

Final Report

Evaluating the Progress of Embedded Literacy and Numeracy in Industry Training Organisations

Prepared for

The Tertiary Education Commission

Te Amorangi Mātauranga Matua

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Keypoint Summary

The decision to embed literacy and numeracy in industry training was based on international research on the advantages of providing learners with a more holistic experience in developing literacy and numeracy skills alongside development of vocational skills. Embedding was adopted as a deliberate policy approach in Industry Training Organisations (ITOs) from the mid-2000s.

A formative evaluation of the ITO embedded literacy and numeracy projects was conducted between 2009 and 2011. The evaluation found that while ITOs had completed the funded projects there was still considerable work to be done before embedded literacy and numeracy could be considered business as usual. It was identified that as this was a major educational change project it would take time to be fully implemented, (Heathrose Research, 2012).

Industry training, by its very nature, is industry led and driven. This means that each ITO, and even within many ITOs themselves, there is significant variation in the way training may be constructed and arranged. The impact of this variation, and the flexibility within industry training, cannot be overstated. It is what enables industry to tailor its training to the industry and sector conditions. From a literacy and numeracy perspective this has also required considerable adaptation of practices to meet the wide range of conditions. It is the interaction of those factors – such as workplace size and locations, training traditions, existence or not of a career path, expected qualification levels in the industry, acceptance of a role for employers in literacy and numeracy development – that can both enhance and pose challenges to ITOs in their efforts with embedding.

This study is a follow-up to the formative evaluation and aimed to assess changes in practice, the effectiveness and impact of practices and the extent to which literacy and numeracy is now embedded into organisational approaches, processes and practices.

From 2009 to 2014 there were considerable and on-going policy changes in the ITO sector (see pages 7-9). Policy changes related specifically to literacy and numeracy can be viewed as incremental, although these have occurred within the wider context of policy, system and structural change that have impacted across the sector.

Overall for ITOs embedding practices look to reduce literacy and numeracy obstacles to learning, improve literacy and numeracy outcomes for learners and assist them to succeed; to complete their qualifications. In 2014 all ITOs (12) have multifaceted, strategic and operational plans that guide their overall organisational approach to addressing literacy and numeracy in their industry training arrangements. ITO board, CE and management support for these efforts are also present. For some, the legacy of mergers is impacting on current levels of integration of embedded practices across the ITO business, but all ITOs are maintaining and progressing embedding within their learning programmes and organisations.

There are multiple ways in which ITOs embed, and the practices and processes are described on pages 10-21. The areas of most significant progress across ITOs have been in building staff capability, trainee learning resources and on-job training support. The

approaches and practices used by ITOs are driven by the sector and delivery models that are commonly accepted in that sector. For example, some training advisors have little to do with trainees and work most extensively with company training staff. While in another sector the training advisor will meet with a trainee and their supervisor and engage directly in supporting the learning relationship. ITOs have a large role to play in influencing the work of others to deliver good outcomes for trainees.

The Literacy and Numeracy for Adults Assessment Tool (the Assessment Tool) is receiving a high level of attention from ITOs. A quarter of ITOs are able to use the Assessment Tool with a high proportion of trainees (85 percent+) and around half appear to be assessing 40-65 percent of trainees. Those facing the biggest challenges in assessing trainees are operating in sectors with a focus on on-job training only within their lower level programmes. Better use of the tool is also found where off-job providers and training advisors are conducting assessments (eight ITOs). Most ITOs report the Assessment Tool is providing them with valuable information although nearly half of ITOs report on-going difficulties in administering the Assessment Tool.

Embedding literacy and numeracy in on-job training continues to be a challenge. ITOs continue to undertake a considerable amount of awareness-raising with their industries and say responses continue to be mixed. However, employers spoken to reported effective on-job practices to support their trainees, although most expressed reticence about how widespread such practices might be in their industry.

Effectiveness, impact and extent of embedding

How effective have ITOs been in embedding literacy and numeracy? This evaluation has found:

- There is growing confidence and competence amongst ITOs to take a strategic and integrated organisational and industry development approach.
- The practices that have had the greatest direct effect on literacy and numeracy skill development are those in the workplace, the off-job training, and in the learning materials available to trainees
- Internal ITO literacy and numeracy capacity and capability have been critical to effectiveness, particularly in consistently articulating to employers and industry the case for addressing literacy and numeracy skill development.

What have been the educational and work impacts for learners of embedding? As is often the case, it is not possible to separate out the impact that embedding has had for learners. Learners operate in a wider learning context and in the absence of progress assessment data (from the Assessment Tool) we can only look at indicators used for assessing the overall effectiveness and efficiency of the industry training system, ie the rate at which trainees gain credits and complete programmes. Here, over 2011-2013 analysis of ITO Education Performance Indicators (EPI) show improvements in credit and programme completions where embedding is occurring at Level 1 and 2, with completions at Levels 3 and 4 remaining relatively static.

Most ITOs show some improvement in their completion rates and nine ITOs suggest they have made 'progress' with completions. Most report learners are positive about and perhaps

more engaged in their learning. Employers who were interviewed could cite numerous improvements in the literacy and numeracy skills of their trainees, alongside development of the trainee's vocational skill. Employers also commented on the positive workplace impact of this skill development eg more enthusiasm for learning, completing more accurate work quicker.

Has embedding become part of 'business as usual' for ITOs? There is strong evidence that embedding, and all its associated practices and processes, are now seen as an integral part of the ITO business. Embedding is occurring across Levels 1-3 programmes, and in higher level programmes. Literacy and numeracy capability is part of the capability required in field staff, and instructional designers in ITOs.

Both the formative evaluation and this follow-up study on ITO progress with embedding literacy and numeracy has sought to characterise models and assess ITO progress within a range of frameworks (e.g. to determine whether practices were emergent, partial or mature as described in the Embedded Literacy and Numeracy (ELN) practices table). It is our conclusion however, that the extent of variation inherent within ITOs has made such characterisation unhelpful and problematic. It is the industry-based delivery model that determines which practices are the most useful, and therefore focused on, by an ITO.

We have identified a number of 'elements' of embedding in ITOs. This encapsulates a set of strategic, operational and employer/trainee elements that ITOs adapt to meet their predominantly workplace-based learning context. We suggest this could form the basis for a guidance tool for ITOs and investment managers to use, to assess and develop business and investment plans, and to assess progress and priorities.

ITO Strategy

Literacy and numeracy articulated in strategic documents and championed and supported by senior management and industry sector groups

ITO Practice

Field staff qualified and able to support LN skill development

Learning materials take account of learning progressions and articulate LN

Assessment Tool used to inform support for trainees, learning materials and organisational decision-making

Off-job provider cognisant of ITO LN approaches and requirements

Job profiles articulate LN

Employer/trainee practice

Employer/on-job trainer aware of LN, knows about LN requirements for learning and the job, supports trainee to develop LN alongside vocational skills

Trainee knows about and develops LN skills for learning and for the job alongside vocational skills

Introduction

The Government has identified that international expansion of tertiary education, meeting the needs of a growing economy, and new technologies, will require the future tertiary education system to have strong links to industry, community, schools, and the global economy. Further, it identifies that individuals without qualifications experience poorer economic and social outcomes, particularly during tough economic times, (New Zealand Government, 2014). This thinking is confirmed in the OECD's Programme for the International Assessment of Adult Competencies (PIAAC) survey, which shows

Adults with high proficiencies in literacy and numeracy are much more likely, compared to those with lower skills, to report good health, to be employed, to have higher earnings, and to have positive social dispositions and take part in community life. And numeracy appears to be a more potent predictor of social and economic outcomes such as health, employment, and higher salary, compared to literacy, (Tout, 2014).

An improvement in literacy and numeracy skills can also help those in the workforce gain further qualifications and improve their career prospects which in turn, leads to more productive, better paid and sustainable employment. In particular, the increasingly technology-based nature of jobs will require individuals to have stronger basic skills, especially in literacy and numeracy. This is particularly important as workplaces become more dynamic and the need to up-skill is essential to sustainable careers.

Since the publication of the first adult literacy and numeracy strategy, *More than words* (Ministry of Education (MoE), 2001), one of the core principles for increasing the literacy and numeracy levels of adults has been to increase the number of learning opportunities for them. In the New Zealand context this has been done through the development and implementation of embedded literacy and numeracy approaches. This means, "combining the development of literacy and numeracy with vocational and other skills ..." (National Centre of Literacy and Numeracy for Adults, n.d.).

The decision to embed literacy and numeracy in industry training was based on international research on the advantages of providing learners with a more holistic experience in developing literacy, numeracy and vocational skill simultaneously, (Heathrose Research, 2012, p. 10). The policy rationale for this was stated as "...rest(ing) on understandings about how adults learn considered alongside an analysis of the settings that provide optimum learning opportunities," (Tertiary Education Commission (TEC), 2009a, p.3).

A number of ITOs became engaged in working on literacy and numeracy issues in the early- to mid-2000s with work on embedding literacy and numeracy into industry training commencing in New Zealand in 2006. By 2010, 23 (of the then 34) ITOs had work underway. From late 2009 until early 2011 Heathrose Research conducted a formative evaluation of the embedded literacy and numeracy projects and found that while ITOs had completed the projects they were funded for there was still considerable work to be done before embedded literacy and numeracy could be considered business as usual. Heathrose

concluded that this was a major educational change project and as such would take time to be fully implemented, (Heathrose Research, 2012).

While the international research evidence on the impact of embedding literacy and numeracy in tertiary education settings is positive (Alkema and Rean, n.d.), the approaches developed and used in New Zealand ITOs differs in a number of aspects to those in tertiary education settings. There is therefore merit in both ensuring the models used by ITOs are similarly resulting in positive outcomes and that practices for embedding have continued to evolve since 2011.

This current evaluation takes place in a context of change for the ITOs who have, since 2011, merged and reduced in number to 12. It draws on the findings from the earlier study conducted by Heathrose Research, and reports on progress as at 2014 with embedding literacy and numeracy into industry training.

Approach to the evaluation

This is a follow up to the study Heathrose Research conducted in 2009-2011. The data collected for that study is used as a baseline against which changes in practice since then can be assessed, and the extent to which literacy and numeracy is now embedded into organisational approaches, processes and practices can be determined.¹

This evaluation aimed to find out about:

1. The approaches, processes and practices ITOs are using for embedding literacy and numeracy at organisational, qualification and learner level and how these have changed over time.
2. Whether some of these approaches, processes and practices are more effective than others and the factors or variables that explain this relative effectiveness.
3. The educational outcomes for trainees undertaking courses of study through qualifications with embedding.
4. The extent to which ITO embedded literacy and numeracy practices emergent, partial or mature as described in the ELN practices table?²
5. The barriers and enablers to the successful embedding of literacy and numeracy into industry training.

Data were collected through key informant interviews; document analysis; TEC quantitative data; surveys with ITOs; interviews with staff from the 12 ITOs, eight employers and ten off-job providers. Further information about the evaluation methodology can be found in Appendix One.

