealand research have reported concerns about the adequacy of assessor training (ETITO, 2006; Pells, 2006).

The content of training

There are dilemmas about what kind of training assessors need. An Australian study of the certificates IV in Assessment and Workplace Training and (the revised version) Training and Assessment[10] described the way the certificate course focused on learning as a solely practical activity and made little reference to theoretical explorations of learning, especially emerging ones.[11] The researchers found that in the revised version of that certificate, Training and Assessment, there is even less attention to processes of teaching and learning (Simons & Smith, 2008).

The minimal training undergone by assessors can create problems when assessors face developments in what counts as knowledge and performance, evidence of those things and—more broadly—what kinds of things are now being demanded of people in workplaces. Hase and Saenger's (2004) study showed that assessors struggled with the idea that assessment should take many forms, involve a range of evidence and be more holistic, because it required a broader view of assessment and greater involvement of the assessors. In other words, the requirements of assessment can get beyond the capabilities and knowledge of the assessors.

In a recent Australian study of VET teachers who were also assessors, the teachers recognised a growing need for an "underpinning knowledge" that would enable apprentices to meet competency-based outcomes within a flexible delivery framework (Salter & Bound, 2009). Teachers identified content knowledge as a critical aspect of their teaching. Even more critical though was that the teachers understood that knowledge no longer meant just passing on technique, but involved developing apprentices' deep understandings. The teachers experienced a shift from seeing apprentices as incapable of answering higher order questions (because they lacked the knowledge to answer) to seeing that they could use resources like photos to engage apprentices and get them to think for themselves. Interestingly, in another example of how workplace assessment has great potential for authenticity in assessment, those teachers who were involved with worksite assessment gave examples of using higher order questions while *at* the worksite—they appeared to have a tacit understanding of integrating theory and practice. Many of

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[10] The certificates are a training *and* assessment qualification intended for VET practitioners.

[11] The exception was some emphasis on "learning styles"—perhaps the most simple and most uncritically understood and used learning theory.

those who taught only on campus used lower order questions, separating theory (or what teachers call "underpinning knowledge") and practice (Salter &Bound, 2009).

Who gets trained and under what conditions

Australian researchers studied employers who had been through assessor training[12] and found that they struggled with competing demands. They had to meet output demands while meeting legislative requirements for a competent and safe workforce. Business pressures meant that assessor training providers came under pressure to provide a training package that could be completed in three days. They interpreted "competence" in different ways. Those who became workplace assessors were more often than not nominated by others and on the basis of their technical expertise even though other attributes (communication skills, literacy, thoroughness, trustworthiness, confidence) were seen as essential to being a good assessor. However, most people said they became assessors for professional development and status (and valuing the qualification). These were the most common reasons for becoming an assessor, followed by business needs and legal requirements and—to a lesser extent—a personal interest or for job variety. They also found that assessors had trouble maintaining their skills as assessors in all aspects of the training package, particularly competencies in the areas used infrequently such as planning and reviewing assessment, which were seen as less important than actually conducting the assessment (Hase & Saenger, 2004).

The researchers suggest that these problems—the competing demands of being an assessor in one's own workplace, having to create time-compressed assessor training packages, maintaining assessor skills and the differences between other people's notions of what makes a good assessor and why some people choose to become assessors—need resolution at the systemic level. Management needs to accept and value the importance of adequately implementing competency-based training in their organisations (integrating all aspects of competency-based assessment into normal quality practices); developing a partnership between the mindful organisation and a high-quality provider who can provide appropriate training and ongoing support onsite; and somehow to address validity and reliability of assessment practices (Hase & Saenger, 2004).

Assessors who are in the workplace alongside the learners they are assessing face particular challenges. The Australian survey of business administration workplaces found that assessors were typically the trainee's supervisor or boss (Misko et al., 2000) and this highlights the difficult position of assessing colleagues (Clayton, Roy, Booth, & House, 2004). Assessors may then have a reluctance to commit judgements to print, and show a tendency to pass trainees by default, simply in the absence of negative evidence (Postgraduate Medical Education and Training Board, 2005). So there are different issues, depending on whether the assessor is "in house" or not.

The timing of assessors' work

Having assessors understand more about learning processes is important—particularly since learning and assessment are inclined to be separated out in some workplace assessment models.

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[12] Focus groups with 83 people and a survey of a further 83.

