Investigating training advisors in work-based learning in the construction and infrastructure sector: Final Report

ConCOVE Tūhura

10 October 2024

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CONCOVE TŪHURA

The Next Generation Of Construction & Infrastructure Vocational Education

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Executive summary

Background

Allen + Clarke was engaged by ConCOVE Tūhura (ConCOVE) to conduct research on how tertiary providers, that provide work-based learning, facilitate training and support for apprentices and employers in the construction and infrastructure sector before and during the delivery of their apprenticeship programmes. The research was focused on the current practices by, and support for, training advisors. It examined how the six conditions of system change (policies, practices, resource flows, relationships and connections, power dynamics and mental models) impact on the training and support provided by training advisors to learners.

Project methodology

Allen + Clarke commenced this research by developing an understanding of how tertiary education providers facilitate training and support for apprentices and employers before and during the delivery of their apprenticeship programmes. We undertook a literature review, examining published research on work-based training in the construction and infrastructure sector in New Zealand and other comparative jurisdictions. We also spoke to ten 'key informants' from ConCOVE, Te Pūkenga, and construction and infrastructure representative bodies through semi-structured interviews about what is working well, potential challenges, and suggestions for improvement.

We analysed our research findings against the six conditions of systems change framework (detailed below) to identify challenges relating to training advisors in the construction and infrastructure apprenticeship system and to understand how these challenges can be addressed.

Conditions of system change methodology

In 2018, John Kania, Mark Kramer and Peter Senge published a paper exploring the concept of systems change.[1] Their paper, "The Water of Systems Change" outlines a methodology for understanding why "problems" (referred to as challenges in this report) within a system exist, and how the system can be changed to remove those challenges.

Their paper identifies that six interdependent conditions typically play significant roles in holding a system together and sets out the following definitions for the conditions:

- **Policies**: Government, institutional and organisational rules, regulations, and priorities that guide the entity's own and others' actions.
- **Practices**: Espoused activities of institutions, coalitions, networks, and other entities targeted to improving social and environmental progress. Also, within the entity, the procedures, guidelines, or informal shared habits that comprise their work.

[1] Kania, J., Kramer, M., & Senge, P. (2018). The water of systems change.

- **Resource Flows**: How money, people, knowledge, information, and other assets such as infrastructure are allocated and distributed.

- **Relationships & Connections**: Quality of connections and communication occurring among actors in the system, especially among those with differing histories and viewpoints.

- **Power Dynamics**: The distribution of decision-making power, authority, and both formal and informal influence among individuals and organisations.

- **Mental Models**: Habits of thought—deeply held beliefs and assumptions and taken-for-granted ways of operating that influence how we think, what we do, and how we talk.

Literature Review

The literature review examined published research and grey literature on work-based training in the construction and infrastructure sector in New Zealand and other comparable jurisdictions. The key insights from the literature review included:

- A consolidated approach to simultaneous alterations of all conditions of system change to address problems with the construction and infrastructure apprenticeship system has not been attempted in New Zealand, leading to some significant problems remaining in place.
- Significantly different apprenticeship models are successful overseas, indicating that there is potential to make major changes within New Zealand's apprenticeship system to address problems that remain in place.
- Alterations to structural and relational conditions could be used to support more difficult, long term, transformative changes.
- Understanding problems within the construction and infrastructure apprenticeship system requires applying a systems change lens not just to the system as a whole, but also to individual organisations operating within the system.
- Training advisors are both affected by, and able to contribute to altering, all six conditions of system change, making them potentially highly influential actors within the construction and infrastructure apprenticeship system.
- There may be a need to alter multiple, or even all, of the six conditions of system change simultaneously to embed long-term changes in a system.

Overall, the literature review indicated a need for a holistic approach to analysing data collected during engagement with stakeholders, actively exploring and considering the relationships between conditions operating at all levels of the hierarchy.

Application of six conditions of systems change methodology

Based on survey and interview data, *Allen + Clarke* identified the following challenges relevant to the role of training advisors in the construction and infrastructure apprenticeship system:

- Training advisors do not always have the capacity to adequately support their apprentices and employers.
- Work-based learning (WBL) providers do not always enable training advisors to adequately support their apprentices.
- Apprentices do not always feel empowered to advocate for themselves.
- There is a reluctance to value soft skills in training advisors, despite the acknowledgement that these skills are just as important as technical skills.
- There is limited support for apprentices who wish to switch trades part-way through an apprenticeship.
- There is a lack of understanding of the roles, responsibilities, and rights of the different actors within the tripartite relationship.
- Not all apprentices (and employers) have a clear understanding of the apprentice progression pathway.