¹ The Ministry of Business, Innovation and Employment (which incorporates the previous Department of Labour) gave their consent to TEC using the data and evidence gathered in the original study, but DOL/MBIE have not been participants in this study.

² <http://www.tec.govt.nz/Documents/Forms%20Templates%20and%20Guides/embedded-literacy-numeracy-practices.doc>.

This report is divided into the following sections:

- Section One provides a brief overview of industry training in New Zealand and the policy context in which embedding of literacy and numeracy has been undertaken.
- Section Two describes what the ITOs are doing in 2014 and what is working well and not so well for them.
- Section Three describes the progress ITOs have made with embedding since 2011.
- Section Four describes the effectiveness and impact of embedding in ITOs.

The report concludes with the elements of embedded practices in ITOs and considerations for future work.

Section One: Industry training in New Zealand

Industry training provides employees with training and learning that is linked to national qualifications through the New Zealand Qualifications Framework (NZQF), while providing employers and industries with support to grow their workforce for the future. Industry training is part-funded by industry itself and predominantly funded by government through the industry training and modern apprenticeships funds, (Mahoney, 2009). Principally, the role of ITOs in arranging the delivery of industry training is to ensure that vocational learning meets the needs of industry, employers and employees.

In 2013 there were 129,307 trainees³ eligible for government funding, (TEC, 2014). This represents a decline in number of trainees from 2012, and on previous years back to 2009. In the 2013/14 financial year industry training received \$159 million of government funding to support trainees and apprentices, (New Zealand Parliament, 2014).⁴

ITOs arrange training, set the standards for qualifications, and work with industry to determine skill-development needs. Workplace learning is provided in-house, by employers, and can be supported by off-site education and training on a regular or occasional basis. ITOs do not deliver training themselves and are not allowed to have ownership stakes in an organisation that delivers training. ITOs are accountable for effectively monitoring the training arrangements of industry trainees, in terms of ensuring effective learning takes place in the workplace, and the level of provision purchased from institutes of technology and polytechnics (ITPs), wānanga and private training establishments (PTEs). ITOs are also held accountable for the credit, programme and qualification completions of their trainees.

Workplaces are a rich source of learning. One of the distinguishing features of training in this environment is that much of the learning happens on the job and occurs through explicit activities that make use of a range of pedagogical methods that align with the particular workplace context and learning environment, (Vaughan, O'Neil and Cameron, 2011). As such there are a variety of approaches to delivering industry training as a one-size-fits-all approach does not apply, given the range of different industries, (Nana, Sanderson, Stokes, Dixon, Molano, & Dustow, 2011).

Industry training in the workplace involves trainees gaining practical skills and knowledge from their employer, supervisor or co-workers. Most ITOs supply trainees with training material. This can include workbooks and study guides, and guidance on the assessment of unit standards or any off-job training that may need to be undertaken. Off-job training includes short courses delivered by tertiary training providers, (Kerehoma, Connor, Garrow and Young, 2013).

In most ITOs training advisory staff also support trainees and their workplace assessors. Advisory staff visit workplaces regularly to set study goals and check on the progress of industry trainees. Overall, their role is to provide support to trainees and their employers. Workplace assessors test on-the-job skills through practical assessments. Workplace

³ The term 'trainees' is used in this report to include both industry trainees and apprentices.

⁴ The quarterly statistics for September 2013 show there were 77,580 industry trainees and modern apprentices in New Zealand. Of these, 70 percent were male and 30 percent female; 40 percent were 20–29 years old; with 53 percent aged under 30 years; and 13 percent aged 50+ years old. Sixty-eight percent identified as European, 17 percent were Maori, 8 percent Asian and 7 percent as Pasifika, (TEC, 2013a).

assessors may be employed by the business where a trainee works, or may be employed by an ITO and visit the workplace to undertake the assessment.

ITOs arrange the delivery of training in collaboration with employers. This is important because industry training needs to be delivered in such a way that it allows trainees to fit training in around their work. Again, each ITO develops its own approach to doing this. ITOs understand how industry 'works' and how training can be made part of this work environment. This is a unique feature of industry training that again emphasises the role of ITOs as a conduit in tertiary education and the labour market, (Nana et al., 2011).

In theory, the model of industry training is relatively simple. In practice, however, industry training is part of the work environment and is delivered in a variety of ways to meet the needs of industry and employers. The delivery of industry training, and subsequent completion of credits, programmes and qualifications, therefore needs to be flexible to succeed in a variety of work environments, and across a broad range of occupations and sectors.

Much of the tertiary education sector however works with learners who engage with face-to-face teaching in a course of study in an institutional setting. This is not the case for trainees in ITOs, therefore embedding literacy and numeracy in industry training has been a much more complex process, (Heathrose Research, 2012).

New Zealand policy context

Improving poor literacy and numeracy skills is a priority for tertiary education in New Zealand. The current Tertiary Education Strategy, 2014-2019 notes,

An improvement in literacy and numeracy skills helps not only those seeking employment, but also those already in the workforce. These skills also help people to gain further qualifications and improve their career prospects which can lead to more productive, better paid and sustainable employment. In particular, the increasingly technology-based nature of jobs and the workforce will require individuals to have stronger basic skills, especially in literacy and numeracy. This is particularly important as workplaces become more dynamic and the need to up-skill is essential to sustainable careers, (New Zealand Government, 2014, p.15).

To do this, the Government is looking to the tertiary education sector for a diverse and flexible range of foundation skills programmes (Levels 1 and 2). These need to reflect learners' differing needs and abilities, and help support their achievement; including through short programme options targeting job-specific literacy, language and numeracy gaps as well as longer programmes for those who require them. In particular government is targeting attainment of qualifications at Level 2 and above, literacy and numeracy skill improvement across all age groups, and greater industry involvement with tertiary education to support workforce upskilling, (New Zealand Government, 2014).

Since 2001, (Ministry of Education, 2001) respective governments have looked to increase the number of learning opportunities that include literacy and numeracy. Embedding literacy and numeracy into vocational skill development has been a strategy for doing this. For ITOs this work started in 2006 when the TEC funded projects in five ITOs. These projects were

largely exploratory and the TEC encouraged ITOs to experiment. In the subsequent two years, as the concept of embedding became more widely discussed, 14 more ITOs received project funding. These projects varied significantly in their size, timeframes, and objectives, and only a small number involved systematic approaches with multiple streams of activity, (Heathrose Research, 2012).

Between 2008-2014 there have been a number of policy developments and projects for ITOs, including:

- 2008: a separate embedded literacy and numeracy fund for ITOs
- 2009: the publication of guidelines for ITOs to fully embed literacy and numeracy into industry training (TEC, 2009b)
- 2009-2010: the funding of the Industry Training Federation (ITF) Good Practice Project that aimed to research, inform and develop good practice guidelines, tools, and resources to support ITOs⁵
- 2009: a separation of funding within investment plans for embedding into two components: capability building and trainee learning
- from 2011: ITOs have been expected to assess all trainees undertaking qualifications up to Level 3 (from 2014 this has changed to levels 1 and 2 only) using the Literacy and Numeracy for Adults Assessment Tool, (the Assessment Tool) with the TEC signaling its intention to consider evidence of learner achievement as one of the measures of ITO performance. From 2013 use of the Assessment Tool has been mandatory as part of ITO funding conditions
- between 2011-2013: ITOs have had funded support to embed literacy and numeracy into an increasing proportion of programmes
- 2013: a Ministry of Education-led review of industry training from mid-2011, with announcements arising from the review in early 2013 including:
 - combining of existing apprenticeship schemes into the 'New Zealand Apprenticeships' and increasing resourcing for apprenticeships
 - requirement for all apprenticeship programmes to include a minimum of 120 credits at Level 4
 - amendments to the performance requirements on ITOs and allowance for direct access to industry training funds for employers.

By 2011 many ITOs were indicating their dissatisfaction with the extent of literacy and numeracy policy changes and the direction of policy. They had, until then, undertaken pilot projects with limited aims, had experimented with a range of approaches and begun to recognise the extent of organisational change required to build literacy and numeracy

⁵ The resources developed by the project can be sourced at <http://www.itf.org.nz/skills-and-productivity/literacy-and-numeracy/ito-good-practice-project/>

capability. They had also begun to engage with industry, to think differently about learning resources, understand the support required by learners and started efforts to improve the quality of both on- and off-job training, (Heathrose Research, 2012).

Up until the end of 2013 ITOs were supported by government to embed literacy and numeracy in all Levels 1 to 3 courses through Embedded Literacy and Numeracy (ELN) funding, a top-up to their Standard Training Measure (STM) funding. In 2014 ELN funding ended and ITOs are now expected to embed literacy and numeracy as 'business-as-usual', with this being a condition for future funding (TEC, 2013b). The TEC reported that by the end of 2013 ITOs were expected to have embedded literacy and numeracy into just over 40 percent of Levels 1 to 3 courses (TEC, 2012). In data supplied to Heathrose Research by the TEC for this evaluation, ITOs reported in 2014 that a total of 91 percent of programmes include embedded literacy and numeracy.⁶

In addition to the policy developments listed above ITOs have gone through mergers with the number being reduced from 32 in 2012, to 12 in 2014. At the same time the Targeted Review of Qualifications (TRoQ) has involved all ITOs and has resulted in a reduced number of qualifications delivered by them.

As can be seen from the information provided above, the changes in the ITO sector have been considerable. While on the one hand policy changes related to literacy and numeracy can be viewed as incremental, these have occurred within a wider context of policy, system and structural change that have impacted on ITOs.

⁶ This data is from ITOs checking the 'Embedded Programme' box in the ITR response to whether the materials for a programme incorporate 'embedded' design.

Section Two: Embedding literacy and numeracy into industry training 2014

This section describes the current approaches, processes and practices of ITOs in embedding literacy and numeracy skills into industry training. *Strengthening Literacy and Numeracy: Theoretical Framework* (TEC, 2009a) states that a course that embeds literacy and numeracy is expected to include explicit learning outcomes for literacy and numeracy, a literacy and numeracy diagnostic assessment, deliberate teaching of literacy and numeracy contextualised to the curriculum and learner needs, and assessment of learner's progress in literacy and numeracy.

Given this description of embedding is more suited to the delivery of literacy and numeracy programmes in tertiary education settings, establishing what embedding means for ITOs was important in this evaluation. As stated earlier, the approaches and practices used by ITOs differ to those used internationally and to what is possible through face-to-face delivery models. This is because ITOs do not deliver training, rather the learning, for the most part is on-job and through learning materials.

Most respondents talked about embedding as a multifaceted, integrated approach whereby good practices were used throughout their organisational processes. These practices look to reduce literacy and numeracy obstacles to learning, improve literacy and numeracy outcomes for learners and assist them to succeed. For ITOs, success means qualification completion. Some indicated their embedded approach was heavily focused within their learning resources (although at least one ITO does not produce learning resources), often backed up by capable field staff. Some, particularly those with little off-job training, or a highly integrated approach referred to their support for employer and on-job training practices.

