



# **Evaluating the support for trainees' literacy and numeracy skills for successful completion of higher level tertiary qualifications in the New Zealand ITO context.**

**Full Report**

**Primary ITO**

**Marianne Farrell  
Mike Styles  
Dr Lesley Petersen**

**March 2016**





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



# CONTENTS

Executive Summary .....	4
1. Introduction.....	7
1.1 Project Objectives .....	8
1.2 Literature Scan .....	8
• Language, Literacy and Numeracy in New Zealand .....	8
• Knowing the Learner’s needs .....	10
• Providing and Embedding LLN in Training Programmes: Three Challenges.....	11
2. Background.....	12
2.1 Participating Organisations .....	13
2.2 The Qualification .....	14
3. Methodology .....	15
3.1 Data Collection .....	16
3.2 Trainee Profile .....	16
3.3 Data Analysis .....	17
4. Findings.....	17
4.1 Assessing Trainees’ LLN Proficiency .....	17
4.2 Embedding LLN in the Diploma .....	19
4.3 Challenges to the Learning.....	20
• Tutors and Training Advisers.....	20
• Trainees.....	22
4.4 Evaluation of the pilot programme.....	22
4.5 Trainee Support and OutComes.....	23
4.6 LLN Professional Development for Tutors .....	24
5. Conclusion .....	25
6. Recommendations.....	26
6.1 A Suggested Framework for Embedding LLN in the Agribusiness Management Diploma.....	26
6.2 LLN Mapping .....	30
6.3 Assessing LLN .....	30
6.4 Tutor Professional Development .....	31
6.5 Review Processes .....	32
References .....	33
Appendix A: Self-Review Checklist for ITOs and Programme Providers .....	37
Appendix B: Suggested Rubric for Assessing Writing Skills .....	38

## EXECUTIVE SUMMARY

*“We don’t have enough time to improve literacy and numeracy in a short course or with limited contact hours. Also, the trainees are not there to learn about literacy and numeracy, they want to know about farming. They don’t have time, they are so busy on the farm that they are lucky to get enough time off to complete class assessments let alone work on improving their literacy and numeracy skills.” (Tutor participant)*

What are the literacy, language and numeracy (LLN) requirements of trainees completing higher level tertiary qualifications? This project investigated the pilot programme of the Level 5 National Agribusiness Management Diploma delivered over the past eighteen months by a collaboration between Waikato Institute of Technology (Wintec), Dairy Training Ltd and the Primary ITO. The Diploma is a key part of the dairy industry’s drive to lift workforce skill levels and capabilities with DairyNZ calling for 1000 Diploma graduates on an annual basis.

The project’s key aims were to determine what provisions are in place to identify LLN requirements of the Diploma courses and therefore LLN support which trainees may need to complete the qualification. The extent to which tutors felt equipped to support trainees’ LLN needs was also explored. These aims were achieved through reviewing the Diploma qualification structure and interviewing key stakeholders, which helped with the development of tools and resources beneficial to assist programme providers and their tutors in removing LLN barriers and enhancing trainees’ learning achievements and success.

Whilst the focus of this project was on the pilot Diploma programme, the wider issue of LLN skills required by trainees to complete higher level studies was an underpinning factor of the investigation. A case study methodology (Yin, 2014; Zucker, 2009) was used. Other New Zealand Diploma programme providers supplied comparative data to the pilot programme, specifically, the LLN support mechanisms they have in place for trainees to successfully achieve the qualification. A triangulated approach to the data collection was employed, including i) a review of the LLN literature at Foundation and higher level learning; ii) a review of the Diploma pilot programme structure; and iii) interviews and an online questionnaire conducted with four stakeholder groups. The

groups were; current pilot programme trainees and trainees who had withdrawn (n=20); tutors from the pilot and representatives of other Diploma providers (n=10); Primary ITO training advisers (n= 5); and collaboration representatives (Wintec, Dairy Training Ltd and DairyNZ) (n=3). Other level 4 and 5 course providers and trainees were also considered for their impact on diploma studies.

It was the intention of the project to conduct the Adult Literacy and Numeracy Assessment Tool (ALNAT) with trainees currently enrolled in the pilot programme, as a quantitative data source for the investigation. The ALNAT is not administered in the Diploma, given it is a level 5 qualification, so this was seen as a key source for triangulating the data. However, the project team could not gain access to pilot programme trainees until late in the project by which time trainees were no longer available to complete the ALNAT.

Additionally, investigating the LLN components of the pilot Diploma courses and the potential LLN support of trainees studying this higher level tertiary qualification proved difficult on the grounds that there was a significant variance across the pilot programme stakeholders (the collaborative partners, tutors) in their perception of LLN being an issue for trainees studying at level 5. This brought into question whether an evaluation of LLN or trainee support in this area was necessary.

In keeping with the reflexive practice valued in qualitative research, the project team reflected on these challenges and subsequently a clearer picture of the issue was formulated, presenting a previously unappreciated complexity to the issue. It was concluded that tools and resources were needed to assist programme providers and their tutors in identifying the LLN demands of the Diploma courses and other higher level programmes, and LLN support for trainees. The learnings gained through investigating the pilot programme has also proved useful for the Primary ITO to consider LLN requirements within other industry training at higher levels.

A key finding of the project was the absence of tools and resources in the pilot programme for the programme provider and the tutors to identify LLN requirements of the Diploma courses and align them with support for the trainees' LLN knowledge and

skill acquisition. This has resulted in the development of the *LLN Identification & Decision-Making Framework* (refer Table 3, pg 27) which offers the pilot and other programme providers of level 5 qualifications, and ITOs, an instrument to identify the LLN content of their programmes and LLN support strategies to assist the trainee's progression through, and successful completion of, higher level qualifications. Two further resources have been created to support providers' and tutors' work within the pilot programme which are transferable to other higher level programmes. They offer a starting point for implementing some of the report's suggestions: The Self-Review Checklist for the ITO and Programme Providers, and the Rubric for Assessing Writing Skills (refer Appendices A and B, pages 36 and 37).

Within the parameters of this hub-funded project, it was not feasible to map the Diploma courses against the NZ National Progressions, nor was this the intention. A recommendation is therefore made for courses of the Diploma pilot programme to be mapped using the ALNAT and the accompanying Progression Steps (National Centre of Literacy and Numeracy for Adults, 2012). Higher level learning requires higher level LLN skills. A mapping exercise would confirm what the LLN demands really are at the higher levels, and provide evidence to programme providers of the LLN skills required to complete higher level studies. Other recommendations advise: i) that Diploma trainees who have not previously completed the ALNAT be required to undertake this assessment; ii) that professional development in LLN for tutors on level 5 programmes be expanded and standardised; and iii) that regular reviews of LLN in higher level qualifications occurs.

This project represents a first exploration into the LLN demands of higher level training in the industry training world, a large and relatively unexplored area. Many of the findings from this report will be transferable to other programme providers and ITO training offerings at higher levels. The Ministry of Education (2009) has indicated that the national standards for literacy and numeracy would help educators to consider developing a model that could guide the development of learning outcomes for higher level competencies (p. 5). This project goes some way towards such a model being developed for the Level 5 National Diploma in Agribusiness Management, and suggests a way forward for strengthening training in the wider vocational education sector.

