

Hi viz learning: the transformation of on-job assessment for carpentry apprentices

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Abstract

In 2010 New Zealand's Building and Construction Industry Training Organisation (BCITO) transformed its assessment system by creating "assessment teams" of assessors, carpentry apprentices, moderators, and evaluators (employers). This re-aligned the assessment process with the on-job learning environment for carpentry apprentices. It also created new partnership demands, especially in relation to creating learning environments and facilitating judgements about evidence of learning. This presentation is based on just completed research designed around on-site observations, interviews, and an analysis of apprentice learning records. The findings show how the mechanisms of the BCITO's system work holistically and how they promote deeper learning for all members of the assessment team.

Introduction

This paper is based on findings from the Transforming Industry-Led Assessment of On-Job Learning project - a collaboration between the New Zealand Council for Educational Research (NZCER) and the Building and Construction Industry Training Organisation (BCITO), funded by Ako Aotearoa (Centre for Tertiary Teaching Excellence). ITOs in New Zealand are tertiary education organisations that do not provide training but arrange it, carry out assessments, set national skill standards, develop qualifications, and provide skills leadership. The research collaboration aimed to shed light on systems of on-job assessment by focusing on the BCITO's improvements in organisational capability for the purposes of improving outcomes for learners. The research produced two publications: a full research report (Vaughan, with Gardiner & Eyre, 2012) and a guide for apprentices (Kear with, Vaughan & Gardiner, 2012).

The BCITO's new system

In 2009 the BCITO began developing a new assessment system in response to a number of problems it had encountered with on-job assessment. For example the BCITO had been using structured worksheets as assessment tasks but these were not effective in discriminating between what really mattered (i.e. the intent of the standard as described by the elements) and what was intended more as guidance for assessors (e.g. the items in a listed range statement). This rigidity was further exacerbated by the instruction to assessors to ensure that "all questions are answered correctly", which sat alongside a set of model answers, which were intended to guide the assessor, but which became "gospel". That sometimes led to correct answers being overlooked because they did not comply with the model answers, or in oral questioning being conducted in a rigid way that failed to elicit what the apprentice actually knew. Although these approaches arose from good intentions to ensure the consistency of assessment judgments, they had resulted in a lack of alignment between the assessment

process and the learning environment. Apprentices would tend to complete the theory work in their worksheets (e.g. installing hardware) long before they were in a position, or sufficiently trusted, to actually *do* that work on-site (e.g. do chisel work on a new door).

The new system was thus designed to clearly establish relationships between supportive learning environments and purposeful, professional assessment of learners' progress. It removed responsibility for assessing from its workplace assessors and placed it in the hands of BCITO's 75 regional training advisors. It immediately relieved employers of the burden of assessing the theoretical aspects of the apprenticeship. It also made it possible to provide professional support and development in assessment to the training advisors, who were now a much smaller group than employers and were BCITO employees. A new responsibility for evidence evaluation has been designed for employers. Responsibility for evidence collection has been more clearly conceptualised as being one for the apprentice role.

The key elements of the new BCITO assessment system are:

- a shift from around 6000 workplace assessors to around 75 ITO-employed assessors
- a face-to-face internal moderation system that builds a community of assessment practice
- the establishment of "assessment teams", each comprising a evaluator/trainer, training advisor/assessor, moderator, and apprentice
- revisions of learning and assessment resources to reflect and support the other changes

Four principles of good assessment systems

Coincidentally, around the same time as the BCITO began to develop their new system in 2009, NZCER and the Industry Training Federation was starting research (funded by Ako Aotearoa) into systems for assessment of on-job learning across *all* industry training organisations (ITOs) in New Zealand. The research about on-job assessment involved writing a background paper, surveying all ITOs, and conducting nine focus groups with assessors and ITO staff. The research culminated in the production of a *Guide to Good Practice in Industry Training Organisation Structures and Systems for On-Job Assessment* (Vaughan & Cameron, 2010). The Guide was based around a set of four high-level principles for developing and maintaining good assessment systems:

1. ITOs and workplaces should have a clear purpose for assessment and work together

This principle emphasises the collaborative nature of assessment that can produce a well trained and qualified workforce. It promotes clarity around what assessment needs to do and that the right knowledge and skills are being assessed. It also highlights the importance of good communication between ITOs and employers, and the need for ITOs to support employers so that they and their workplaces can, in turn, support their apprentices.

2. The ITO's assessment structures and systems must support the learning process

This principle highlights alignment of systems and processes to ensure that assessment processes do not impede, and preferably support, learning. Summative assessment tell us whether or not the person has met the standard. Formative assessment helps the

learner reach that standard. Ideally these are combined to lead to “sustainable learning”—equipping learners for a lifetime of learning by constructing them as active participants in the assessment process (Boud & Falchikov, 2006).