There were mixed views on the extent to which literacy and numeracy was articulated in learning resources and there were limited references to embedding as a means of improving literacy and numeracy skills in their own right.

The key is finding drivers for completions. Literacy and numeracy is an intervention that helps this. (ITO interviewee)

This highlights both an evolution in what embedding means in an ITO context, and the key areas of focus for different ITOs. These approaches are then described more fully in this section. Appendix Two provides summary tables of ITO survey responses on embedding practices.

Strategy

In 2014 all 12 ITOs have strategic and operational elements for embedding literacy and numeracy. Ten ITOs have literacy and numeracy strategic plans, 11 of them reference literacy in their ITO's strategic plan and all have business/operational components to guide their overall approach to literacy and numeracy. Most ITOs also expressed that the level of governance, Chief Executive and management support for literacy and numeracy embedding was consistent and strong.

Embedding at [X] ITO is just part of what we do with apprentices and learners. No one person has responsibility, we see it holistically. We use the Assessment Tool, make resources accessible, have support for learners who need it. Field staff are critical to support it. (ITO interviewee)

Ten ITOs describe their approach to embedding as fully integrated into their practices. The remaining two had some reticence about the current extent of integration rather than that they aren't taking an integrated approach. For these two ITOs, the impact of mergers is a key factor in their current state, with efforts directed to address this particularly in one ITO. ITO mergers have had a substantial impact on embedding in seven ITOs, with most saying the impact has been positive and enabled them to learn and gain from the experiences of merging ITOs. The ITOs where mergers have had little impact have largely been able to continue to maintain and progress embedding through their learning programmes and organisations.

[Mergers have had] a big impact, but mostly it's been positive as we've been able to see how others have addressed it and are learning from that. (ITO interviewee)

Capability

Eight ITOs have dedicated literacy and numeracy specialist staff who play a role across the ITO, championing and delivering on their ITOs' strategies. Four of these are full-time and four part-time. There are also other structural elements that facilitate literacy and numeracy promotion and delivery, for example two ITOs have active, cross-functional teams with literacy and numeracy responsibility. There is also a number of other staff in ITOs who assist with delivering on literacy and numeracy responsibilities, for example, field staff, resource developers and Assessment Tool data processors.

Field staff play a key role in terms of the ITO interface with employers and in many cases, trainees. Three-quarters of ITOs said they have staff with, or working towards, a literacy and numeracy qualification. Many of these are in field roles, although two ITOs noted they have staff other than those in the field who hold the National Certificate in Adult Literacy and Numeracy Education (NCALNE). Eight ITOs expressed confidence in the literacy and numeracy knowledge and ability of their field staff to deliver on the ITOs' literacy and numeracy responsibilities. Those who indicated less confidence thought this was largely as a result of staff turnover and the current need to upskill and coach staff (four ITOs).

[We provide] on-going PD and consistent messaging to our field staff about our expectations. They are all involved in sign up and have to sell the [Assessment] Tool. (ITO interviewee)

Churn is the main issue with field staff literacy and numeracy capability so we need to upskill new ones. For existing staff it's 'business as usual', just how we do stuff. It will be talked about at all co-ordination meetings, they will be constantly brokering and are asked about trainees in their region that have low scores. They can't hide [from literacy and numeracy expectations]. (ITO interviewee)

On-going professional development would appear to be part of the 'business as usual' approach for ITOs, with all reporting they undertake at least one form of professional

development activity with their staff. Activities include provision of website information, newsletters, internal workshops, external specialist provided presentations and/or conferences. Most ITOs (nine) provide 'workshops' and/or 'specialist presentations' for their staff.

Our [field staff] administer the [Assessment] Tool, talk to tutors, offer mentorships with trainees, review training every three months, have conversations with employees, have literacy training, and participate in our annual conference with off-job tutors where a day is focused on literacy and numeracy PD. (ITO interviewee)

Embedded programmes and qualification reviews

All ITOs reported having embedded programmes at Levels 2 and/or 3. Half of them also embed at Level 4. While two ITOs have only on-job training at all levels, three others have only on-job training for Level 2 and 3 qualifications. Most ITOs (10) have a mix of on- and off-job training for their embedded programmes and most of these (eight) also report that they embed in programmes at Levels 4 and/or above.

The Targeted Review of Qualifications (TRoQ) continues to impact on both ITO reviews of literacy and numeracy in programmes, and resource development. By mid-2014, two ITOs were in the early stages of TRoQ, five ITOs had completed or were well advanced with reviews and three were mid-review. TRoQ has and will result in a number of qualification changes across the ITO sector that will require review of new materials from a literacy and numeracy perspective.

Eight ITOs also report that self-assessment of literacy and numeracy issues is an ongoing feature of their systems. For others self-assessment occurs at least six monthly (one) or annually or to support other review processes (three), for example, the New Zealand Qualifications Authority (NZQA) External Evaluation and Review (EER).

Assessment of literacy and numeracy skill

Most ITOs (11) report having Level 2 qualifications and all use the Assessment Tool to assess trainees at this level, as do most with qualifications at Level 3. Those that say they are not using the Assessment Tool at Level 3 state this is because they have no embedded qualifications at Level 3; that there are some employers that explicitly opt out; that there are IT compatibility issues; or that they have an agreement with the TEC to focus on new Level 2 trainees. Two ITOs report either using another tool in addition to the Assessment Tool or are considering use of another tool.

The initial assessment is completed with a varied proportion of trainees from each ITO. Based on data from ITOs themselves and from the TEC, ITOs can be categorised as high, medium and low users of the Assessment Tool. Those ITOs with high use of the Assessment Tool (85+ percent) all tend to have a strong focus on trainee achievement of higher-level (Level 3 and 4) qualifications (three). The three lower usage ITOs (below 25 percent) all have a focus on on-job training only within their lower level programmes. The other six ITOs appear to be assessing between 40-65 percent of their trainees.

There is variation within ITOs with some using different approaches for different industries. In general however:

- five ITOs typically have assessments conducted at off-job providers
- three ITOs have field-based ITO training advisors conduct the assessments on-job
- three ITOs expect trainees to complete the assessment in their own time
- one ITO expects workplace educators to assess trainees.

While the approaches vary, the more control the ITO has over the process – whether this is through contracted off-job providers, having high expectations for learner engagement or a tradition of accepted investment in training – the higher chance it would appear that trainees complete the assessment. Factors that get in the way of, or support Assessment Tool use, include the employers' views, what trainees understand about why they are doing the assessment, administrative assistance for the trainee and the extent to which trainees get the right information if they require literacy and numeracy support.

Ninety percent is through providers. Some employers push back. Post assessments are okay as they are part of the Training Agreement but it's always hard work getting them done. It's more difficult with big companies and we are very limited in what we can do. Don't like the idea of another strand being added next year as the time demands are already high. Some account holders are now able to see why it's done and get companies on board. (ITO interviewee)

Eight ITOs indicate they use the Assessment Tool results to both target assistance for individuals where it is needed (usually those at Step 2 and below on the Learning Progressions) and to undertake some analysis of the overall results to identify the knowledge trends and gaps in their trainee population. Some ITOs indicated they were just beginning the analysis process and others indicated they would like to do further analysis of their results.

The [learner] information we get from Assessment Tool results is the real value to us. We can better target our resources and better understand who our learners are [the levels they are at]. (ITO interviewee)

The Assessment Tool data is just one of the bits of information we have. We can see some areas (like place value) where our trainees struggle, but we can also have trainees with higher-level results but an employer or provider may suggest they are needing assistance and we will refer them for help as well. We also now flag on our credit records the trainees with Step One and Two on the Learning Progressions so our field staff can check on progress with completing credits more easily. (ITO interviewee)

One ITO noted that they didn't see it as their role to analyse the Assessment Tool data and did not notify off-job providers where there were issues. Amongst those who were either not using or providing limited assessment data to trainees, training or education staff, there were two who noted they were actively involved in efforts to better disseminate and use data with educators.

A bit of resistance but most do it. We're making good progress with re-assessments. Seem to be making an impact but data hasn't been analysed. See this as TEC's job as we're not funded to do it. See it [Assessment Tool] as 50/50 compulsion versus usefulness. (ITO interviewee)

Most ITOs indicated the Assessment Tool provided them with valuable information, with only two indicating it was predominantly used as a compliance requirement for them. That isn't to say that all ITOs have totally overcome a number of administrative issues and employer resistance. In particular the difficulties of administering the tool within workplace contexts can be challenging in terms of connectivity issues (two), and employer resistance to the time taken to administer the tool (four).

The fundamental problem is that it is not suitable for the realities of workplace delivery. Learning progressions are only useful for those who really understand them and it's a waste of time for everyone else. (ITO interviewee)

Most ITOs indicated how many trainees they expect to complete progress assessments. A third suggest up to 20 percent of trainees would be assessed. Two are looking to assess between 40-60 percent (although for one this will be dependent on trainee participation in further off-job training). One ITO expects to progress assess all trainees with other ITOs (five) saying they don't know at this point. Some (three) commented they would attempt to assess most trainees, but will only require progress assessments by lower level learners.⁷

Nine ITOs fund assistance for their trainees who require additional literacy and numeracy support, usually those on Step 2 and below of the Learning Progressions, and three ITOs access government-funded support. Three noted that employers can access support, although three others also said they would like to be able to access government support themselves for high-need trainees.⁸

We picked up one guy from Gateway. He was pretty good on-job and we knew he'd had [literacy and numeracy] support at school. As he got into his apprenticeship it got tougher for him but he didn't want the stigma of specialist support. I talked with his manager and between us we provide regular times to go through anything the apprentice is having trouble with. It's working well. (ITO interviewee)

Seven off-job providers commented on the difficulty of supporting high-needs learners, both in class where they lack time to focus on their needs, but also for those learning at a distance and/or working long hours. Both brokering support and the actual time for learners to participate in this support can be difficult.

⁷ Note this is in keeping with TEC policy on reassessment where there is no requirement to reassess those on Step 4 for reading and Step 5 for numeracy.

⁸ Accessing support for trainees with low levels of literacy and numeracy (Step Two and below on the Learning Progressions) is problematic for ITOs. While trainees can access support through the Workplace Literacy fund they have not been able to do this while they are enrolled in an industry training funded programme and have to put their Training Agreement on hold to do so. However, ITOs were advised in August 2014 that this requirement had changed and trainees at Steps 1 and 2 would, for the remainder of 2014, be able to access funds directly from the Workplace Literacy – Employee Targeted Fund without having to put their Training Agreement 'on-hold'.