To address these challenges, *Allen + Clarke* has discussed a suite of alterations to conditions in the construction and infrastructure apprenticeship system that can be implemented by WBL providers. These challenges are discussed in depth in **section 3**.

On the following page **Table 1** contains recommendations for WBL providers that respond to the alterations that this report discusses. The recommendations provide high-level guidance to support WBL providers to implement the alterations discussed in this report and have been developed to respond to significant variation in the contexts that WBL providers operate. These recommendations are underpinned by two recommendations for system level alterations to mental models, which are presented below.

System level recommendations

Recommendation 1: Adopt a consistent system-level understanding of the navigating role of training advisors in construction and infrastructure apprenticeships.

Recommendation 2: Adopt non-competitive, collaborative understandings of construction and infrastructure apprenticeship actors' roles in system-wide workforce development.

Table 1: Recommendations for WBL providers

Condition	Recommendation
Mental models	WBL providers should consider adopting the title 'learning navigator' for their training advisor roles as part of supporting transformative change within the construction and infrastructure apprenticeship system.
	WBL providers should begin collective discussions with a view to agreeing processes that enable training advisors to facilitate the transfer of apprentices between trades.
Power dynamics	WBL providers should ensure that training advisors consistently reinforce apprentices' agency in the apprenticeship program. This should include communicating the extent and possible effects of that agency and how it can be exercised.
	WBL providers should ensure that they enable training advisors to exercise agency in the apprenticeship program. In particular, training advisors should be supported to determine their appropriate case load at a given time, accounting for the highly variable time required to support different apprentices at different stages of apprenticeships.
Relationships and connections	WBL providers should ensure that training advisors are provided adequate support to develop and maintain strong, trusting relationships with apprentices and employers, including providing adequate time to develop and maintain these relationships.
	WBL providers should build mutually supportive relationships with other WBL providers, particularly with those providing training in other trades, to facilitate the transfer of apprentices between WBL providers and trades.
Policies	WBL providers should undertake regular comprehensive reviews of their internal policies with a view to ensuring that training advisors are only required to carry out activities that directly relate to their navigating function, and that they are adequately supported by WBL providers to do so.
Practices	WBL providers should undertake regular comprehensive assessments of the current practices of their training advisors with a view to identifying those practices that best enable training advisors to support apprentices and employers to navigate the training journey. Those practices should then be codified in policy.
Resource flows	WBL providers should work to remove barriers to the flow of apprentices within the construction and infrastructure apprenticeship system, including by supporting apprentices to change WBL provider and/or employer and/or vocation where appropriate.
	WBL providers should undertake comprehensive reviews of the information that they provide, via training advisors, to apprentices' employers regarding their progress. This is to ensure that employers are consistently provided the information necessary to support apprentices to efficiently progress through their apprenticeships.

1 Introduction

1.1 Purpose

Allen + Clarke has been engaged by ConCOVE Tūhura (ConCOVE) to conduct research on how tertiary providers facilitate training and support for apprentices and employers before and during the delivery of their apprenticeship programmes, including on current practices by and support for training advisors. The project is specifically focused on the construction and infrastructure sector.

This report is designed to provide ConCOVE with key findings from this research. It identifies challenges in the construction and infrastructure apprenticeship system and recommends actions that system actors can take to address these challenges.

1.2 Background

Established in 2020, ConCOVE is the national centre of vocational excellence for the construction and infrastructure sector. ConCOVE plays a significant role in connecting and aligning industry, learners, and vocational education to re-imagine clear, equitable, and supported career pathways within the construction and infrastructure sectors. It helps drive innovation and excellence in vocational education by having inclusive, sustainable, and productive construction and infrastructure sectors with clear career pathways supported by a future focussed vocational education system, honouring Te Tiriti o Waitangi.

Apprenticeships are an effective way for learners to advance their career in the construction and infrastructure sector. Employers who take on apprentices are responsible for ensuring the apprentice gains the necessary knowledge and skills required for their NZQA qualification. They are required to provide adequate training and supervision, offer a suitable range of work so the apprentice can meet the qualification requirements and gain work experience to appropriately prepare them for employment, and provide feedback on the skills and knowledge demonstrated by the apprentice.