## 1. INTRODUCTION

Assessing for and embedding literacy, language and numeracy (LLN) in the New Zealand tertiary education environment is a requirement for all programmes at levels 1-3 (Ryan, McDonald, Sutton & Doyle, 2012). However, assessing LLN is not compulsory for programmes at level 4 and above. The gap between what testing providers *have* to do, and the observed *need* for proficiency testing and development in trainees in level 5 programmes formed the basis for the current project. Mike Styles, the National Advisor for Literacy and Numeracy for the Primary ITO (2015) states,

“Industry training is significantly different to education and training in other parts of the tertiary sector. In particular, at levels 4 and above, the individual programme providers own and manage much of the content being delivered.

Many of the providers are small operations which do not have the quality systems and professional development processes that exist in polytechnics for example. While polytechnics have had extensive up-skilling in literacy and numeracy, programme providers and tutors in the primary sector are mostly unskilled in education and literacy/numeracy matters, resulting in a wide range of quality of delivery. The range of skills and literacy and numeracy deficits is also variable among the trainees. Some trainees will have had earlier LLN skill development in lower level courses, but definitely not all.”

This report outlines the results of an investigation of the Level 5 National Diploma in Agribusiness Management (the Diploma) pilot programme to ascertain what structures are in place to identify the LLN requirements and support of trainees in LLN to successfully complete the qualification. The project focus included identifying LLN support mechanisms that other Diploma providers have in place for trainees to successfully achieve the qualification.

Completion rates in 2013, 2014 and 2015 across the Diploma programme provider group contributed to the decision to instigate this project. Table 1 lists the total number of Primary ITO trainees who enrolled, those who completed and those who withdrew in each of the calendar years shown. Over this three-year period, many trainees were

active (in training and had not withdrawn) across more than one year. The important figure is the large number of trainees who withdrew and the low percentage of completions. The average withdrawn percentage was 49% and the average completion rate was 14%.

**Table 1 Diploma Completions and Withdrawals, 2013-2015**

Year	Active Trainees	Completed	Withdrawn
2013	692	144	462
2014	883	135	474
2015	639	40	142

## 1.1 PROJECT OBJECTIVES

The primary objective of this project was to investigate the LLN requirements of trainees studying a higher level tertiary qualification – in particular the Diploma pilot programme - and the subsequent LLN support they need to complete the Diploma. The project aimed to inform the development of specific resources and tools which providers could use to support trainees and grow their LLN skills in the context of studying for higher level programmes in Agribusiness. Secondary objectives of the project included:

1. Determining structures that are in place in the pilot programme which identify the LLN requirements of the Diploma courses;
2. Establishing the LLN support that is currently in place for trainees completing the Diploma;
3. Investigating whether the LLN skill and knowledge levels of the pilot programme tutors has an impact on trainees’ ability to complete the Diploma qualification;
4. To alert training providers, industry and government agencies of possible LLN deficits that impact on higher level training.

## 1.2 LITERATURE SCAN

---

### LANGUAGE, LITERACY AND NUMERACY IN NEW ZEALAND

“Literacy is the written and oral language we use in everyday life and work; it includes reading, writing, speaking and listening. Skills in this area are essential



for good communication, critical thinking, and problem-solving in the workforce. Numeracy is a person's knowledge and understanding of mathematical ideas and their ability to use their mathematical knowledge successfully in their personal, study and work lives" (Whatman, Potter & Boyd, 2011).

Strong LLN skills are a prerequisite for participation in tertiary education and in most employment, as well as participation in wider society. People with strong LLN skills have better employment options and can adapt to changes in work environments (Statistics New Zealand and Ministry of Pacific Island Affairs, 2013). "It is when individuals move into higher level supervisory positions and are required to undertake more complex tasks, or when learners commence higher level vocational qualifications, that L&N barriers often become apparent" (Queensland VET Development Centre, 2011a, p. 6).

Adult literacy and numeracy initiatives are designed to implement and achieve the Government's priorities under the Tertiary Education Strategy (TES) 2010-2015, in particular improving the LLN outcomes from levels 1-3 study (2012). The initiatives also support other TES priorities including increasing the number of young people achieving qualifications at levels 4 and above. The Tertiary Education Commission (TEC) cites research by the Organisation for Economic Cooperation and Development (OECD) that more than a million New Zealand adults have literacy and numeracy skills below those required to function effectively in a knowledge-based economy (43 per cent and 51 per cent respectively). Business NZ (n.d.) notes that for Māori and Pacific Island peoples, the proportion of the population with numeracy gaps exceeds 70%.

An initial review of the literature on LLN in the New Zealand tertiary education context reveals an abundance of evidence-based research and Government initiatives for supporting and increasing LLN in foundation programmes and in qualifications up to level 3 on the New Zealand Qualifications Framework (TEC, 2010; 2015), echoing studies from overseas, especially Australia and the United Kingdom (Schwenger, 2010). The New Zealand literature also identifies that in general, universities and polytechnics have well-resourced learning support departments to support LLN, whilst such resourcing does not exist in the ITO world. There appears to be minimal literature

within the LLN domain in the higher level of tertiary education qualifications, that is, level 4 and above.

Yet low level literacy and numeracy skills pose significant barriers to increasing the number of higher level qualifications (Queensland VET Development Centre, 2011a). This supports the purpose and intention of this project which aims to establish the LLN demands of the Diploma and develop a mapping rubric which programme providers and their tutors can use to identify the LLN demands of the Diploma courses and other related LLN-specific resources.

---

#### KNOWING THE LEARNER'S NEEDS

According to the Queensland VET Development Centre (2011a), “Many people are quite functional in their current jobs but are held back from progression in their learning or careers by literacy and numeracy issues” (p. 5). This is especially so in today’s ‘high-tech’ dairy farms, which are calling for more qualified dairy workers with the multi-disciplinary knowledge and skills to work in an industry in which food safety standards, efficient milk harvesting and accountable management of water and effluent systems are key performance requirements (DairyNZ, n.d.).

Many of the trainees in the Agribusiness Management Diploma have worked in the dairy industry or other farming sectors for several years, often having come from school with minimal qualifications and/or a negative schooling experience. With the Diploma targeted at those who wish to “improve your equity, own a farm, or get better at managing your resources” (Primary ITO, 2015), it stands to reason that there will be academic skills and knowledge gaps for many. As an example, “the expectations for an explanation written by a learner on a level 1 or 2 course... are very different from the expectations for one written by a post-graduate student” (National Centre of Literacy and Numeracy for Adults, 2013, p.1). Nor are isolated “catch-up LLN courses” advocated. One of the key findings in Leach, Zepke, Haworth and Isaacs et al.’s (2010) summary report on the embedding of LLN in New Zealand tertiary education organisations emphasises how literacy learning needs to fit the context for which learners are being prepared which is the very rationale for embedding literacy and numeracy (p. 2).

Another significant consideration is the need for support of LLN capabilities of Maori and Pasifika trainees who are even more likely to need this content as part of their training programme (Business NZ, n.d.). The TEC emphasises that one of the key priorities in the New Zealand tertiary education sector is the absolute need to continue building LLN capability and provision within tertiary education programmes to ensure that provision meets the needs of these students (TEC, 2010, pp. 2-3).

---

#### PROVIDING AND EMBEDDING LLN IN TRAINING PROGRAMMES: THREE CHALLENGES

The Centre for Educational Research and Innovation (2008) offers a word of caution to those designing LLN interventions, as they say, “At the system level of programme evaluation, key stakeholders including learners, community advocates, teachers, programme leaders and employers may have very different views of what counts as literacy and numeracy success and how to measure it” (p. 20). This consideration will be valid for programmes across the tertiary sector, and particularly in work-based training such as offered by ITOs. In the case of the present study, the selection of a programme offered jointly by three stakeholder providers, and the use of data from multiple participant groups, provides some measure of balance to the findings.