We embed as much as we can in our programmes. I've had two of my trainers go through NCALNE but there is limited classroom opportunity as most of our courses are of short duration (three hours – four days) and we have no on-going connection with trainees. (Provider interviewee)

When you stick 15 people in a class and fill them with knowledge over five-six hours then throw in numeracy and literacy, it brings [the lowest level learners] back to the nightmares of school. Classrooms are challenging. An experienced mentor, or a few hours to get some reflection on learning would be good, but we have no time. (Provider interviewee)

Trainee learning resources

Trainee resources are important vehicles for embedding literacy and numeracy, particularly in programmes where there is little actual tuition and learning is predominantly self-directed. All but one ITO have literacy and numeracy guidelines for the instructional design of trainee learning resources and/or workbooks, and most also have guidelines for the design of assessments for trainees (with the exception of two ITOs, who do not require this).

We've embedded into resources and trainers' training. The programme and the learning is what's important. Manuals no longer refer to Unit Standards, now it's about skills. The Unit Standard assessments fall out of the training programme. (ITO interviewee)

Literacy and numeracy in our resources is 'business as usual'. Where we will put more effort in the future is on 'clip-ons' or shared resources outside the qualification, for example, sheets on time management, listening, giving instructions at work. (ITO interviewee)

Of note here is that the guidelines are for instructional design that make learning materials accessible to trainees. As such they look to improve the trainees' chances of completion rather than explicitly improve their literacy and numeracy skills.

On-job training

As noted above, much of the training and skill development in the vocational education system in New Zealand is undertaken at the workplace. This has always been a challenge for embedding literacy and numeracy as on-job trainers may have little formal knowledge of the principles of adult education or literacy and numeracy and assessment.

Over time ITOs have undertaken work with industry to raise employers' awareness and understanding of the potential gains from addressing literacy and numeracy skill development and the business benefits for doing so. They also help employers to access additional support for trainees whose literacy and numeracy levels are such that they need specialist support. Recently the majority of ITOs (nine) report conducting some form of planned awareness-raising activities with employers in at least some of their sectors, with the remaining ITOs conducting awareness-raising 'on a needs' basis.

We are redoing information for employers, borrowing from some of the merger partners. It's important to be professional and reflect changes in industry in our communication. (ITO interviewee)

However, employers' responses are mixed. While most ITOs (nine) generally report an 'okay' response from employers when they discuss the Assessment Tool requirements with them, for example, it is still an area where mixed reactions can be found. For some this continues to reflect employers' views that literacy and numeracy is not their responsibility (two) or is an area where 'it is hard to gain traction' (two). That said, some ITOs report evidence of higher levels of awareness of literacy and numeracy issues amongst employers (four) and others comment that this area continues to require more and on-going work (five).

There's reasonable awareness although they still think 'it's not our problem'. It's not a quick thing to achieve, but we are getting it into things from the start now. (ITO interviewee)

We have a good response from all our members. They are very conscious of support for learners and they are big organisations and they see the benefits. There's good union support too. (ITO interviewee)

Four ITOs work directly with larger organisations in their sector to assist with tailoring training to meet larger workforce needs, including in relation to literacy and numeracy. Six ITOs also provide guidance for on-job trainers, with these personnel being key mechanisms for those ITOs who don't have any off-job training⁹ Other information is routinely provided by the majority of ITOs to on-job trainers. This is similar to that described above for employers, namely literacy and numeracy resources to support trainees and how literacy and numeracy skills impact on trainees and their workplace.

Slowly but surely we are trying to address on-job training. Some of our strongest advocates are sole charge [employers in the sector]. (ITO interviewee)

On-job training in the sector is mixed. Some will just hand workbooks out and trainees are left to it. Others might have a workshop at the start and the finish. (ITO interviewee)

Most of the eight employers interviewed say they meet one-to-one or with a group of their trainees on a weekly basis (four), or more regularly (one) to coach and assist trainees with their learning. Others say they work with trainees where there is a need (three). The main barriers they face in working with trainees on-job are their own lack of knowledge or access to help to support high-need trainees (four), trainee motivation (two), and trainee embarrassment about having literacy and numeracy issues (two). One employer thought employers needed support and to be 'pushed' more to help their trainees given there was good opportunity on the job to do this.

⁹ In a vocational training context 'on-job providers' are typically the trainee's supervisor or boss. In some sectors an educator or company training advisor/manager may provide or arrange some on-job training or provide support to trainees.

[ITO] need to push back to employers because if they put more time and effort in they'd get better results. It's hard when you turn over staff so much but maybe staff wouldn't leave if they were getting more help. We need to expect this to happen at work. I know other employers are helping like we are, but the majority are not doing anything. They pay for the course then just expect the trainee to go and pass.

(Employer interviewee)

When employers were asked about the literacy and numeracy skills their trainees needed for their jobs, what their skill levels were and how well skills matched the job, they had no hesitation in identifying quite specifically what they needed trainees to be able to do. This included for example, complete accident forms, fill in job cards so they are understandable for billing, calculate feed budgets, make appointments, calculate quantities, quickly navigate and comprehend manuals. Employers were similarly clear in recognising that many of their trainees had literacy and numeracy skill gaps, but that time on the job to practise skills and employer effort enabled most trainees to sufficiently develop their skills to match the job requirements.

However this was not the case for trainees with learning difficulties such as dyslexia. Here there was an example of an employer, whose trainees did not have additional support, who said that while they progressed in their qualifications, she was less confident they also developed sufficient literacy and numeracy skills.

One guy I was reader/writer for. We'd signed him up for a qualification before he confided in me that he had a problem. He's got two national certificates now but he still can't fill in an accident form. I helped him achieve, but the on-going issue isn't solved. (Employer interviewee)

While another employer noted that a trainee who had additional specialist literacy and numeracy tuition on a weekly basis was improving his literacy and numeracy skills.

He goes to a lady for help [with literacy and numeracy] and he's interested and wants to learn. His literacy and numeracy skills have improved. You can read his job-sheets now so few have to be redone. He's really good at the [technical aspects of the] job. (Employer interviewee)

Off-job training

Off-job training can include anything from a short stand-alone half-day course, provision of space for trainees to meet and study together, to a day a week over a number of years with an off-job provider. This can create a range of challenges for off-job providers in terms of the scope available to them to both understand and address their learners' literacy and numeracy needs. Of the 10 ITOs who use off-job training, half have trainees complete the Assessment Tool at off-job providers and typically those providers would also receive the results. For two, this happened after completion of the course where the trainee completed the assessment.

Four ITOs say guidance for off-job providers on how to embed literacy and numeracy is not required, while five other ITOs also do not provide guidance on how to embed literacy and

numeracy for off-job providers. This guidance is a major component of embedding for one ITO, and is also provided in some sectors by two ITOs.

Most off-job providers (six) delivering training for ITOs could identify elements of the ITOs' approach to literacy and numeracy, particularly those related to literacy and numeracy in resources (five) and the Assessment Tool (four).

One ITO has, over a long period, deliberately invested in building the literacy and numeracy capability of the providers in their sector. While acknowledging that it has taken some time and investment to develop a sustainable core of skilled tutors, the ITO continues to support them through annual professional development on literacy and numeracy that is well supported in this sector.

We have an annual two-day conference where one day is focused on the literacy and numeracy development needs of tutors. Around 20-30 tutors attend along with our field staff so we have the chance to really engage with tutors. (ITO interviewee)

Providers were also active in identifying literacy and numeracy topics trainees found difficult and then working directly with trainees on those topics (seven). For some, this frequently involved group work (five) while the others tended to work more one-to-one (in one case by phone with distance learners). Whatever the approach, there was general agreement that trainee motivation plays a significant part in enabling help to make a difference for trainees.

One provider designed their support to meet both trainee and workplace goals, another found the learning tasks identified in the TEC Learning Progressions a useful resource. Two providers identified that significant proportions of their trainees have difficulties with learning; one with high literacy and numeracy needs, another where trainees were reluctant learners.

About 50 percent (of the 60-70 trainees we have at one time) would have difficulties with literacy and numeracy. Some have others writing for them, some you just need to sit down with and read to. It's sometimes difficult for the guys to open up. If a foreman asks for support, we'll go out to the guys to talk to them and help them get through the book. (Provider interviewee)

We work with employers to set work-oriented goals, tutors use the Assessment Tool and Progressions and then we design a literacy and numeracy programme that aims to match the learners' needs as well as meet the work goals. Workers are then taught in small groups. (Provider interviewee)

The practices providers identified as important for the success of their learners, in addition to what the ITO provides, include:

- more practical learning assessment methods where trainees are observed and questioned rather than completing written assessments
- development of their own teaching resources, keeping materials fresh and interesting
- the capability of tutors with NCALNE
- regular two-three weekly visits to trainees onsite
- on-going tutor professional development workshops.

What's working/not working with embedding?

ITOs commented on the elements of embedding literacy and numeracy that seemed to be working well for them. These include:

- consistency, commitment and leadership from the ITO
- industry/stakeholder engagement and support for literacy and numeracy development
- the fact that embedding is considered business-as-usual, holistic, and that this reflects experience and having had 'time in the game'
- responsive employers who know about literacy and numeracy and are prepared to work with ITOs and support trainees
- field staff who are knowledgeable about and consistently promote literacy and numeracy in workplaces
- the development of integrated approaches that support learners to succeed; this means there is an overall approach rather than single interventions to support trainees
- the reshaping and quality of the learner workbooks that has happened as a result of knowing more about literacy and numeracy.

The quality of the teaching workbooks is a key aspect that's working well. The learning jumps out now. We've had very positive feedback about them. (ITO interviewee)

Other elements individual ITOs referred to as working well include:

- the value of the Assessment Tool within the sector to identify trainees needing specialist help
- the engagement with training providers and the 'community of practice' that has developed between providers
- the progress being made with embedding literacy and numeracy into on-job educators processes
- improved learning assessment practices
- seeing good results from mentoring/peer support learning models
- organisational pride in progress and EER results.

Cumulative history means that things are much better than they used to be, but it's taken a long time to change attitudes. (ITO interviewee)

The points listed above show what works to support embedding. However, there are still aspects that are not working so well or are challenging for embedding in the ITO environment. These include:

- some lack of clarity about direction, and the compliance expectations government has for ITOs in relation to embedding
- insufficient resourcing to develop material to the desired quality, particularly where the ITO is beginning to work in new sectors
- not being able to include literacy and numeracy activities into learning materials as the addition of these makes the workbooks too large and off putting for trainees
- issues related to the Assessment Tool:

- use viewed as compliance
- insufficient resource to use of the Assessment Tool and analysis of the data
- the ITO model with its lack of face-to-face teaching means it is not possible to incorporate deliberate acts of teaching based on Assessment Tool results
- difficulties with access to support for high-needs trainees, ie those on Step 2 and below of the Learning Progressions.