3. Good assessment systems require appropriately recruited, training, and professionally developed people

This principle reminds us that the skills of the trainer and those of the assessor are complementary, but different. People currently in assessor roles, who have been in a trainer role at some point in their career, and/or worked in the building and construction industry, need training and ongoing professional development in assessment. People involved in assessment as verifiers of evidence also need professional development and support.

4. Moderation contributes to reliability and validity

This principle reaffirms that the consistency of assessment judgements can be quality-assured by engaging assessors and moderators in discussions and that these are also a way to establish and maintain the standards overall. Good moderation requires judgement. So it is better, from a reliability standpoint, to moderate *with* assessors and before, during, and after assessment takes place. It is even better for reliability and validity if moderation can become a collective exercise.

The guide’s elaboration and discussion of the four principles included good practice examples and questions that ITOs could use to direct and develop their own specific assessment systems. The principles were deliberately designed as a resource based on the best available evidence so that ITOs could interpret them for use *in their specific industry contexts*. In other words, they were intended as a way forward but not as a blueprint. What the Guide could not do was point to any real on-the-ground examples of an ITO’s specific assessment system working in practice. With the firm establishment of the BCITO’s new system by 2010, however, there came an the opportunity to observe a system in practice in a follow-up project. The rest of this paper summarises this project and its findings.

Research approach

The *Transforming Industry-Led On-Job Assessment Systems* research involved inquiring into how an assessment system in one industry might give life to the four principles in practice. We wanted to know what actually happened that was likely to contribute to successful learning outcomes. So we examined the “production space” of assessment—that is, the formal assessments and informal assessment-related events, interactions, conversations, and reflections generated by on-job assessment that ultimately produce learning outcomes.

We based our exploration of the production space around the “assessment team” of the carpentry apprentice, employer/trainer/evaluator, training advisor/assessor, and moderator. We devised a careful recruitment strategy to locate and recruit five suitable “assessment teams” in five different parts of New Zealand. Our best opportunity to see the new system being demonstrated was to work with assessors who used the system well, together with apprentices at a stage where formal assessments were taking place (18-24 months into their apprenticeship), and workplaces that offered good training and assessment opportunities. We therefore identified and selected:

- five of the most proficient assessors based on BCITO's ratings of its 75 training advisors/assessors;
- five carpentry apprentices who worked with the assessors and were typical (in gender, ethnicity, and age terms) of the cohort of 3000 carpentry apprentices; and
- five employers who employed the apprentices and worked with the assessors.

We visited the five workplaces (sometimes on different physical sites) twice each over a 6-8 month period to observe formal assessments taking place, observe discussions between training advisors and employers, and interview everyone in the assessment team. We also observed at a BCITO National Moderation Workshop, and interviewed four training advisors recently appointed under new selection criteria designed to take account of experience, skills, and dispositions associated with supporting and assessing learning, rather than solely experience as a builder or builder-employer. In addition to interview and observation data, we collected BCITO internal documentation, examples of training plans and apprentice work records.

Findings: a range of mechanisms express the principles

The strength of the four principles of good practice for on-job assessment established in the previous research was that it asked ITOs to understand the strengths and weaknesses of their current systems, and then to recreate them in principle-aligned ways, adapted to their unique industry circumstances. This latest research found specific mechanisms involved in the way that the BCITO does this in practice:

Training Advisors as Assessors

Transferring the role of assessor from employers to training advisors has enabled the BCITO to offer a range of training and management opportunities that were not previously financially or operationally viable. Training advisor/assessors can now combine both of their roles to the best effect. As training advisors they partner with employers around the recruitment of the apprentice, the set-up of the training relationship and the overall coordination of the training. As assessors, who now engage in professional learning and development specific to that role, they extend their partnership with employers into assessment collaboration. The apprentice benefits from the training advisor brokerage and support role being combined with the assessor learning support role.

The Assessment Team

The BCITO approaches the issues of meeting all assessment purposes through its concept of the "assessment team". Each team comprises: an apprentice (learner), a training advisor (assessor), an employer (trainer and evaluator), and a moderator. The assessment team concept repositions everyone's roles in relation to the key purpose of promoting learning through assessment to produce a well-trained workforce, knowing the right things and skilled in the right ways. It raises awareness of learning and its relationship to assessment.