Much of the literature concurs with Whatman et al.’s (2010) assertion that “Literacy and numeracy needs to be built into a programme, not bolted on to it as an extra activity with no connection to the programme’s purpose” (p. 14). Alkema and Rean’s (2013) overview of the evidence about what improves adult literacy and numeracy, delivered the following as their number one key finding:

Embedding (the practice of combining / integrating literacy and numeracy into vocational and workplace training) improves the likelihood of retention and success when: vocational and literacy tutors work together; literacy and numeracy content is deliberately connected to vocational or real life contexts; and there is a whole of organisation approach (p. 2).

The challenge here for teachers and organisations such as the ITOs is “unpacking the literacy and numeracy skills required for a particular course or qualification, then identifying the skill levels of the learners and figuring out the gap between the two” (Queensland VET Development Centre, 2011a, p. 12). The proposed solution in this case

is the design and development of checklists and rubrics for Diploma programme providers to review and evaluate the LLN requirements of their courses and LLN skill needs of their learners. These tools will also assist Diploma programme providers in implementing professional development initiatives for tutors to assist them in the teaching of embedded skills and LLN support for the trainees.

A third challenge lies around the difficulty of establishing a common baseline for trainees' LLN learning and experience prior to enrolling in the Diploma. Fortunately, an excellent tool that provides robust and reliable information, is reputable and well understood already exists. The ALNAT was developed in 2009, rolled out from 2010, and required from 2011 for all learners in all foundation level (levels 1-3) education (TEC, 2015). Learners must complete at least one initial and one progress assessment, with scores plotted against a series of Learning Progression Steps.

The challenge for the researchers in this study was that trainees come to the open-entry Diploma pilot programme from different learning pathways, so that some have already completed the ALNAT and have good evidence of what they can already do; others have not – and therefore have no formal assessment of whether they will have the LLN skills required for successfully completing the qualification. This issue is discussed in a later section of the report.

## 2. BACKGROUND

The dairy industry is the biggest sector in agriculture within New Zealand. With annual exports in excess of \$11 billion the dairy industry is also New Zealand's biggest export earner, accounting for approximately 35 percent of the world trade in dairy products. The industry, which employs 37,000 people, has a strong international reputation and therefore offers excellent prospects for learners in a range of career pathways, including agribusiness management (DairyNZ, n.d.; DCANZ, 2015; Primary ITO, 2015). A number of key industry organisations are working in partnership to review existing qualifications and develop new programmes where a gap in provision has been identified, so that dairy industry workers can ensure their skills are current and

relevant, take their career to the next level and achieve their business goals. These organisations include the Primary ITO, DairyNZ, and education providers such as Wintec – the three participating organisations in this research.

## 2.1 PARTICIPATING ORGANISATIONS

Primary ITO is New Zealand's largest industry training organisation, funded by TEC to deliver a suite of work-based training programmes and credential trainees across primary production and processing roles – such as agribusiness. Understanding training needs and priorities, as well as a commitment to overcoming “inadequate literacy and numeracy...sitting at 50%” (Primary ITO, 2014, p. 9) is central to the ITO's vision, and linked to “Government's desire for more and better trained primary industry employees”, and “employers' rising expectations” (p. 9). Since the inception of the Diploma, Primary ITO has promoted and marketed it extensively, reporting “a 36% increase in new enrolments nationwide from November 2013 to November 2014 with 901 trainees enrolled in the Diploma or Certificate of Agribusiness Management as at December 2014” (Primary ITO, 2014, p. 21), partnering initially with Wintec and subsequently with other Institutes of Technology and Polytechnics (ITPs).

DairyNZ is the industry organisation charged with supporting on-farm change, creating on-farm opportunities, and building capability through education and training (DairyNZ, n.d.). DairyNZ is a strong advocate for training, recommending a written training plan for all employees, not just those that are new. DairyNZ is a major funder of Primary ITO and has recently set a target of 1000 graduates per year from the Diploma for on-farm roles, and another 250 a year for rural professional and science roles, stating “we need to lift our game if we're going to be considered world leaders” (Mark Paine, as cited in DairyNZ [news], n.d.).

Wintec has been the lead provider for the National Diploma in Agribusiness Management (Level 5) since early 2013, when a provider partnership was formed between Dairy Training, Primary ITO and Wintec. The collaboration was originally referred to as the Farm Business Management Training Initiative and called for an initial pilot programme to be delivered in the Waikato/Bay of Plenty/Taranaki regions (Mitchellmore, 2014). This model has now expanded to include other education

providers in different regions, and different delivery approaches, but it is the original pilot participants who form the basis of the study reported here.

## 2.2 THE QUALIFICATION

The importance of this Diploma programme reflects the increasing move in New Zealand from an owner-operator farming structure to corporate farming. It has been recognised in the dairy farming industry that there exists a deficit in farm management skills and that increased profitability will come from better farm and resource management rather than increasing the number of farms (DairyNZ). The Diploma is made up of five modules that comprise the two National Certificate in Agribusiness Management programmes plus a Business Report course. The five modules include:

- Business and Finance
- Taxation and Investment
- Resource Management and Planning
- Ownership and Risk
- Human Resource Management

The qualification overview section on the NZQA website describes the target learner audience for the Diploma as, “People who are in a management capacity in an agribusiness, or who have some industry or other relevant experience and are ready to advance into a management position within an agribusiness” (NZQA, 2015). The entry criteria vary across programme providers, for example, Aoraki Polytechnic requires a minimum of 42 NCEA level credits at level 3 whilst the pilot programme offered through Wintec has open entry. There are multiple programme providers of the Diploma and each one delivers a different version of the courses. The providers deliver the qualification on behalf of the Primary ITO; the ITO does not hold the training resources for higher level qualifications nor are they in a position to examine the learning content.

The Diploma has been offered since 2008, but in earlier years, has had low completion rates and historically, the main delivery mode has been ‘chalk and talk’. Within the pilot programme which commenced in 2012, a methodological shift was made in the teaching delivery to more discussion, tutorials, groupwork and bringing in experts relevant to

the course content. Different delivery models have been developed to meet learner needs, including block and blended online courses which are now scheduled alongside the traditional face-to-face courses (Mitchelmore, 2014).

Significant to the Diploma is the level 5 National Certificate in Agriculture (Production Management). People can pathway on to other agriculture industry qualifications such as the National Diploma in Agribusiness Management (NZQA, 2015). This stand-alone, single course qualification has been found to be pivotal to the transitioning of trainees between a level 4 qualification and embarking on the Diploma.

Despite the Primary ITO's focus on improving the way LLN is embedded in its lower level qualifications (Primary ITO, 2015), this is not mentioned specifically as part of the Diploma delivery 'system', suggesting that there is still some way to go in ensuring LLN provision is made available within all farming training. This project sought to investigate the LLN requirements within the Diploma, the contributions LLN assessment and support is making towards this success, and how this momentum can be sustained to help more trainees achieve the qualification.