See it mainly as having to do it [Assessment Tool]. We're annoyed as it seems to take precedence over everything. ... Because of the small uptake we are only getting bits and pieces of data – so it's basically useless. But even with this we are starting to see a pattern [bell shaped curve]. ... The CE doesn't want to say "must" to employers in case we lose them as clients. [However], the idea from the CE is that we are really going to give it a good go over the next two years. ... We haven't managed many post assessments. There is no opportunity to request this. It's a transient sector. Email and house addresses change. (ITO interviewee)

Our trainees need better access to learning support. We use volunteers where ITPs have whole departments of skilled people. (ITO interviewee)

There are uncertainties as we start to work with new sectors and unpick their issues. Also with larger firms there are no conversations directly with learners. (ITO interviewee)

Other issues raised by individual ITOs include:

- ongoing employer resistance and the need to continue to work on this
- while embedding has improved access to lower level qualifications there is still a need to look at higher level qualifications, particularly where there are complicated concepts or higher levels of literacy and numeracy requirements
- greater sharing of learning and resources amongst ITOs
- regional pressures that result in loss of knowledgeable staff, particularly in Christchurch
- resourcing to undertake or complete initiatives such as finding and matching mentors and providing learning support
- upskilling for the digital age.

Maybe we need to change the message [to employers about literacy and numeracy] to be more in line with their business outcomes. Employers don't see why they should be involved. Some leaders in the sector are 'illiterate' so they are not seeing the difference with vocational literacy. Plus, most initiatives for employers are designed for large workplaces. (ITO interviewee)

Providers also expressed views on how well they thought the ITOs approach was working. Two providers who work with trainees in programmes of longer duration with higher levels of qualification were very positive about the approaches being taken by their ITOs. One of these noted that the total commitment of the ITO to literacy and numeracy issues had enabled her to totally change the way she taught.

The ITO does a wonderful job. We've had support from day dot. Initially a letter went to all tutors saying we all needed NCALNE. I thought that was a bit tedious, but

enjoyed it and it extended my training. It's changed the way I teach from how I was taught - to be more engaging, creative and help trainees to take ownership of their learning. I had one Year 3 share her learning journey with Year 1s about making her own tools to help her with learning. She's now looking to further study at Level 5.
(Provider interviewee)

From the providers' perspective the aspects of embedding that worked well came from the ITO commitment and enthusiasm, the engagement of effective tutors, context specific learning opportunities and the motivation and engagement of on-job trainers with their trainees. What gets in the way of this occurring however is time to develop teaching material, tutor willingness to engage with literacy and numeracy, the amount of content to be delivered, the difficulty with accessing trainee support with literacy and numeracy while they are training, and the lack of Assessment Tool results that can be used to tailor teaching.

Comment

The evidence in this section highlights the variation in ITO approaches and practices that are driven by the sectors in which they work, the delivery models they have, and the extent to which employers support literacy and numeracy skills development alongside vocational skills. It also shows the breadth of work ITOs are undertaking to embed literacy and numeracy and the stakeholders and organisations they need to engage with and influence in order to do this work.

While ITOs have not been able to get to the explicit acts of teaching literacy and numeracy, overall, embedding has provided the opportunity for ITOs to rethink their approaches to learning materials (design and content) and focus on adult learning principles in addition to embedding. And this is possibly all that can be expected from the delivery model that is available to them.

Section Three: Progress since 2011

A focus for this evaluation was to look at the progress of embedding in ITOs since the formative evaluation in 2009-2011. This section comments on changes, and the similarities and differences in approaches and practices that have occurred from 2011 until mid-2014.

Strategy

By August 2009 around half of the ITOs that had started work on literacy and numeracy had a literacy and numeracy strategy. This had involved considerable work to achieve and included:

- job profiling and alignment of literacy and numeracy qualification and job requirements
- qualification reviews
- awareness-raising efforts with employers and extensive stakeholder engagement.

Those ITOs that were able to articulate the returns for industry from addressing literacy and numeracy issues, such as improved health and safety practices or reducing training agreement terminations, and had established processes to target high-needs trainees, were the early leaders in developing their practices.

By mid-2014 all ITOs had developed strategic approaches to addressing literacy and numeracy skill development for their trainees. All ITOs commented that the consistent support of their governance, Chief Executive and senior management were important aspects of continued efforts on literacy and numeracy. This represents a significant shift in organisational understanding and engagement over what, for some, has been more than a decade of efforts to address literacy and numeracy skill development in the industry training sector.

Industry awareness of literacy and numeracy

It is difficult to know definitively whether there is a higher level of awareness in industry overall about the importance of addressing literacy and numeracy and there is likely to continue to be considerable variation in the state of awareness and engagement. That said, the language being used by the small number of employers interviewed for this research suggested a level of comfort and familiarity that was not common in 2011. All were able to talk about literacy and numeracy and what this meant for their trainees and the work.

Numeracy – numbers are important. ... Need to understand feed budgeting, tons/hectare, how many cows feed for how long from what feed. Need the basic understanding of how to work it out. One [trainee] I had struggled for a few weeks then clicked, related it to what he did at school. Others have used example after example to grasp it [and it] has taken months. (Employer interviewee)

Spelling, comprehension, writing a sentence that makes sense, for example, 'I traced fault to the light fitting'. He used to write 'fault finded'. (Employer interviewee)

Some ITOs continue to report employer resistance in accepting they have some responsibility in addressing literacy and numeracy, although, this tends to be in industries that have struggled to see a clear case for literacy and numeracy skill development in order to do the job required (e.g. in some service jobs).

While most ITOs report undertaking awareness-raising activities in the past, it is not clear why fewer are doing this now. It may, in some cases, reflect a reasonable saturation of industry, while in other cases competing priorities may have resulted in this aspect receiving less attention. Also, Government has undertaken little work with, or messaging to, employers in relation to literacy and numeracy and industry training. The current key conduit for messaging to employers is the Skills Highway programme. Here the focus is on literacy and numeracy of low skilled workers at the pre-qualification level. However, in saying this there are very clear messages about the business benefits of literacy and numeracy and these are messages that can be used by ITOs.

Building internal ITO literacy and numeracy capability

ITOs have used a range of approaches to build their internal literacy and numeracy capability. When work on embedding started, a number of ITOs contracted literacy and numeracy specialists who, often due to their lack of knowledge about ITOs, became isolated and the literacy and numeracy efforts siloed within organisations. Capability development worked best when awareness-raising activities were undertaken with ITO staff and ITOs 'grew their own' through participation in the NCALNE and other professional development. In 2011 there was still considerable anxiety amongst field staff who feared employer resistance and worried about their ability to manage and message literacy and numeracy, given the often sensitive nature of the issues.

Field staff literacy and numeracy expertise is critical for many ITOs, given the role they have in on-going engagement with employers and trainees. In 2014, ITOs continue to ensure they have literacy and numeracy skilled staff. ITOs have clearly lifted the expertise of these staff, and most expressed real confidence in their ability to contribute effectively to support trainees and workplaces where literacy and numeracy support was required. This represents significant progress.

They have at least a basic understanding of the importance of literacy and numeracy, can read Assessment Tool results and refer trainees with low scores to [ITO] team for help. Hope to eventually refer trainees to specific modules on Pathways Awarua too. We've been coaching and working with training advisors for years on the right language to use and working with employers. It still depends on the employer, some resent the loss of work time, but we have some guys who love it. (ITO interviewee)

Assessment of literacy and numeracy levels

In the mid-late 2000s a number of ITOs developed their own industry-specific assessment tools as part of their TEC-funded projects. When the Assessment Tool was introduced a number of ITOs were unhappy with abandoning their tools and two continue to use their own tool alongside the Assessment Tool. In 2011 when ITOs were required to use the Assessment Tool with new trainees at Levels 2 and 3, ITOs expressed considerable concern to the TEC, particularly over the feasibility of the use of the Assessment Tool.

In 2014 ITOs continue to put considerable effort and resource into the use of the Assessment Tool. While some of the earlier concerns have seen acceptable accommodations (e.g. the availability of shorter Snapshot assessments and paper-based rather than on-line assessments) a number of ITOs still find it challenging to complete initial assessments and have concerns about their ability to adequately complete progress

assessments. Those trainees who attend on-going off-job training are more likely to complete initial and progress assessments than trainees who only have on-job training.

Each ITO has to consider how it will undertake the assessments in a way that works in their industries and yields the best return for investment from the process. Making it as easy as it can be for trainees tends to result in more Assessment Tool completions for the initial assessments but getting progress assessments continues to be challenging.

Heathrose Research, (2012, p. 12) noted that, “Only time will show whether use of the Assessment Tool receives greater acceptance.” Overall it would appear the majority of ITOs accept the Assessment Tool and do see value in its use. Where they have analysed data at the organisational level they have seen patterns in knowledge gaps and can also use the data to target trainees for additional support and/or mentoring. However, the logistics of its administration – especially those who do not have off-job training or where a training adviser does not have direct contact with a trainee – are still of concern to some ITOs, as is the time to analyse the data at an organisational level.

Embedding in off-job training provision

Over the mid-late 2000s ITOs undertook a range of activities to upskill off-job providers. For example, they funded off-job providers to complete NCALNE, encouraged providers to undertake professional development and reviewed provider resources. Some ITOs also increased their monitoring of contracted providers and a small number introduced contract requirements addressing literacy and numeracy capability. By 2011 there was a view amongst ITOs that, “Provider capability, while still variable, has improved significantly in recent years.” (Heathrose Research, 2012, p. 38) Many made the point however, that the scope for improving literacy and numeracy among trainees through a reliance on the skills of off-job tutors is limited. This remained the case in 2014.

Most ITOs are not now involved in significant efforts to lift off-job provider capability. Some of this is because of the low reliance ITOs have on off-job training, plus providers, particularly those in ITPs, have had their own capability-building fund for embedding. As a result many adult educators in other parts of industry training must have now completed NCALNE. Those ITOs who continue to focus on off-job providers may also do so as this provides one of the few options they have for directly influencing teaching and learning.

On-job training support for literacy and numeracy

On-job training continues to be the area for potentially greatest impact on trainees’ literacy and numeracy skill development and the most difficult to influence. Discussions with ITOs in late 2011 tended to focus on the difficulties of engaging workplace supervisors/managers and team leaders, most of whom have no formal training background.

While there appeared to be higher awareness amongst employers in 2014, ITOs saw the need to ensure employers know about, and are adequately supported, to assist their trainees. In 2014 ITOs continued to focus on the importance of working with employers to assist them to upskill on-job trainers and support trainees. Around half the ITOs provided supporting resources for on-job trainers.

The ITO and the workplace need to work together. Literacy and numeracy is out there, in the industry, and there are opportunities for people in the sector to improve and it’s our job to help. But we can’t do it alone. (ITO interviewee)

We are doing a bit of work with employers around our new resources. Employers seem aware of literacy and numeracy and positive about resources that include integrated learning. (ITO interviewee)

Learning resources

By late 2011, learning resources for a small number of qualifications had been revised using better instructional design principles. By 2014, ITOs made significant in-roads to revising all their relevant learning materials. This focused particularly on improving the accessibility of the learning materials by improving the design and text features. One trend however has been for literacy and numeracy activities to be stripped out of learning resources, and provided as supplementary resources.