Recent Australian research examined the ways in which 17 joinery and carpentry teachers in technical education institutions could be supported to meet the challenges for more flexible delivery, both off and on the job. The teachers understood their role as including flexibility around delivery, which necessarily included flexibility around assessment—namely assessing on demand, when apprentices are ready, rather than at preset times (Salter & Bound, 2009).

The timing of assessments was also an issue for motor mechanic and hospitality apprentices and trainees in an Australian study (Robertson, et al. 2000). The research noted a wide range of combinations of on the job and off the job learning and assessment models being used in order to balance different enterprise and learner needs. Survey and interview responses from apprentices and trainees highlighted an absence of things they needed for learning in their workplaces, some of which could come under the rubric of formative assessment. These practices included opportunities to work on their own, receiving feedback and encouragement, opportunities to practise their skills and time to talk with their employer about their job. They also referred to formal (summative) assessment timing and wanted to have some say about when this occurred—namely when they are ready, and not according to a predefined schedule. These issues were particularly stressed by trainees whose learning and assessment were all on the job, highlighting greater gaps between what they needed for learning (and assessment) and what their workplaces offer.

The motor mechanic and hospitality trainees' ideas about what they needed to learn fit well with those of many education experts in assessment: that people learn best when they can assume control of their own learning and that they can only do this if they develop the capability to assess their own learning (Absolum, Flockton, Hattie, Hipkins, & Reid, 2009). So, in a way, it is not just assessors who need assessment skills; learners need them too (Poikela, 2004). This view is based on the idea that the purpose of assessment is to support learning. This 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, that we discussed earlier in this review.

Conclusion

It seems that workplace learning assessment lends itself to the sought-after status of authenticity in assessment. It also lends itself to more recent ideas about formative assessment because proof of competence is gathered by learners performing authentic tasks under changing assessment conditions at regular intervals (Sluijsmans, Straetmans, & van Merriënboer, 2008):

> A recent trend in medical education is to soften the distinction between formative and summative assessment. Formative assessment is typically undertaken to provide feedback to the doctor in training and their educational supervisor about progress and potential difficulties but without contributing in any way to pass/fail decisions. Summative assessment on the other hand, is traditionally concerned only with formal testing of attainment and forms the very basis of pass/fail decisions … the emphasis is moving rapidly away from gaining a certain number of marks in high-stakes examinations and more towards gathering evidence of clinical competence and appropriate professional behaviour and

> attitudes. Much of this evidence cannot be captured in the kind of formal examinations that have traditionally been the primary focus in postgraduate training. It is demonstrated, day in, day out, in the workplace and seen by educational supervisors, other team members, fellow healthcare workers, patients and their relatives and carers … it stands to reason that the workplace is where the evidence can be gathered. This is why workplace based assessment will become increasingly important over the next few years. (Postgraduate Medical Education and Training Board, 2005, p. 4)

It is likely that formative assessment is particularly relevant to workplace learning because it informs learners of how they are progressing and redirects their future learning (Tillema, Kessels, & Meijers, 2000). This not only supports the sort of learning-to-learn dispositions favoured in knowledge societies but also offers the potential to undo some of the damage of past experiences of formal learning, providing another chance for workers to see themselves as capable learners.

However, these assessment principles are not necessarily or easily structured into workplace learning assessment practices. The division between trainers and assessors that often occurs tends to mitigate against formative assessment that promotes learning and creates a focus on checking off competencies. Where the division does not exist (in forms of on the job learning and assessment), the impact of business imperatives (lack of time for what are perceived to be noncore activities, workplace cultures that are weak on learning support) and a lack of educational expertise make it difficult to promote learning. There will instead be a pull towards checking off competencies because that is what seems most efficient in the short term. That situation then finds its corollary in some of the relatively weak assessor training requirements and a lack of ongoing support for assessors shown in the literature.

Despite these challenges, the principles of authentic, valid and reliable assessment are worth pursuing. Learning and particular learning-to-learn dispositions are increasingly important in knowledge societies and are potentially a good match with learning in workplaces. Both address knowledge as personal competencies, such as the ability to identify and solve new problems (Vaughan, 2009). So some of the drivers for improving workplace learning assessment are already emerging at a global, economic and societal level. The next level for improving workplace learning assessment practice in New Zealand lies with the industry training system itself. There may well be structural-level possibilities that will support ITOs that can in turn support employers, their workplaces and their trainees.

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