### 3. METHODOLOGY

Case study methodology provided the framework for the project and was deemed by the project team to be a good fit, as each qualification necessarily differs from all others in its content, level, purpose, requirements, delivery and learner profile – and this investigation of the LLN aspects of the pilot programme sought to be highly specific to the programme and its delivery. A proponent of case study research, Yin (2014) defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context. Cousin (2005) says simply that case study research “aims to explore and depict a setting with a view to advancing understanding” (p. 427).

In the current study, a range of data sources allowed the presentation, examination and interpretation of the LLN elements in the Diploma to be understood from various perspectives. While a limitation of case study research is that it is inevitably sited in a fixed context, it is hoped that by including broad results from the points of view of

several stakeholder groups, that many of the findings about good practice strategies will be broadly generalisable to other ITO and vocational education providers across the tertiary sector.

### 3.1 DATA COLLECTION

A mixed method approach was used to collect and analyse both the qualitative and quantitative data, which included:

- An overview of the LLN literature in the tertiary education context;
- Baseline review of the Diploma pilot programme structure, enrolment criteria and graduate profile. The programme structure of the other Diploma programme providers, the trainee demographic; the tutor demographic and the Primary ITO context were also reviewed. This review was the starting point of investigating the pilot programme as assessment of structures to identify LLN requirements and trainee support mechanisms had not been conducted nor was this activity deemed necessary.

The understanding of the LLN demands of the Diploma courses and how trainees are assessed and supported to manage these demands continued to develop throughout the project, as different participant groups were interviewed;

- Semi-structured telephone interviews with current Diploma trainees (n=15); tutors from the pilot and other Diploma providers (Aoraki Polytechnic, Taratahi and the Open Polytechnic), (n=10); Primary ITO training advisers (n=5); and stakeholder collaboration representatives (Wintec, Dairy Training Ltd and DairyNZ) (n=3);
- An online questionnaire with current trainees unavailable for interview, and Diploma trainees who had withdrawn from the programme (n=5).

### 3.2 TRAINEE PROFILE

The trainee demographic was described as predominantly “Time-poor farm workers in their early 30s with young families” (Primary ITO, 2015), made up of trainees who have completed a level 4 qualification with the Primary ITO and pathwayed into the Diploma,



and trainees who had enrolled with no previous connection to the ITO. All of the trainees were clear about their reasons for enrolling in the Diploma, including: to improve themselves as employees, to gain industry-specific knowledge, to gain farm management skills, to advance their own business, and to apply what they were learning in their work.

### 3.3 DATA ANALYSIS

Analysis of the participants' comments and responses from interviews and the online questionnaire was conducted by reading and re-reading the textual data and coding the emerging themes to identify important categories, patterns and relationships in the data (Schutt, 2011). The participant voices and their different lenses underpin the project findings reported in the following section, that is, how and what the trainees, tutors, programme providers and industry stakeholders perceived, conceived and understood about LLN skills required by trainees to successfully engage in and complete a level 5 Diploma qualification.

## 4. FINDINGS

*"I have a farming background so I find it hard sometimes to participate in class discussions and answer some of the questions in the assignment. Maths also isn't my strongest point but I have managed to complete the requirements of the programme."* (Trainee)

A number of key findings resulted from this project in relation to the evaluation of the pilot programme and the comparisons - similarities and differences - between the pilot and other programme provider approaches. Feedback from the participants highlighted a range of experiences regarding the LLN requirements of the Diploma, the level of trainees' LLN skills to meet these, and whether LLN poses a challenge to trainees successfully completing the qualification.

### 4.1 ASSESSING TRAINEES' LLN PROFICIENCY

There are no formal processes for deciding who is recruited for the Diploma or whether trainees who have completed a level 4 qualification will be recruited if they score below level 3 on the LLN Progressions. At present it is also not a requirement for programme providers of the Diploma to administer the ALNAT with trainees either newly enrolled or completing modules within the programme.

Table 2 however provides a snapshot of ALNAT results of a cohort of nineteen trainees currently on track to complete the Diploma offered by a provider in the South Island. The ALNAT was conducted in November 2015 as part of the project. A score of 4 for reading or 5 for numeracy represents relatively low LLN scores, and it is likely that success in higher level studies requires much higher scores than the lowest pass mark for reading and for numeracy. The thresholds distinguish between those who have sufficient skills for the workplace and those who do not. Established by TEC in conjunction with the New Zealand Council for Educational Research (NZCER), the thresholds are statistically determined in response to the OECD-mediated Adult Literacy and Life Skills Survey (ALLS) survey conducted in 2006.

**Table 2 Snapshot of Level 5 Trainee ALNAT Scores**

Schedule A. Reading

Step 1	Step 2	Step 3	Threshold	Step 4	Step 5	Step 6
0	2	2		6	3	6

Schedule B. Numeracy

Step 1	Step 2	Step 3	Step 4	Threshold	Step 5	Step 6
0	0	0	4		7	8

The reading results in Schedule A show that four of the nineteen trainees are below the threshold, indicating a reading age of seven-eight year olds. The numeracy score results in Schedule B show that three of the nineteen trainees are below the threshold, which corresponds to a numeracy/maths age of less than twelve years. Six trainees achieved a Step 4 score, a result which is viewed as barely adequate for a trainee to manage the demands of level 5 study.

In theory, trainees scoring at the lower levels would not be actively recruited for the Diploma as they are deemed 'not ready'. However, other imperatives were mentioned by the Primary ITO which countered this, such as achieving sufficient numbers to fill the class and meeting DairyNZ's target of 1000 graduates per year. Also, as previously explained, the pilot programme offer open entry. As the National LLN Adviser for the Primary ITO commented,

*"A significant proportion of the recruits for Diploma come from trainees who complete level 4 and 5 training. Trainees who struggle to complete level 4 training for LLN reasons are not likely to achieve at the diploma level. In fact, many trainees will exclude themselves from consideration for diploma studies because they have reached the peak of their LLN skills."*

#### 4.2 EMBEDDING LLN IN THE DIPLOMA

How is LLN embedded in the Diploma's teaching and learning delivery? Does it need to be? These questions prompted differing views from the tutors and programme providers about whether trainees should be given upskilling tuition in reading, numeracy and writing before they enrol in a course, or if reading, writing and numeracy instruction activities needed to be included alongside the technical learning within each course. This latter approach was described by the pilot programme provider as the tutors' responsibility and that tutors need to be spontaneous and address the LLN issues at the time these skills are required, because *"that is the time when the context is right"* (Provider).

However, eight of the tutors interviewed described their level of knowledge in how to integrate LLN into their teaching and course materials as *"very minimal understanding and experience"*. They identified ALNAT results from trainees' previous qualifications, observation and assessments as strategies they used to identify trainee LLN skill levels early in the programme. However, if LLN skill development was found to be a requirement for the trainee's successful completion of the Diploma, the tutors indicated that they had no specific strategies in place to address any LLN deficit. Two tutors mentioned that the main programme resources such as books, handouts and internet sites *"do not allow for LLN issues"*.

When asked how LLN support and skill development strategies are integrated in the course materials and resources at the institutional level, the tutors stated that from their knowledge this did not happen. The main reason cited for this is that the trainee is enrolled based on the assumption that they have the necessary LLN skills to complete the programme to the required academic standards. Given the open entry criteria, there are trainees who have not completed a level 4 qualification.

Two tutors who stated they felt confident with LLN mentioned using strategies such as planned teaching approaches, learning activities which focus on LLN skill development, individual trainee support and the use of technology. As one tutor explained, *“The use of smart pens or programmes where trainees read out text are fantastic and a great help”*.