We've had feedback that the new resources are easier to read. Things like "I read the last one three times before I got it, only had to read the new one once." (ITO interviewee)

We get very positive feedback about the quality of the teaching workbooks. Our online [platform] is also working well as a blended model. (ITO interviewee)

In our annual survey with learners there is a high satisfaction rate for learning resources – around 80 percent. This includes that they are user friendly and have the information learners need for assessments. (ITO interviewee)

In 2012 Heathrose Research commented, "The policy objective of embedding is to build literacy and numeracy skill, while industry training is more likely to be based on competence in achieving practical skills. This has meant industry is more interested in ensuring resources function to reduce barriers to learning those skills and increase access to learning for people with literacy and numeracy gaps." (2012, p. 45). This continued to be the case in 2014.

Overall, the ITOs have continued to improve and refine their approaches to embedding as summarised in Table 1.

Table 1: Summary of overall position of ITO approaches and practices 2011 and 2014.

Practice Area	2011	2014
<i>Strategy</i>	Half had strategic plans	All ITOs developed strategic approach
<i>Industry awareness</i>	Reasonable awareness growing, although variable	Expect there is greater depth of awareness, some industry variation remains
<i>ITO literacy and numeracy capability</i>	Combination of contracted specialists and investment in NCALNE and PD. Field staff concern at taking on literacy and numeracy	Majority report competent, confident field staff and, as required, other key specialist ITO staff effective at supporting or delivering strategy
<i>Assessment Tool use</i>	Commencing, high level concerns about feasibility and utility	Initial assessments being undertaken overall, concern about undertaking progress assessments and administrative logistics. Many finding results data useful
<i>Off-job provision</i>	Investing in literacy and numeracy skill	A few ITOs working with off-job providers to support PD. Many have

	development, considering options for leveraging greater attention to literacy and numeracy	limited off-job training and investment has dropped away
<i>On-job training support</i>	A small number developing employer resources	Around half have developed resources to assist employers to support trainees, or work with on-job trainers to develop own resources
<i>Learning resources</i>	Resources reviewed as part of pilot projects	Significant in-roads to review and rewrite learning resources with attention to improved instructional design

Comment

The findings in this section show that ITOs have continued to make clear progress on embedding since 2011. This progress has been driven by ITOs' persistence and their desire to improve outcomes for their trainees along with government policy requirements for increased completions and use of the Assessment Tool. While the ITOs have had a level of frustration with the need to comply with policy requirements, it has led to progress that may not have otherwise occurred had these requirements not been in place. However, in saying this, there have been one-size-fits-all policy requirements for a sector where there are differences within and between ITOs which have led to high levels of concern and frustration in some ITOs. The amount of resourcing and attention that has been given to the administration of the Assessment Tool continues to stretch some ITOs.

Section Four: Effectiveness of approaches and impact

Effectiveness

One of the difficulties with determining the effectiveness of ITOs' approaches and with examining the practices associated with embedding of literacy and numeracy skill development by ITOs, is that each ITO exists within an industry (or industries) context that varies greatly. Some industries have a long tradition of vocational education that is well accepted and promoted within the industry while others have more recently begun to formally credential learning. Some industries have registration requirements for skilled practitioners, others apparently place little value on upskilling their workforces. With the latter industries, investment in vocational training can seem less warranted, both from the perspective of the limited contribution it may make to enhancing business or individual outcomes, and where high staff turnover is a feature.

In the 2009-2011 evaluation, Heathrose Research (2010) developed a model for assessing effectiveness both in relation to the specific goals of ITO ELN funding and more broadly the contribution the projects made towards the wider goals government seeks from the industry training system. The model included assessing the extent to which literacy and numeracy capability had been built, the extent of trainee literacy and numeracy gain, and the extent to which ITO businesses had adopted an organisational development approach to literacy and numeracy. These elements are discussed below. It is useful however to remember that the wider goals of government to improve qualification completion and enable people to move to higher levels of qualification are also pertinent.

Since 2011, ITOs have more comprehensively adopted an organisational and industry development approach. In part this reflects broader organisationally-focused policy requirements than the earlier focus on implementation of defined projects, but also reflects the growing confidence and competence of ITOs to address all aspects of their approaches to literacy and numeracy. The extent to which ITOs approached the earlier projects from an organisational perspective, influenced where the ITOs were able to get to by 2014. This was interrupted in some instances however, where mergers necessitated fundamental changes in training arrangement approaches.

As has been discussed, industry affordances and how training is viewed and managed in the industry fundamentally drive the range of approaches and practices ITOs use. The effectiveness of approaches must all be assessed within that context. The practices however, that have arguably had the greatest direct effect on literacy and numeracy skill development for industry trainees, are those which have impacted at the workplace, the off-job training (where this exists) and in the learning materials available to trainees.

In order to achieve the outcome of improved literacy and numeracy skills, practices to build internal ITO capability and competence have been key. While for some this has involved long-term relationships with external specialists, most, if not all ITOs have needed to upskill their own staff, particularly those in field and instructional design roles. And there has been a noticeable shift in how ITOs view the improved capability of their field staff. The impact of enhanced capability means ITOs can consistently articulate to employers, industry and their sectors the need to address literacy and numeracy skill development.

Sitting behind those that engage with employers and industry, the development of relevant and appropriate learning resources and the ability for ITOs to understand the learning needs of their trainees, is also key to enhanced effectiveness. Those ITOs that have analysed Assessment Tool data and used it to target trainees for support or to recognise knowledge gaps across trainees, are able to demonstrate to industry the value of using the tool.

For those ITOs that utilise a significant off-job component in their training arrangements, effectiveness of their approaches are also enhanced where tutor literacy and numeracy capability and professional development is addressed well.

Those ITOs that have significant off-job training have a better opportunity than those that don't to impact on trainees' literacy and numeracy outcomes. In part this is because many training providers have expertise in adult education and have had literacy and numeracy skill development opportunities. They are also able to deliver deliberate acts of teaching that target trainees' skill gaps. This combination is not often found with on-job trainers. That said, a number of off-job providers talked of their limited opportunity to address individual trainees' specific literacy and numeracy gaps because of large class sizes and the amount of vocational curriculum content to get through in the short time given to off-job provision.

In industries where it has been difficult to get traction with literacy and numeracy, ITOs have faced an uphill battle in terms of effectiveness. These tend to be industries that have not had a history of training or a fully developed career pathway.

In terms of the effectiveness of ITO approaches this evaluation has found:

- a growing confidence and competence amongst ITOs to take a strategic and integrated organisational and industry development approach
- the practices that have had the greatest direct effect on literacy and numeracy skill development are those in the workplace, the off-job training and in the learning materials available to trainees
- internal ITO literacy and numeracy capacity and capability have been critical to effectiveness, particularly in consistently articulating to employers and industry the case for addressing literacy and numeracy skill development.

Impact – educational and work outcomes from embedding

The overall educational outcomes that arise specifically from embedding cannot be separated out from educational outcomes overall. The Assessment Tool can be used to measure progress in literacy and numeracy skill development and there is the potential for the TEC to undertake further analysis of the initial and progress assessment data set to determine progress. The current publicly available measures are those that assess the efficiency and effectiveness of the industry training system more generally, i.e. the rate at which trainees gain credits and complete programmes and qualifications; and also the rate at which trainees enroll in higher level qualifications.

While ITOs are held responsible for completion rates there are a range of factors that contribute to or influence completion that may or may not have anything to do with literacy and numeracy and over which ITOs have no control. This includes the quality of on-job training and the motivation of the trainees themselves.

There are some really passionate people out there. For others training is at the bottom of the list. This may impact on completions, but we don't know. (ITO interviewee)

Between 2011 and 2013 there has been considerable change in the industry training sector. Therefore it is not possible to attribute particular ITO credit and programme completion improvements, or even ascertain the level of contribution embedded literacy and numeracy may have made to the improvements in credit and programme completion rates. However, during this period there has also been an increased emphasis on embedding literacy and numeracy within ITOs and an expectation that the Assessment Tool will be used with trainees enrolling in Levels 1 to 3 programmes.

Learner impacts

An outline is provided below of overall trends in learner completion rates from 2011-2013. This data is provided in relation to ITO trainees at Levels 1 and 2 and at Levels 3 and 4. ITOs are required to embed literacy and numeracy in all Levels 1, 2 and 3 programmes of learning.

Between 2011-2013, the TEC's Education Performance Indicators (EPIs) show ITOs' Level 1 and 2 credit completion has improved from 62 percent to 72 percent and programme completion has improved from 58 percent to 74 percent. This compares with an overall more static credit completion for Level 3 and 4, which went from 75 percent to 72 percent, and programme completion from 73 percent to 75 percent.¹⁰ Further analysis of the ITO data at Level 1 and 2 shows:

- completion rate gains (credit and programme) for seven ITOs, with six showing improvements of between 26 percent to 80 percent, four of whom had improvements of around 35 percent to 50 percent over the three years
- of the remaining ITOs, two show a drop in completion rates, although this drop could have resulted from mergers where one ITO performed lower than the merger partner; and two ITOs show mixed results where credit and programme completions vary and/or the trend in completion rates also appears to be affected by mergers.¹¹

At Level 3 and 4, five ITOs record an improvement and five a drop in completion rates. The 10-20 percent improvements in completion rates for Level 3 and 4 are smaller than those recorded for the Level 1 and 2 qualifications.

Five ITOs (who were interviewed ahead of 2013 performance data being available) identified they have at least some evidence that completion rates have improved, although, as said above, it is difficult to say what contribution literacy and numeracy efforts have had to this. Others (four) suggest they have made 'progress' although their evidence is less equivocal.

Think we're doing pretty well ... Don't have the data that would tell us this exactly – but would say that learners complete qualifications – so that is a positive outcome. (ITO interviewee)

¹⁰ Data accessed from <http://www.tec.govt.nz/Learners-Organisations/Learners/performance-in-tertiary-education/Educational-performance-at-individual-tertiary-providers/>

¹¹ One ITO has no Level 1 or 2 qualifications.

Pretty good – but don't have an evidence base for saying this and would like one.
(ITO interviewee)

Most ITOs believe trainees are positive about and perhaps more engaged in their learning, although evidence of this is also sparse. Two ITOs noted positive trainee reaction to, for example, reduced requirements for writing and greater emphasis on observations for assessments. Others (six) commented that literacy and numeracy skill development is invisible to trainees and that this supports them to just get on and do their jobs and get their qualifications. Others weren't sure about how their trainees may view ITO literacy and numeracy development efforts.

One ITO noted their anecdotal evidence suggests learners are more engaged, tutors prepare better lessons, training is of a better quality and that on-job trainees appear more confident to raise issues. The overall sense is that a culture of learning success exists. A second ITO also considers they are being reasonably effective, and a third, with its expanding mentoring assistance, sees progress being made with embedded literacy and numeracy for their trainees.