The team is designed to place the learner at the centre of assessment activity and underline the importance of everyone's contribution to the promotion of learning through assessment. So, for example, although employers no longer undertake the formal summative assessments, they are still part of the assessment process through

their role as the trainer and provider of formative assessment (feedback), and as an evaluator of evidence that is gathered by, or described by, the apprentice. The team approach also means that moderators are now collaborators rather than people who exist only to “check up on” assessors or assessment results.

The Training Plan

The Training Plan is one of the key tools that helps members of the assessment team to work together to a common purpose. The Training Plan contains overview details about the apprenticeship such as Unit Standards, credits, and dates of assessment. It also contains more detailed records of workplace visits, discussions held, progress comments, evidence used to determine competence, and assessor judgements about competence. What the training advisors actually write in the Plan, and how much they involve the apprentice and employer/evaluator in developing it, is critical. Everyone – and this includes new or replacement training advisors and employers – needs to be able to read the Training Plan and understand the training advisor’s thinking or reasoning, how they determined competence, and what evidence they used to support decisions.

The Walk-Around

The assessments we observed typically began with a “walk-around” of approximately 10 minutes, depending on site access and what sort of work being done by the apprentice could be observed. The training advisor asked the apprentice to show him around the site and point out work the apprentice had done. The training advisor would question the apprentice, asking for details about individual tasks involved in the work, processes and tools used by the apprentice, and interactions with the employer and, if applicable, workmates and subcontractors.

The walk-around process mimicked the everyday nature of apprentice work—walking around the site and seeing it as a whole, focusing on specific tasks, discussing the tasks with the employer, and perhaps showing off good work. This process enabled the training advisor to directly observe apprentice competence through real work underway or completed. In other words, the assessment revolved around “naturally-occurring evidence” derived from the apprentice’s real everyday work, often over a period of time. The discussion during the walk-around helped the apprentice to articulate his understanding and helped the training advisor to probe for areas in which apprentice might be weaker, need help, or not yet be competent.

A Custom-Made Record of Work

Trainees record their practical, on-site work as part of the evidence-gathering process that informs assessment decisions. These records of practical work are reviewed by the training advisor during assessment visits, to help build a picture of the apprentice’s knowledge and skills in relation to the qualification requirements. By discussing the records with the apprentice and using them to probe understanding, the training advisor can decide either to “sign off” relevant unit standards, or provide guidance on what further learning needs to take place.

Apprentices are expected to take an active role in managing their learning and assessment. In line with this approach, there is no rigid, prescribed way of recording practical work completed on site. Instead, training advisors actively encourage apprentices to come up with their own ways of collective evidence. The most

important consideration is that the method of recording should be time-friendly and allow the apprentice to work within their comfort zone, rather than being a barrier to learning. We collected a range of examples of these records which included scrapbooks with sketches and photographs, diaries, magazine columns for a well-known construction/home improvement company, and online blogs. Most records were either project-based (evidence grouped around a particular job) and diary-based (a daily task-based record). The process of gathering evidence and choosing what to record and how to record it involved apprentices in actively thinking about, and reflecting on, their learning. This is a well-recognised educational strategy to promote high-quality, deep learning.

The Ride-Along

Moderators offer support to the assessor in a number of ways. They provide advice on managing relationships with apprentices and employers, gathering of evidence, and the use of assessment tools. In a more formal moderation role, training plans and assessment judgements are reviewed.

Moderators sometimes accompany training advisors on their site visits in a practice known informally as “the ride-along”. Moderators observe, and sometimes participate in, the assessment activities. They are then in a position to provide analysis and advice to assessors about better preparing learners for assessment, techniques that improve the validity of questioning, and better tools for observing and acknowledging learner progress. There has been a tendency for moderation to be applied to decisions made in the past with the sole purpose of evaluating the consistency of assessment judgements. The BCITO’s new moderation system seeks to look forward rather than backward and to examine practice as well as outcome. This enables interactions with learners to be evaluated and improved.

National Moderation Workshops

There is general agreement within the assessment literature that the most effective form of moderation occurs when assessors meet to discuss and reach agreement about assessment processes. Moderation improves reliability by helping assessors to develop a shared understanding of what counts as sufficient evidence of achievement prior to the formal assessment taking place. Through its National Moderation Workshops, the BCITO regularly brings its national group of training advisors/assessors and moderators together for professional development opportunities. These workshops run up to several times a year and occur in addition to moderation sessions at Area Meetings, held on a quarterly basis. These are part of a deliberate strategy for creating an assessment community of practice. The open conversations (which we observed) disrupt the earlier model of moderators “reporting on” and “checking” assessors. Instead it engages everyone in the shared purpose of improving practice all around.