#### 4.3 CHALLENGES TO THE LEARNING

A diverse range of challenges for trainees completing the Diploma was identified across the participant groups, as well as LLN challenges faced by the programme providers and the tutors. The feedback indicated that perceptions of LLN challenges were based on the individual participant’s own knowledge of and experiences with LLN. For example, some tutors identified challenges as time to create appropriate resources and managing a wide range of LLN levels in each class, whilst the pilot programme provider commented that the biggest challenge was the need for tutors to be convinced that *“the LLN component of their teaching and LLN improvements is an important focus and their (the tutor’s) responsibility”*.

Five of the trainees currently completing the Diploma and two of the five trainees who had withdrawn from the programme commented that LLN was not an issue for them. There were no formal LLN evaluation mechanisms in place which would involve the trainees in understanding the LLN requirements of their study. It is questionable therefore if trainees were making informed comments on LLN issues.

A dichotomy of thinking about whether LLN was an issue for trainees was evident in the tutors' feedback. Whilst some tutors commented that trainees did not struggle with the LLN requirements of the Diploma, other tutors believed that LLN was a significant challenge for a large number of trainees. For example, one tutor stated, *"The trainees' general written communication skills greatly affect their ability to present assessments and take notes. This is also evident in how they take a long time to complete assignments"*.

Another tutor commented that the level of the course material and associated literature was at a much higher academic level than most trainees can cope with, stating, *"Most of the material is written by academics who have never suffered from any form of LLN issues and therefore also don't understand that other people need to read their papers."* In comparison, one of the tutors stated,

*"For the most part I find LLN skills of trainees at diploma level acceptable. They don't struggle with LLN, they struggle with time management, not realising how much is involved to complete the assessments, the structure of the resource management module and the relevancy of some of the questions when they don't relate to farming business practices of trainees."*

Collectively however, the tutors identified time to develop trainees' LLN skills as a significant difficulty they faced in integrating LLN in their teaching. Comments such as *"We have lot of content to get through and therefore there is limited time available to work on LLN"* and *"We also only have some of the trainees for six days total; this is not enough time to improve LLN"* reflect this reality.

Another challenge identified by the ITO training advisers was the stigma attached to LLN, which often prevented trainees from admitting they were struggling with the learning. As one training adviser said, *"People returning to the classroom are often ashamed to admit they have difficulty"*. These participants also talked about how a number of trainees' foundational writing skills were lacking which impacted on their ability to successfully engage in and/or complete course requirements such as report writing and computer literacy.

In terms of specific trainee cohorts, another training adviser explained how English as Another Language (ESOL) trainees had much greater needs with LLN. Associated with

this was the ESOL trainee's fear of failure and therefore it was even more important that the tutor identify specific trainee needs in specific courses in the programme and provide additional input and LLN learning strategies accordingly.

---

## TRAINEES

The dichotomy of perception about LLN as an issue for their successful journey through and completion of the Diploma was equally evident in the trainees' feedback. Whilst five of the trainees currently completing the Diploma said LLN was not an issue for them, the remaining ten talked about needing assistance from the tutor for LLN support or getting help with the reading and writing from their partner or friends. The trainees also emphasised the challenges of time to complete assignments, work and other commitments such as family and child care, and for some trainees, a lack of farming experience or no farming background. These were illustrated by comments such as *"Class work is limited to the times between daily milking and assignments have to be done at night or on infrequent days off"* and *"Time to complete the course and the assignments while working full time running a dairy farm business is a huge undertaking"*.

Five trainees who had withdrawn from the Diploma completed an online questionnaire. Two trainees thought that the writing component and numeracy aspects of the courses they had enrolled in were not issues whilst the other three cited needing more time for in-class discussions and written examples to look at. The main aspects they identified as reasons for why they withdrew from the programme were time, multiple costs, health, and family constraints and commitments. However, some programme-related challenges were mentioned, such as the need for clearer information about the courses requirements, both in terms of the group and self-directed learning components. These trainees also cited a lack of content relevancy as the reason for withdrawing, that is, there was less direct application of the learning material to their own business than they had expected.

## 4.4 EVALUATION OF THE PILOT PROGRAMME

Feedback from the tutors and programme provider identified a range of formal and informal processes and tools being used to evaluate the programme including:

- Summative evaluation forms at the end of the course;
- Student experience surveys;
- Verbal feedback from the trainees during and at end of a course;
- Pass rates;
- Completions;
- Analysis of trainee withdrawals.

There did not appear to be any specific LLN evaluation methodology although the tutors described the various evaluation processes as providing a mechanism to determine a trainee's ability to write, express ideas clearly, read questions and ascertain their meaning.

#### 4.5 TRAINEE SUPPORT AND OUTCOMES

What support is available to trainees as they commence and journey through the Diploma? The tutors, training advisers and trainees had various responses to this question. The tutors identified several strategies they found to be successful in supporting trainees and improving trainee outcomes, including peer support, peer tutoring, group work, and technology. Some of the tutors commented on how early diagnosis of LLN issues for planning and early intervention is important but they had no formal strategies to carry this out.

The training advisers also identified two key support mechanisms and influences on successful trainee outcomes. The first involved providing mentoring support for trainees at any stage in their study, with the most 'popular' mentors being accountants and farm consultants. However, the advisers acknowledged that the mentors are not trained in LLN. The second significant influence was explained by one training adviser as re-directing potential trainees to a lower level qualification which would assist them with foundational skills and create a pathway to progress on to successful entry into the Diploma. They identified one of their key roles as a training adviser as finding out the appropriate programme level and support required for trainees. Paramount to the

training advisers was making sure that the trainee was successful in their academic endeavours and learning within their comfort zone.

All of the current trainees noted how the tutors supported them in their learning, although again none of them specifically referred to LLN support. They gave examples such as tutor availability, interactive teaching strategies and sound content knowledge, as well as relevant examples of good practice and the tutor's ability to get learning expectations across. The trainees also identified a mix of preferences for teaching approaches which they thought supported their learning. For example, some trainees preferred face-to-face classes, opportunities for conversations in class and to be given examples which supported the learning material. Mentioned by one trainee was the need to have time with other trainees to help with learning, however added that this didn't happen very often.

#### 4.6 LLN PROFESSIONAL DEVELOPMENT FOR TUTORS

There was a mixed response to the interview question asking tutors and the pilot programme provider about what professional development training and support in LLN was provided for tutors. The feedback from both participant groups ranged from specific LLN-focused options such as meetings with LLN specialists to help develop resources, attending LLN courses and developing LLN resource toolkits, to *"nothing specific to LLN"* and *"nothing specifically at Diploma level but we discuss LLN at staff meetings"*. A number of the tutors saw the need to learn specific teaching and learning strategies to support trainees in LLN and ensuring they had prior knowledge of the trainee's LLN skill levels before the course begins.

Completing a qualification in LLN such as the National Certificate in Adult Literacy and Numeracy Education (NCALNE) was identified as another option for tutor professional development, and some of the tutors stated they were completing this qualification at their own discretion. Although the choice to upskill in LLN appeared to be at the tutor's discretion, the programme provider believed that LLN is an important component of higher level training, stating, *"LLN should not be seen as isolated from pedagogy but rather should be seen as a key part of the soft skill development tutors complete"*.