Workplace impacts

All but one of the eight employers interviewed observed definite improvement in literacy and numeracy skills alongside their trainees' vocational skills. A number also commented on the impact of this skill development in the workplace, including that trainees:

- make fewer mistakes and learn from these
- have improved communication with clients
- are more confident and this means they are doing a better job
- have reduced the amount of waste product
- are quicker at completing accurate written work
- have more enthusiasm for learning, and that will open opportunities for them in the industry.

Overall, the ability of trainees to communicate, and use their technical skills, makes trainees more valuable to the employer, particularly as they can engage with customers.

Provider views

Providers were more circumspect about the impact of embedded literacy and numeracy. While they thought tutors were using more effective teaching methods, half of them queried the extent to which self-directed learning materials could improve Level 2 and 3 trainees' literacy and numeracy skills. This wasn't a criticism of the ITOs. In fact some commented the ITO was doing their best within the scope of the training arrangements. Their concern tended to focus more on the ability of trainees to access support and in some cases that the structure of the materials may still be difficult for trainees with low literacy and numeracy skills.

However some did acknowledge that embedded approaches do work within tertiary education settings.

Absolutely sure that embedding helps – seen it in Māori and Pasifika Trades training and the [X] College. Get a lot of trainees with not a good school experience. They are

nervous to start with and then they start to pass. Embedding helps break down the [technical] terms. (Provider interviewee)

In spite of their concerns most providers (six) noted positive impacts including:

- ‘pretty good’ pass rates which suggest literacy and numeracy is pitched at the right level
- many have had poor school experiences, but once they start to succeed their nervousness about learning drops away
- trainees are learning to listen and to retain information
- trainees are in a more complex world – they are better able to navigate material, comprehend it and problem solve.

Assessment outcomes are higher than previously, but there will be a lot of reasons for this. Previous material was dense, and now it is pared back to what is needed. ... A lot of material used to be written by subject matter experts who liked to show off what they knew and there were not a lot of pictures. We’ve improved this through the new development processes – have pictures, exercises, self-testing. Learning is now more accessible and this helps those whose literacy and numeracy is not high. There’s always been those who did not complete - those who loved working with cars, but were not into reading books [learning materials]. ... Support is a big part of it. Our job is to support them through to successful completion. (Provider interviewee)

Providers involved in shorter courses and where literacy and numeracy skills were seen as making little difference in trainees’ jobs thought there was little impact from embedding.

Table 2: Summary of trainee impact.

Outcome area	2014
<i>Trainee educational outcomes</i>	<ul style="list-style-type: none"> • Nine ITOs cite progress in improving completion rates in embedded programmes • Overall improvements in ITO credit and programme completion rates 2011-13 for Level 1 and 2, with more than 25 percent improvements in rates for six ITOs • Off-job providers and employers report that improved confidence with learning has encouraged trainees to consider higher-level courses
<i>Trainee workplace outcomes</i>	<ul style="list-style-type: none"> • Employers report improvements in trainees’ literacy and numeracy skills are observed in reduced waste, quicker and more accurate work completion, improved paper work, improved communication and fewer mistakes
<i>Learning experience</i>	<ul style="list-style-type: none"> • Trainees off-job learning environments better recognize their needs • Trainees believed to gain more confidence as succeed

Barriers and enablers to embedding of literacy and numeracy in industry training

As Heathrose Research reported in 2012, industry buy-in is critical for ITOs to be successful in implementing literacy and numeracy strategies and as such is both an enabler, and/or potential barrier to successful outcomes. This remained the case in 2014.

However, the single biggest barrier to supporting literacy and numeracy skill development for trainees lies in the fact that, by its very nature, most industry training occurs for trainees in the workplace. Here there is limited opportunity for ITOs to directly assist workplace educators/employers to support their trainees who struggle with literacy and numeracy. For this to be effective employers require a willingness to engage in literacy and numeracy issues, to have sufficient knowledge to understand what their trainee/s need and how they learn, and to provide time and effort to work with their trainees on gaps in their literacy and numeracy skills. Amongst the small number of employers interviewed most did demonstrate this engagement with their trainees and considered there were both positive impacts for their businesses and their trainees from investing in this way.

They [trainees] go to poly and I run a visual folder for the salon. Each unit is in the folder and they have to do a thing in the salon. I have training every Tuesday morning. I also have literacy and numeracy things for example, how to greet a client, how you would answer the phone. They write this in their folder. (Employer interviewee)

Others however saw little business outcome from literacy and numeracy skill development and saw it mainly as supporting qualification completion.

There's not a lot of reading material or numeracy or writing [for the job]. Literacy and numeracy is more associated with training – the jargon in text books. (Employer interviewee)

While the policy environment has acted as enabler, the amount of policy change ITOs have had to adapt to has impacted on the progress ITOs have made. For ITOs the policy direction began as developmental and they were funded to take experimental approaches. Those ITOs that took a whole-of-organisation approach from the mid to late 2000s and have continued with this, have fared best. These ITOs are largely in the position to maintain and consolidate their work. However there are also other changes at play for the ITOs. The recent mergers appear to have provided an opportunity for review and development to embedded practices, but these will take some time to bed in.

Key enablers for ITO support for literacy and numeracy skill development are obviously the flip side to the barriers. These include, general industry and employer support, and encouragement for training and assessment that embeds literacy and numeracy.

The extent to which employers and work colleagues at an individual workplace support the success and achievement of those with low levels of literacy and numeracy, can also be a powerful enabler. One of the issues raised by ITOs, employers and providers unanimously has been the need to ensure access to one-to-one specialist literacy and numeracy support where this is required by a trainee. As already discussed in this report, current policy and processes to ensure this support is available in a timely manner are problematic for many.

Comment

It is not possible to specifically identify whether, or the extent to which, embedding may have contributed to improvements in outcomes for trainees. Anecdotal evidence suggests it has contributed. While improvements in credit and programme completion rates for Level 1 and 2 from 2011-2013 have occurred at the same time as increased emphasis has been placed on improving literacy and numeracy skill development for trainees, they have also occurred in a time of wider policy changes, mergers and an overall focus on improving completion rates.

Added to this is industry and workplace variation, the extent to which trainees are supported and the capability of workplaces to do this. These are factors that the ITO can influence but not control.

Measuring literacy and numeracy outcomes through the Assessment Tool will be one of the key ways of assessing progress in proficiency. But, as has been noted throughout this report, the logistics of getting trainees to undertake the assessment is challenging for some ITOs.

Policy shifts over this time have seen increasing requirements on ITOs to integrate literacy and numeracy, and there must be a degree to which attention to these issues is meeting a need and a possible component of improving qualification completion rates. In 2009/11, ITOs frequently commented that efforts to address literacy and numeracy issues had impacted positively in terms of lifting adult education practices amongst ITOs. In 2014, ITO attention to adult education principles was so accepted and integrated, it was barely mentioned.

Conclusion: Embedding literacy and numeracy in workplace learning

Since 2001 New Zealand has been working to improve the literacy and numeracy skills of adult New Zealanders. While there have been a number of policies and approaches, both from the Ministry of Education and the Tertiary Education Commission, the central principles of building sector capability and increasing learning opportunities have held true. One of the ways to achieve the latter has been the provision of literacy and numeracy through an embedded approach, whereby it is integrated into other forms of learning. In the case of ITOs this has meant embedding it into vocational/workplace training.

So has embedding had an impact on the sector and trainees? And has there been progress since 2011?

The answer to the first question is yes, embedding has made a difference to the ways in which ITOs: message learning; design learning materials; and know which learners will need support. The Assessment Tool, although still problematic from a logistics perspective, has provided ITOs with evidence of both individual trainee skills levels and gaps, and skills levels and gaps at the organisational level. Embedding has also provided the opportunity for capability building within ITOs.

However the extent to which embedding has improved the literacy and numeracy skills of trainees is difficult to determine. While there is anecdotal evidence in this report from employers that trainees' skills are improving, the ITOs are more circumspect because the delivery model they work within does not allow for deliberate acts of teaching. In addition, the ITOs point out that explicit literacy and numeracy is not included in learning materials because it adds to the size of the learning package and is off-putting for trainees.

One of the ways of assessing literacy and numeracy progress is through analysis of Assessment Tool data. However to date, ITOs report that only a small number of progress assessments have been completed making it challenging to yet obtain empirical evidence of progress. There will also continue to be a wide range of variables that will influence the measured extent or otherwise of trainee literacy and numeracy gain, or lack there-of, and many of these lie outside the direct control of ITOs.

A number of ITOs do report improved completion rates for qualifications where embedding is occurring and ultimately this is the desired outcome from industry training. There has also been a definite improvement in credit and programme completion rates for Level 1 and 2 programmes. The extent to which embedding literacy and numeracy in industry training has contributed to this outcome is however difficult to determine.

And has progress been made since 2011? The answer to this too is yes. The 2012 evaluation concluded that although ITOs had moved a long way in three-to-four years of project investment, there was still a considerable way to go before claims could be made that literacy and numeracy had been fully embedded into industry training. This was based on the view that literacy and numeracy skill development had at that time been incorporated into vocational training arrangements in some industries and for some qualifications. The embedded projects had "limited objectives, applied only to a small number of qualifications, and affected only a small number of trainees," (Heathrose Research, 2012, p. 60).

Since then ITOs have been required to take a strategic organisational approach and embed literacy and numeracy in all programmes up to Level 3, with many ITOs also embedding within higher level programmes. The increase in literacy and numeracy requirements came at a time when the Global Financial Crisis impacted on industry and trainee numbers; when ITO performance was under renewed scrutiny; when a major review of qualifications was taking place (TROQ) and within a context where we saw 34 ITOs merge into 12.

Table 1 repeated from Section Three of this report outlines the progress that has been made.

Table 1: Summary of overall position of ITO approaches and practices 2011 and 2014.

Practice Area	2011	2014
<i>Strategy</i>	Half had strategic plans	All ITOs developed strategic approach
<i>Industry awareness</i>	Reasonable awareness growing, although variable	Expect there is greater depth of awareness, some industry variation remains
<i>ITO literacy and numeracy capability</i>	Combination of contracted specialists and investment in NCALNE and PD. Field staff concern at taking on literacy and numeracy	Majority report competent, confident field staff and, as required, other key specialist ITO staff effective at supporting or delivering strategy
<i>Assessment Tool use</i>	Commencing, high level concerns about feasibility and utility	Initial assessments being undertaken overall, concern about undertaking progress assessments and administrative logistics. Many finding results data useful
<i>Off-job provision</i>	Investing in literacy and numeracy skill development, considering options for leveraging greater attention to literacy and numeracy	A few ITOs working with off-job providers to support PD. Many have limited off-job training and investment has dropped away
<i>On-job training support</i>	A small number developing employer resources	Around half have developed resources to assist employers to support trainees, or work with on-job trainers to develop own resources
<i>Learning resources</i>	Resources reviewed as part of pilot projects	Significant in-roads to review and rewrite learning resources with attention to improved instructional design

Both this and the previous evaluation have aimed to develop and test models of practice. These were intended to explain, describe and characterise the approaches being used by ITOs. The 2012 evaluation report did not include such models as it became apparent that the context and conditions within which ITOs operate were so different, it was not possible to reduce them to a small number of models.