A principles-based system is holistic in practice

Each of the mechanisms in the BCITO’s system actually serves at least *two* principles because the mechanisms are designed to create coherence throughout the system. For example, having *training advisors as assessors* enables the professionalization of the assessment workforce and makes use of the relationship-building and relationship-management dimensions on the training advisor role to support the assessment process (principles 1, 2, and 3).

The *Training Plan* is a prompt to the employer to find learning opportunities for the apprentice (principles 1 and 2). It is also a recording and goal-setting tool for apprentices and training advisors (principle 2). It is a transparent record of judgements made and evidence used for moderators, and for overall organisational improvement (principles 3 and 4).

The *assessment team* approach builds a sense of shared purpose and responsibility around assessment, especially for employers and training advisors/assessors. It draws the apprentice towards active participation in, and responsibility for, their own learning because other team members look to the apprentice to know how to best help them. It also supports assessors and moderators to work together in a collegial way (principles 1, 2, 3, and 4).

Because apprentices can choose how to construct and use their *record of work* they can take further responsibility for their learning and their progression through the apprenticeship. The records of work can serve as reflective learning devices and as evidence of competence for the apprentice. They also help employers learn about recognising and evaluating evidence, and help them to think about the further learning opportunities for the apprentice (principles 2 and 3).

The *walk-around* reduces apprentices' anxiety about the assessment process. Most apprentices have not had pleasing experiences of assessment and sometimes not of learning (at school) either. The walk-around enables them to demonstrate their competence in a business-as-usual fashion, using all the available contextual cues that help them show and articulate what they know and can do. It gives training advisors a chance to develop judgement about a wide range of evidence. (Principles 2 and 3)

The *ride-along* and the *National Moderation Workshops* function to build an assessment community of practice that fosters a spirit of openness, peer-support, innovation, and organisational excellence. The ride-along and the workshops build the collegial assessor-moderator relationship and provide each with a wealth of professional development opportunities (principles 3 and 4).

Perhaps the most interesting and important thing about all of these mechanisms is that they consistently cohere around two strong ideas: supporting the apprentice to learn (not just pass) and making *everyone* in the assessment team a learner. These two ideas mirror each other across the assessment system. It is useful to think of both formative and summative assessment as “points on learning trajectories” and as providing “windows on episodes of practice” (Eraut & Hirsch, 2007). The BCITO's assessment system takes care to do that by focusing on developing, supporting, and assessing apprentices' real understanding and competence. The walk-around and the discussions between apprentice and training advisor are not just assessment practices that come after the learning; they are meaningful moments of learning in their own right. They draw in other people who can also promote that learning—employers and supervisors who evaluate evidence, strategise with the training advisor, and design the right learning environment and opportunities for their apprentices.

The BCITO also makes use of “windows on episodes of practice” for its training advisors/assessors and moderators. Just as training advisors and employers/evaluators seek and consider naturally occurring evidence, within a business-as-usual approach to

assessment, the BCITO's overall system bases evidence, judgement-making, and moderation around naturally occurring professional conversations, many of which now occur on an ordinary, business-as-usual basis. BCITO's assessment community of practice and its assessment team around the apprentice create two interwoven feedback loops. The increased transparency of the assessment process means a greater range of feedback is possible, as well as more frequency of feedback, and a better quality of feedback. It seems to work for everyone involved at every level.

Learner outcomes: emerging evidence

Ultimately the BCITO's new assessment system is designed to improve learning outcomes for its apprentices. Although it is difficult to discern changes and their meaning related to the *speed* of credit attainment, there is some emerging evidence of change in the *nature* of credit attainment towards qualifications. Under the old model, the first hundred credits attained by apprentices were almost exclusively theory-based, as bookwork was prescribed as a means of "getting runs on the board." More recently, with assessors focused on the actual work being done onsite, and what is likely to happen before the next visit, discussion within the assessment team focuses on what the apprentice does and does not know, and can and cannot do, in a way that blurs the distinction between theory and practical units. Thus trainees are increasingly achieving some practical unit standards earlier in their apprenticeships alongside the companion theory standards. So there are two levels of integration involved. Firstly the theory and practical learning are both more closely linked to the acquisition of hands-on skills. Secondly the assessment is more closely aligned to the actual work being done. Although there is not yet definitive evidence of this shift, there is anecdotal evidence from BCITO training advisors that the assessment business-as-usual focus and subsequent theory-practical integration contributes significantly to apprentice motivation.