## 5. CONCLUSION

The main purpose of this project was to determine what structures are in place to identify LLN requirements of the level 5 National Diploma in Agribusiness Management pilot programme and therefore LLN support which trainees may need to complete the qualification. The findings underline that consensus about the LLN demands of the Diploma and the trainee LLN skill requirements to achieve this qualification is problematic. Whilst some of the pilot programme provider stakeholders did not perceive LLN as being an issue for trainees studying at level 5, other participants in the project highlighted LLN challenges for the trainees' learning and progression through the Diploma courses. This highlights a 'patchy' understanding and appreciation of LLN issues across all stakeholders.

The variation of opinion across the participant groups has made it difficult to suggest any 'one size fits all' definitive actions that could be undertaken to ensure trainees have sufficient LLN skills and are supported in this skill development in order to successfully complete the Diploma. Leach et al.'s (2010) study of different New Zealand providers found the same thing. Their conclusion, reiterated in other literature (e.g. McKenna & Fitzpatrick, 2004; Pittaway & Moss, 2006) is that embedding LLN works best when it matches the vocational and social context of programme and learner. Leach et al. state, "There is no single perfect model of embedding. Rather, there is evidence that multiple, not unitary, approaches to provision work best, [and] that more flexible patterns of participation are needed" (p. 2). Whether in relation to levels 1-3 programmes other higher level qualifications such as the Diploma, the authors' findings resonate with the learnings from this project.

Yet there were also commonalities evident in the shared strong commitment to learners and learning. The 'crux of the matter', as noted by Queensland VET Development Centre. (2011b), is the need to consider three critical issues for effective learner-centred LLN training and assessment practice; the trainees' skills, the training and assessment requirements, and those needed in the workplace for successful participation and

career development. In response, a number of recommendations are proposed for consideration by stakeholder groups involved in this higher level tertiary education context.

## 6. RECOMMENDATIONS

The LLN skill demands of the Diploma pilot programme were perceived along a spectrum of 'significant trainee need' to 'no need' across the participant groups. The following recommendations aim to encourage the key stakeholders invested in the Diploma to consider LLN as a core component of this level 5 programme. That would require regular monitoring and evaluation to determine the influence of LLN on a trainee's likelihood to successfully complete the qualification.

The first recommendation is a suggested framework for establishing the LLN requirements for each course in the Diploma and making subsequent decisions about trainee support strategies. The next recommendations are a combination of specific actions that can be taken to develop practical LLN tools for use within the Diploma by trainees, tutors, pilot and other programme providers and the Primary ITO. There are also broader recommendations for programme development, such as the mapping of each module against the National Learning Progressions for the embedding of LLN within the whole programme.

### 6.1 A SUGGESTED FRAMEWORK FOR EMBEDDING LLN IN THE AGRIBUSINESS MANAGEMENT DIPLOMA

Table 3 offers a suggested framework which could assist key stakeholders involved in the Diploma with making decisions about LLN requirements of the programme and subsequent learning and teaching approaches and activities that could be implemented to support trainees' LLN skill development. The *LLN Identification & Decision-Making Framework* has been developed as a result of the participant feedback in this project, the LLN literature, an analysis of the mechanisms in place within the pilot programme

to identify LLN requirements, and an investigation of other Diploma programme provision.

The framework offers examples of how it can be applied as a programme evaluation tool and provides a mechanism to communicate the LLN requirements of each Diploma course and support strategies with all stakeholder groups who have a vested interest in the trainees' progression through and successful completion of the Diploma. Ultimately the framework aims to assist these stakeholders in promoting trainees' success in the Diploma qualification as a tool to ascertain:

- (i) The LLN requirements of each course in the Diploma;
- (ii) LLN support strategies for trainees;
- (iii) Teaching practices which support trainees in managing the LLN requirements of the programme;
- (iv) LLN professional development needs and opportunities for tutors.

Although the level 5 Production Management Certificate is not a formal component of the Diploma, as described earlier in this report the Certificate has become pivotal to the transitioning of trainees between a level 4 qualification and embarking on the Diploma. The Certificate is included in the *LLN Identification & Decision-Making Framework* given its significance in the Diploma context.

**Table 3 LLN Identification & Decision-Making Framework**

NZ Diploma of Agribusiness Management, Level 5				
Production Management Course				
Modules	LLN Requirements	Trainee LLN Support Strategies	Teaching Practices	Tutor Professional Development
Business and Finance	<p><b>1. Numeracy</b></p> <ul style="list-style-type: none"> <li>• Computation skills (higher level)</li> <li>• Extrapolation skills</li> <li>• Interpolation skills</li> </ul> <p><b>2. Literacy</b></p> <ul style="list-style-type: none"> <li>• Higher level comprehension skills</li> <li>• Specialist terminology skills</li> <li>• Research skills</li> </ul>	<ul style="list-style-type: none"> <li>• Mentoring.</li> <li>• Study nights</li> <li>• Exposure to good quality exemplars</li> <li>• Regular practice/rehearsal</li> <li>• Buddying up trainees with each other</li> </ul>	<ul style="list-style-type: none"> <li>• Exposure to good quality exemplars</li> <li>• Regular practice in class</li> <li>• Tutors directly targeting these skills instead of bypassing them</li> </ul>	<ul style="list-style-type: none"> <li>• Regular focussing on LLN development</li> <li>• Regular upskilling in LLN skills – in addition to developing technical skills</li> <li>• Sharing best practice</li> </ul>
Taxation and Investment	<p><b>1. Numeracy</b></p> <ul style="list-style-type: none"> <li>• Graph and data interpretation skills</li> <li>• Data analysis skills</li> <li>• Data synthesis and application skills</li> </ul> <p><b>2. Literacy</b></p> <ul style="list-style-type: none"> <li>• Research skills</li> <li>• Specialist language skills</li> </ul>	<ul style="list-style-type: none"> <li>• Regular practice and rehearsal</li> <li>• Mentoring</li> <li>• Study nights</li> </ul>	<ul style="list-style-type: none"> <li>• Regular exercises and practice in class</li> </ul>	<ul style="list-style-type: none"> <li>• Tutors collectively developing class activities to grow numeracy and literacy skills</li> </ul>
Resource Management and Planning	<p><b>1. Numeracy</b></p> <ul style="list-style-type: none"> <li>• Data comprehension and interpretation skills</li> <li>• Data projection skills</li> </ul> <p><b>2. Literacy</b></p> <ul style="list-style-type: none"> <li>• Terminology skills</li> <li>• Higher level reading skills</li> <li>• Composition skills</li> <li>• Research Skills</li> </ul>	<ul style="list-style-type: none"> <li>• Regular practice and rehearsal</li> <li>• Mentoring</li> <li>• Study nights</li> </ul>	<ul style="list-style-type: none"> <li>• Regular exercises and practice in class</li> </ul>	<ul style="list-style-type: none"> <li>• Sharing best practice</li> <li>• Tutors collectively developing class activities to grow numeracy and literacy skills</li> </ul>