Similarly one of the areas for this evaluation was to examine the extent to which ITOs embedded literacy and numeracy practices were emergent, partial or mature as described in the Embedded Literacy and Numeracy (ELN) practices table.¹² Again, in reality, this was not a useful gauge as ITO practices do not sufficiently fit the described practices, particularly in relation to teaching. In addition, there is variation in the extent to which ITOs are able to use practices given the different delivery models they have. This means that some ITOs would never achieve what might be described as a 'mature' system as the conditions that may be required for a particular practice may never be present, yet the results achieved by that ITO may be as good as another ITO where a particular practice is used.

Successful embedded practices in ITOs are those that when combined, best enable the trainees to understand and develop the literacy and numeracy skills they require for learning and their job. In order for that to occur there are a set of elements that ITOs should attend to. There will be variation within and between ITOs on the focus given to particular elements. This will be determined by the delivery models the ITOs have and the sectors/industries they work with. As noted throughout this report, the impact of the variation between, and sometimes within, ITOs around training arrangements cannot be overstated. This flexibility to address industry and sector conditions is an important element in industry training. It has however also resulted in unsuccessful attempts to characterise embedding models.

Instead, the figure below outlines, 'Elements of Embedding in ITOs'. It is a way of looking at what embedding means in the ITO sector. It encapsulates a set of strategic, operational and employer/trainee elements that are an adaptation of embedding that have developed to meet the requirements of a predominantly workplace-based learning context. The employer and trainee practices are nested within the overall practices of the ITO. These in turn are nested within and determined by each ITOs strategic approach and resourcing of literacy and numeracy work. The elements are not intended as a checklist. Rather they should be used as a reflective tool against which ITOs can ask themselves, "Where are we at with this"? "What is happening as a result of this"? "How are these elements interacting to give best results?"

Embedding has both gained real traction within ITOs and been expanded to cover further programmes of study, and meet trainee needs. ITOs understand their trainee profiles better and many continue to improve on the learning resources they have developed and ultimately remove barriers to trainee success in industry training. While the Government and industry investment in embedding has been substantial, the fact remains that maintaining and making further gains in literacy and numeracy skill development for trainees is likely to require on-going investment. In particular this is to sustain a capable ITO workforce, continue to promote employer engagement with the literacy and numeracy needs of their trainees and improve the sophistication of support, particularly for employers/educators at the workplace.

However there are ongoing challenges for ITOs and their work on embedding. These challenges vary between ITOs given the industries within which they work and the qualification levels of their trainees. They include the ITOs' capacity and ability to:

- raise awareness and influence employers

¹² Embedded Literacy and Numeracy Practices. www.literacyandnumeracyforadults.com

- influence the quality of on-job training
- access support for trainees with low literacy and numeracy skills
- (in some ITOs) use the Assessment Tool.

ITO Strategy

Literacy and numeracy articulated in strategic documents and championed and supported by senior management and industry sector groups

ITO Practice

Field staff qualified and able to support LN skill development

Learning materials take account of learning progressions and articulate LN

Assessment Tool used to inform support for trainees, learning materials and organisational decision-making

Off-job provider cognisant of ITO LN approaches and requirements

Job profiles articulate LN

Employer/Trainee Practice

Employer/on-job trainer aware of LN, knows about LN requirements for learning and the job, supports trainee to develop LN alongside vocational skills

Trainee knows about and develops LN skills for learning and for the job alongside vocational skills

Considerations for the future

The question that needs to be asked now is, 'Where to next for embedding in ITOs?' There is an expectation from government that embedding is business as usual for ITOs. This evaluation highlights that while ITOs have made progress, embedding still has its challenges and we recommend future work focus on the following:

- a co-ordinated approach from government to message employers about workplace literacy, e.g. through The Skills Highway, so it is not up to each ITO to develop resources to do this. Articulation of the value of literacy and numeracy skills in the workplace and in society more generally, will require refreshing over time as some suggest employers may have begun to 'tire' of the literacy and numeracy message. However, this is not solely the responsibility of ITOs and government agencies such as TEC, and the Ministry of Business, Innovation and Employment also has an on-going role
- improved access for ITOs and provision of funding to enable specialist support for those at Step 2 and below on the Learning Progressions for whom embedding was not intended to be all that was required to lift literacy/numeracy skill levels
- ITOs have an opportunity to make wider use of Assessment Tool data for example through demonstrating both the profile of the industries' trainees, and what the ITO has done to address the gap to meet industry need and in so doing, improve industry investment in training outcomes
- development of a reflective tool based on the Elements of Embedded Literacy and Numeracy in ITOs for ITOs and TEC investment managers use around ITO business planning, investment planning, identification of priorities and progress discussions
- should ITOs have a period where consolidation, review and adaptation can occur without further significant process and policy changes, the significant investment in building embedding within the sector could be further bedded in.

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Appendix One: Methodology

A mixed methods research approach was used for this study. Qualitative methods were employed to describe and assess the extent to which ITOs are maturing in their approaches to embedding. Quantitative data collected by the TEC on Assessment Tool usage and through the Industry Training Register (ITR) has supplemented the qualitative data. Further a quantitative survey of ITOs was also completed. The research was conducted in four stages.

Stage One: Scoping

Key informant interviews were undertaken with The TEC Principal Advisor Literacy and Numeracy; the TEC Manager and Principal Advisor Industry Training Organisations; the Industry Training Federation Policy Manager and a member of the ITF literacy network. Information from the interviews provided an overview and perspectives of embedded literacy and numeracy in industry training today. Information from the interviews was used to complete a detailed project plan for the data collection, analysis and reporting phases of the project.

Stage Two: Planning and Design

This stage included:

- a. Confirming the key research and interview questions.
- b. Identification of data related to embedding from the information reported to the TEC by ITOs.
- c. Development of communications/information for ITOs. An initial communication advising the ITO Chief Executives (CEs) about the evaluation was sent out by the TEC. Heathrose Research sent all follow-up communication to ITOs and other research participants.
- d. Finalising the data collection tools including interview questionnaires and participant information sheets and consent forms.

Stage Three: Data collection

Data was collected through interviews at ITO offices with the CEs and/or literacy and numeracy advisers in the 12 ITOs. These interviews were 45-90 minutes long. Interviewers took verbatim notes. A web-based survey was also conducted with all 12 ITOs to capture quantitative and comparable data.

ITOs were each asked to suggest employers and training providers who Heathrose Research might approach to also participate in the study. Short phone interviews were completed with a sample of eight employers/on-job trainers (in a mix of large companies and in small and medium enterprises). These lasted 15-60 minutes. Short (15-40 minute) phone interviews were conducted with a sample of 10 off-job providers.

Data was also collected from TEC on Assessment Tool usage by ITO, ITR data on embedding and EPI data for ITOs.

The data collection with ITOs captured information about:

1. Work to date – the approaches, processes and practices (including work that has taken place as a result of mergers).
2. Capacity and capability in relation to literacy and numeracy within the ITO.
3. Setting skills standards and qualifications.
4. The extent of embedded literacy and numeracy in learning resources.
5. Processes for using and utilising the results of the Literacy and Numeracy for Adults Assessment Tool.
6. The availability and skills of on- and off-job trainers/providers to support trainees' literacy and numeracy and approaches to this.
7. What's working well and not so well.
8. Judgement about the effectiveness of the embedded literacy and numeracy approaches, processes and practices (e.g. on trainee engagement, credit and course completion, literacy and numeracy proficiency, workplace practices and productivity).

Stage Four: Analysis and reporting:

After the data was collected a full analysis of the approaches and progress made by ITOs with embedded literacy and numeracy was undertaken. This included a comparison with the baseline data gathered in 2009/2011.

Qualitative analysis was completed using an inductive approach that allows findings to emerge from the frequent, dominant or significant themes in the raw data. This involved multiple and independent readings of the data by at least two researchers to discover important patterns, themes and interrelationships. The first level of analysis focused on the 2014 data followed by a comparative analysis with the 2009/2011 data, recognising that the ITO mergers prevented a full ITO-by-ITO comparison being completed in many cases. The analysis considered the extent to which ITOs had developed their approaches to embedding over the time period, and in what ways or areas of focus.

A further step in the analysis was to consider the findings in relation to the Embedded Literacy and Numeracy (ELN) Practices and in relation to other potential models for characterising the findings.

Quantitative data was primarily used to triangulate ITO data and in the case of EPI data to identify trends and patterns in completion rates.

The high level findings were work-shopped with the TEC and the LLN ITO network to ensure that the decisions we were making would meet TEC and the sector's needs.

Limitations and benefits of approach

The main limitation of the approach taken is that the evaluation drew on a relatively small number of interviewees within ITOs and with employers and training providers. In addition there was only limited review of learning documentation e.g. learning resources.

Conversely, there was some triangulation of data through interviews with providers and employers about their experiences of ITO practices, and through strategy documents and TEC data. Most of the ITO interviewees had been involved in the formative evaluation in 2009-11 and were in a good position to reflect on ITO progress.

Ethics

In line with normal evaluation ethics, participation in the evaluation was completely at the discretion of the individuals and organisations. All participants had the opportunity to be briefed on the purpose of the research, the purposes to which the information gathered would be put, and were asked to give their consent to participate in the research. All information provided by interviewees is confidential to Heathrose Research and has not been reported in such a way as to allow individuals to be identified.

Appendix Two: Summary of ITO responses to survey on embedding literacy and numeracy

Table 3: Qualification levels where embedding and the Assessment Tool are being used.

ITOs reporting (no.)	Level 1	Level 2	Level 3	Level 4	Level 5 & above
-with embedded qualifications	2	11	11	6	
- with on-job training only for embedded qualifications		4	2		1
- mix of off- and on-job training for embedded qualification	1	7	9	8	4
- qualification level using Assessment Tool	4	10	7	6	1

Table 4: ITO practices to support embedding Literacy and Numeracy (LN).

Practice	No. ITOs report using:
<i>Guidelines for:</i>	
- instructional design	11
- design of assessments	10
- on-job trainers	5
- off-job providers	3
Dedicated LN adviser/specialist	8
Some staff have or working toward LN qualification	10
LN professional development for staff	12
ITO contracts specialist support for trainees	9
ITO conducted awareness raising with employers	12
<i>Provide on-job trainers with information about:</i>	
- LN requirements of qualification	7
- how LN skills impact on trainees and their workplace	9
- LN resources to support trainees	10
- The Assessment Tool	9
- how to access LN support for trainees	10