The BCITO are supporting this integration with the new resources for apprentices, and through the encouragement of apprentices to keep learning records that invite reflection. Under the "old system", once the apprentice had signed up with an employer, they were issued with a series of manuals. These manuals detailed what needed to be done to complete the qualification, unit standard by unit standard. Apprentices worked on the theory components of the qualification by working their way through the manuals, off site and usually at home. Many struggled with completing this decontextualised "book work". Practical work was assessed through a prescribed process detailed in other manuals, supplemented by sets of oral questions and a Record of Work. The approach was highly prescriptive, and was based on the premise that each apprentice would follow the same path through the qualification, regardless of their knowledge and skill levels on entry. The result was a rigid, 'one size fits all' system, that was getting in the way of students completing their apprenticeship.

As part of its move to more holistic assessment based on naturally occurring evidence, the BCITO is also making changes to the resources it provides to learners. Apprentices now receive an Apprentice Pack, in the form of a compact "toolbox". Instead of the previous unit standard by unit standard approach, the new resources are based around the distinct but interrelated groups of knowledge and skills (theoretical and practical) that are needed for the qualification. Each group of knowledge and skills is colour-coded throughout the resources—for example, "Site preparation" is the yellow section

of the resources, while “Framing” is the red section. The new learning resources are being rolled out incrementally and include a Guide for the Assessment Team, Work Diary, Theory Resource/Textbook (this will replace the old set of theory manuals), self-assessment tools (instead of the old worksheets), Knowledge Evaluation Guides, and Taking Charge of Your Apprenticeship (a guide developed through this research) (Kear, et al, 2012).

We can say that holistic assessment in the BCITO’s system gives apprentices more *opportunity* to learn deeply. This is not only important for the development of competence but for the development of a learning disposition. If apprentices can enjoy learning (including assessment as form of learning), they are enabled to judge the adequacy and progress of their own learning. They have a chance to “own” the process of assessment because they can see how it works.

Sustaining the building and construction industry

Training advisors/assessors, moderators, and employers/evaluators/trainers have a chance now to “own” the process of assessment. They have all moved away from relying on rigidly-set criteria which may not always apply in the real-world setting of the building site. The training advisors, employers, and moderators need to understand the assessment process so they can develop their own judgement and not be reliant only the judgements of other people or other measures. The BCITO are creating an internal workforce of lifelong learners.

This bodes well for the sustainability of the building and construction industry. Apprentices who love learning, and will keep learning, are more likely to become builders who want to share their love of learning and the industry with others. They are more likely to want to “give back” to the industry that grew them. They are more likely to be concerned with the quality work and innovation that makes the industry attractive, satisfying, and worthy of status in society. Training advisors and moderators are more likely to see their role as a specific expertise and a positive career choice (not second-best to actually being a builder). These things all lay the foundations for a building and construction industry that has the capacity to recognise, respond to, and lead in relation to new and different design, legislative, and customer demands as they inevitably arise.

Extending the system to other industry training organisations

The four principles of good assessment systems were never a blueprint and neither is the BCITO’s system. The four principles are a resource based on the best available evidence that ITOs can interpret for use in their specific industry contexts. The BCITO have now provided evidence that a principles-based assessment system can work. Their system not only gives life to the principles but illustrates how they operate holistically across the different parts of an assessment system.

Before embarking on the change to the assessment model in 2009, the BCITO surveyed their employers, asking them if they supported the concept of a changed system. Over 80% did. Two years on, in response to a BCITO client satisfaction survey, 80% expressed that they were satisfied or very satisfied with the assessment process (a further 17% were neutral). With 90% satisfied with the books and material,

and 80% satisfied with the support provided, there is reason to believe that the implementation has been a success from their point of view. Several employers participating directly in this research expressed some dissatisfaction over the loss of “final say” about an apprentice’s competence. However the idea of the assessment team is designed to address precisely this by including the employer in assessment decisions and making clear the importance of their role as an evaluator of evidence. If there are other ITOs that are considering moving away from using employers as assessors, we suggest they too canvas employers views and learn from how the BCITO have created a new, valued role for employers.

We think the BCITO’s system may be suitable for a wide variety of industries, largely because it relies on professionalising the assessors and developing a solid community of practice. The BCITO has already begun approaching the other trades within its coverage, seeking to extend the assessment model into their industries. In their proposal they have emphasised the training in assessment practice that the BCITO provided to assessors, the well-developed moderation system, and the assessment workload relief for employers. The proposal has been accepted by all trades. A key part of this acceptance has been that the assessment team approach provides industry stakeholders with reassurance that specific trade knowledge will always form part of assessment decisions. We suggest that other ITOs adopt such an approach. Not only does it not make sense for assessment to be “done to” trainees, but it does not make sense for an assessment system to be “done to” ITO staff, contractees, or employers. We encourage ITOs to consider *all* their stakeholders and how they too might build a community of practice within their assessment systems.

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