**NZ Diploma of Agribusiness Management, Level 5**

**Production Management Course**

<b>Modules</b>	<b>LLN Requirements</b>	<b>Trainee LLN Support Strategies</b>	<b>Teaching Practices</b>	<b>Tutor Professional Development</b>
Business Report	<p><b>1. Numeracy</b></p> <ul style="list-style-type: none"> <li>• Data interpretation skills</li> <li>• Data presentation skills.</li> <li>• Higher level computational skills</li> </ul> <p><b>2. Literacy skills</b></p> <ul style="list-style-type: none"> <li>• Research skills</li> <li>• Extended composition skills</li> <li>• Proof reading skills</li> </ul>	<ul style="list-style-type: none"> <li>• Regular practice</li> </ul>	<ul style="list-style-type: none"> <li>• Direct teaching of writing skills</li> </ul>	<ul style="list-style-type: none"> <li>• Tutor peer observations</li> </ul>
Production Management	<p><b>1. Numeracy</b></p> <ul style="list-style-type: none"> <li>• Confident repetitive manipulation of numerical data – including percentages, fractions and decimals</li> <li>• Accurate interpretation of graphs, tables and charts</li> <li>• Preparation of graphs, table and charts</li> <li>• Monitoring data skills including working with standard deviations and variation from normal values</li> <li>• Benchmarking skills</li> <li>• Costing skills</li> </ul> <p><b>2. Literacy</b></p> <ul style="list-style-type: none"> <li>• Interpretation of numerical data into text, including the preparation of instructions for third parties.</li> <li>• Preparation of action plans from numerical data.</li> <li>• Research skills.</li> <li>• Analysis and evaluation skills</li> </ul>	<ul style="list-style-type: none"> <li>• Exposure to a range of quality exemplars</li> <li>• Regular rehearsal</li> <li>• Opportunity for discussion with peers</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion groups</li> <li>• Presentations to peers.</li> <li>• In class debates</li> </ul>	<ul style="list-style-type: none"> <li>• NCLANE qualification</li> </ul>

## 6.2 LLN MAPPING

- i) The ALNAT provides significant indications of a trainee's LLN skills. Mapping the LLN demands of each Diploma course would enable programme providers to ascertain the level of LLN a trainee needs to successfully engage in and complete the individual module requirements;
- ii) Assessing a trainee's level of LLN through completion of the ALNAT and evaluating this against the LLN requirements of the courses would help to identify what trainee support mechanisms need to be in place and also indicate LLN professional development needs of tutors;
- iii) The Production Management Certificate is pivotal to the transitioning of trainees between a level 4 qualification and embarking on the level 5 Diploma. Mapping this course against the New Zealand Learning Progressions would provide the Primary ITO and other stakeholders integral to the Diploma with a benchmark of the trainees' LLN requirements as they enter the Diploma;
- iv) Development of a trainee LLN profile aligned with the existing graduate profile, based on the findings from LLN mapping of the Diploma courses, the Production Management Certificate, and trainee ALNAT results analysis.

## 6.3 ASSESSING LLN

- i) Evaluation of the current LLN skill development of trainees completing level 4 qualifications would inform what system and strategy development is required to build trainees' LLN skills in preparation for pathwaying into the Diploma;
- ii) Trainees enrolling in the Diploma who have not completed the ALNAT should be required to undertake this test. This will provide stakeholders - trainees, programme providers, tutors, training advisers and the ITO - with information about the LLN support required for trainees to successfully engage in, progress through and complete the qualification;
- iii) Assessments within the Diploma require a large amount of writing by the trainees. It is recommended that a writing assessment is designed for each type of writing required in the Diploma, for example, technical, business and academic writing, which can be integrated into the different modules. A

sample writing assessment rubric is suggested (refer *Appendix B*) which could be adapted for the specific writing requirements (informed by Glasswell et al., 2001).

#### 6.4 TUTOR PROFESSIONAL DEVELOPMENT

As this report has identified, there is a significant variation of tutor professional development in LLN being offered and/or encouraged within the pilot programme and across the other Diploma programme providers. The literature on teacher professional development to support LLN continues to focus on levels 1-3 (Hazelwood & Alkema, 2013; TES 2014-2019); there appears to be a dearth of literature offering either discussion or models of LLN support for higher levels of study. Decisions about professional development need to be based on the primary objective of how to best support the trainees' learning for successful outcomes. There are a number of opportunities for informal and formal LLN professional development of tutors, as follows:

- i) Programme providers to use the LLN profile of the Diploma courses (following the LLN mapping exercise) to confirm the level of LLN teaching expertise required of the tutors, which may involve completion of formal LLN qualifications such as the NCALNE.
- ii) Given that the literature emphasises the need for institutions and individuals to regularly reflect on and share LLN practices if trainees are to be effectively supported in this area, two strategies for tutors are suggested, including:
  - a) An LLN self-review checklist (refer *Appendix A*);
  - b) Creation of Communities of Practice (face to face and/or online) where LLN practices can be shared and learned from. These groups would need the support from the tutors' respective institutions, for example, time release, access to online communication tools.
- iii) There are a range of LLN-specific websites available to tutors and programme providers which have a host of resources adaptable to teaching and learning contexts, such as an LLN planning calendar for tutors, literacy and numeracy lesson plans and resource banks.

- iv) The Primary ITO could consider hosting a workshop for training advisers and tutors from all the providers on an annual basis, to outline how the LLN requirements for each module were arrived at, to refresh and share practice, and to ensure consistency and standardisation across all regions.

## 6.5 REVIEW PROCESSES

A number of programme review processes are suggested, including:

- i) Programme providers undertake a regular LLN skills review as part of a qualification and skills standards review process.
- ii) All stakeholders with a vested interest in the Diploma are brought up to speed with understanding and gaining a sound knowledge of LLN via training sessions provided through the Primary ITO.
- iii) An LLN profile of each module and the LLN profile of new trainees are used to inform tutors, programme providers and the ITO of the level that teaching resources need to be pitched at and the relevant LLN skills that need to be built during the trainee's learning journey.
- iv) Programme providers and tutors determine the LLN skills needed through analysis of the performance criteria within the assessment schedule for each course.



## REFERENCES

- Alkema, A., & Rean, J. (2013). *Adult literacy and numeracy: An overview of the evidence: Annotated bibliography*. Wellington: Tertiary Education Commission.
- Business NZ. (n.d.). *Business NZ recommendations to incoming Government: Workforce skills & tertiary education*. Retrieved from [https://www.businessnz.org.nz/\\_data/assets/pdf\\_file/0005/68054/081127](https://www.businessnz.org.nz/_data/assets/pdf_file/0005/68054/081127)
- Centre for Educational Research and Innovation (CERI). (2008). *Assessment for learning: Formative assessment*. OECD/CERI International Conference “Learning in the 21st Century: Research, Innovation and Policy”. Retrieved from <http://www.oecd.org/site/educeri21st/40600533.pdf>
- Cousin, G. (2005). Case study research. *Journal of Geography in Higher Education*, 29(3), 421-427. DOI: 10.1080/03098260500290967.
- DairyNZ. (n.d.). *Workforce planning*. Retrieved from <http://www.dairynz.co.nz/people/recruitment/workforce-planning/>
- DCANZ (Dairy Companies Association of New Zealand). (2015). *DCANZ media release: TPP does not add up for NZ without good dairy outcomes*. Retrieved from <http://www.dcanz.com/media/>
- Glasswell, K., Parr, J., & Aikman, M. (2001). *Development of the asTTle writing assessment rubrics for scoring extended writing tasks*. Retrieved from [e-asttle.tki.org.nz/.../6\\_Development\\_of\\_writing\\_rubrics\\_2001.pdf](http://e-asttle.tki.org.nz/.../6_Development_of_writing_rubrics_2001.pdf)
- Hazelwood, K., & Alkema, A. (2013). *Literacy and numeracy professional development: Research findings*. Tertiary Education Commission: New Zealand.
- Industry Training Federation. (2010). *ITO Literacy and Numeracy Good Practice Project Summary of Good Practices*. Retrieved from <https://ako.aotearoa.ac.nz/community/recommended-resources-ako-aotearoa/resources/pages/ito-literacy-and-numeracy-good-practice>
- Lane, C. (2010). *Adult literacy and numeracy in New Zealand – key factors: An analysis from the adult literacy and life skills survey*. New Zealand: Ministry of Education.

- Leach, L., Zepke, N., Haworth, P., & Isaacs, P. (2010). *'One size does not fit all': How five tertiary education organisations embed literacy, language and numeracy: Summary report*. Retrieved from [http://www.educationcounts.govt.nz/\\_data/assets/pdf\\_file/0005/77036/oneSize-doesNot-FitAll-sum-76975-14062010.pdf](http://www.educationcounts.govt.nz/_data/assets/pdf_file/0005/77036/oneSize-doesNot-FitAll-sum-76975-14062010.pdf)
- McKenna, R., & Fitzpatrick, L. (2004). *Building sustainable adult literacy provision: A review of international trends in adult literacy policy and programs*. Adelaide, South Australia: National Centre for Vocational Education Research.
- Ministry of Education. (2009). *Success for all New Zealanders through lifelong learning*. Retrieved from <http://www.educationcounts.govt.nz/publications/series/tes/51475/5>
- Ministry of Education (2015). Tertiary Education Strategy 2014-2019. Retrieved from <http://www.education.govt.nz/further-education/policies-and-strategies/tertiary-education-strategy/>
- Mitchelmore, K. (2014). Farm business management project. Retrieved from <http://www.scarlatti.co.nz/index.php/articles/>
- National Centre of Literacy and Numeracy for Adults. (2012). *Embedded literacy and numeracy: Teaching and learning approaches*. Retrieved from <https://www.literacyandnumeracyforadults.com/>
- New Zealand Qualifications Authority. (2015). *Qualification overview*. Retrieved from <http://www.nzqa.govt.nz/nzqf/search/viewQualification.do?selectedItemKey=221>
- Organisation for Economic Cooperation and Development. (2015). Adult literacy. Retrieved from <http://www.oecd.org/edu/innovation-education/adultliteracy.htm>
- Paine, M., Mason, G., & Bryant, K. (2014). *The People Pipeline building capability on and off farm*. Presentation to Farmers' Forum- May2014. Retrieved from [http://www.dairynz.co.nz/media/621429/the\\_people\\_pipeline.pdf](http://www.dairynz.co.nz/media/621429/the_people_pipeline.pdf)
- Pittaway, S., & Moss, T. (2006). *Contextualising student engagement: Orientation and beyond in teacher education*. Paper presented at the Pacific Rim Conference on First Year in Higher Education. Retrieved from [http://www.fyhe.com.au/past\\_papers/2006/Papers/Pittaway.pdf](http://www.fyhe.com.au/past_papers/2006/Papers/Pittaway.pdf)

- Primary ITO. (2015). *Literacy and numeracy*. Retrieved from <http://www.primaryito.ac.nz/literacy-and-numeracy>
- Primary ITO. (2014). *Annual report, 2014*. Retrieved from <http://primaryito.ac.nz/assets/About/AnnualReports/AR-2014-WEB.pdf>
- Queensland VET Development Centre. (2011a). *What's happening with language, literacy and numeracy in vocational education and training (VET)? Report on the 2010/2011 VET Connect Symposiums*. Brisbane: QVDC. Retrieved from <http://www.vetpd.qld.gov.au/resources/pdf/tla/literacy-numeracy-training.pdf>
- Queensland VET Development Centre. (2011b). *The Crux of the Matter: Language, Literacy and Numeracy and Vocational Education and Training*. Brisbane: QVDC.
- Ryan, R., McDonald, H., Sutton, A., & Doyle, S. (2012). *Formative evaluation of ITO embedded literacy and numeracy projects*. Department of Labour, Wellington: NZ.
- Schutt, R. K. (2011). *Investigating the social world: The process and practice of research*. Sage.
- Schwenger, B. (2010). *Enhancing educational practices through embedding literacy, language and numeracy*. Wellington, NZ: Ako Aotearoa.
- Statistics New Zealand. (2013). *Education and Pacific peoples in New Zealand*. Retrieved from [http://www.stats.govt.nz/browse\\_for\\_stats/people\\_and\\_communities/pacific\\_peoples](http://www.stats.govt.nz/browse_for_stats/people_and_communities/pacific_peoples)
- Tertiary Education Commission. (2010). *Getting results in literacy and numeracy: Contributing to the vision that all New Zealanders enjoy a level of literacy and numeracy that enables them to participate fully in all aspects of life*. Retrieved from <https://ako.aotearoa.ac.nz/community/recommended-resources-ako-aotearoa/resources/pages/getting-results-literacy-and-numeracy-2>
- Tertiary Education Commission, (2012). *Adult literacy and numeracy implementation strategy*. Retrieved from <http://www.tec.govt.nz/Documents/Reports%20and%20other%20documents/Adult-Literacy-and-Numeracy-Strategy.pdf>
- Tertiary Education Commission. (2015). *Literacy and numeracy for adults assessment tool*. Retrieved from <http://www.tec.govt.nz/>

Yin, R. (1989). *Case study research: Design and methods*. Beverly Hills, California: Sage Publications.

## APPENDIX A: SELF-REVIEW CHECKLIST FOR ITOS AND PROGRAMME PROVIDERS

<b>Embedding LLN</b>	
How committed is the organisation to embedding LLN?	
Are plans and objectives for LLN communicated clearly to all relevant stakeholders?	
Does the organisation understand where embedded LLN fits with its processes?	
Does the organisation understand how embedded LLN be managed?	
<b>Leadership</b>	
Does the organisation build a positive culture toward LLN?	
Does the organisation understand where LLN fits in with its plans for professional development & training?	
Does the organisation inform its stakeholders (trainees, tutors, mentors, assessors, content writers) of LLN skill requirements of qualifications?	
<b>Manage Training and Professional Development</b>	
Are training arrangements established that build LLN skills of key stakeholders (tutors, mentors)	
Are training arrangements established which build LLN skills needed by trainees?	
Does the organisation monitor LLN professional development activities?	
Does the organisation build trainees' LLN skills by embedding LLN skill development in qualification resource material?	
Are effective professional development support networks available for stakeholders in LLN training?	

(Adapted from the *ITO Literacy and Numeracy Good Practice Project Summary of Good Practices*)

APPENDIX B: SUGGESTED RUBRIC FOR ASSESSING WRITING SKILLS

Writing Skill	Very Good	Good	Fair	Poor	Points	Comments.
Full/complete	All key points covered	Most key points covered	Some key points covered	Brief, incomplete, significant gaps in explanation		
Suitable to audience	Language and vocabulary completely appropriate to audience. Complexity in tune with audience. Writer demonstrates engagement with audience	Language, vocabulary and complexity of ideas partly in line with audience	Limited signs of use of appropriate language and vocabulary	Language and vocabulary completely inappropriate to audience		
Legibility/punctuation	All writing legible and all punctuation conventions followed	Writing mainly legible, most punctuations followed	Some punctuation conventions followed. Significant amounts of writing difficult to follow	Few punctuation conventions followed. Much writing not legible		