Each apprentice is assigned a training advisor from the relevant tertiary education provider. The training advisor is responsible for supporting the apprentice's progress through their NZQA qualification. Training advisors also assist employers to help apprentices learn, and mentor apprentices to enable them to become competent tradespeople. Some challenges have been identified with this support. For instance, some employers and other sector stakeholders consider that training advisors are responsible for delivering training (as opposed to supporting the training).

1.3 Scope of the research

To build capacity for greater success for apprentices participating in vocational education in the construction and infrastructure sector, this research investigates the current state of delivery of this support. This includes the current system conditions as well the identification of alterations to the system conditions that might better support the experience of apprentices and employers.

Effective facilitation of training and support could promote the ability of an apprentice to sustain a fulfilling career and continue to be a lifelong learner. It may also contribute to better training outcomes, including completion rates and timing. The identification of best practices, training needs, and greater clarity of their role may benefit training advisors' own career progression and job satisfaction.

The research has explored how the six conditions of systems change (policies, practices, resource flows, relationships and connections, power dynamics and beliefs) impact on the training and support training advisors provide to learners. This has involved identifying the challenges that have the most impact on learner outcomes, and identifying the conditions that have the most potential to address those challenges. The scope of the research includes:

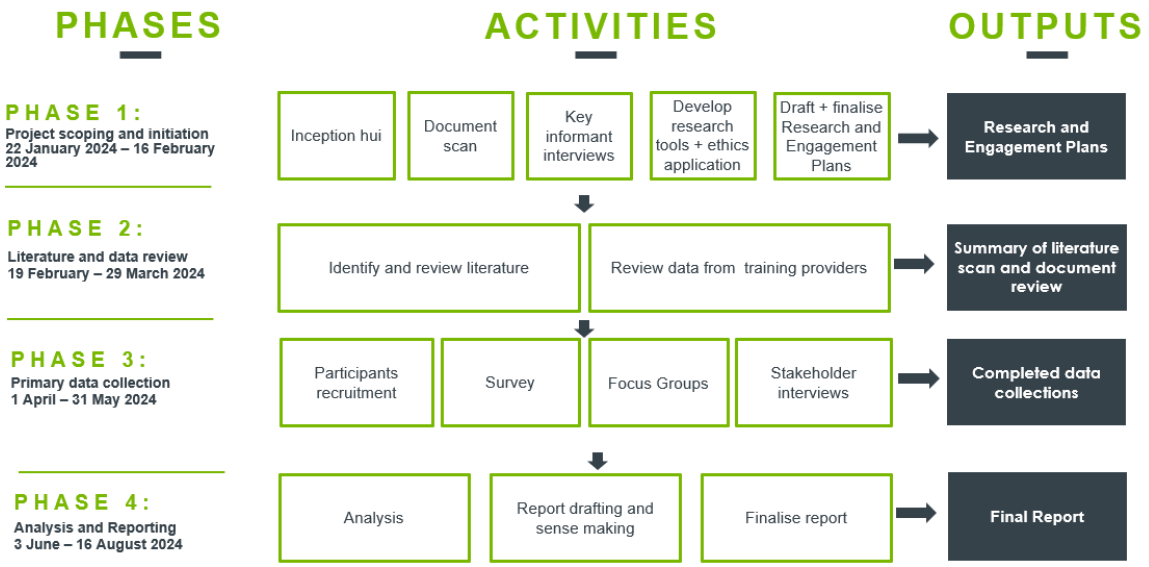
- a review of key documents, provided by ConCOVE, to establish a contextual background for the research
- examination of published research and grey literature on work-based training in the construction and infrastructure sector in New Zealand and other comparative jurisdictions
- data collection via engagement with employers, Work-based learning (WBL) providers, training advisors, and apprentices through one-on-one interviews, focus groups, and a survey
- a review of data from education and WBL providers, including the delivery model used by providers, and progression, completion rates, and timing for each provider
- analysis of qualitative and quantitative data collected through the above methods
- the development of recommendations to alter conditions of systems change to address challenges with the role and utilisation of training advisors within the construction and infrastructure apprenticeship system.

Out of scope topics for this research are exploration of traineeships, examination of the content of courses, and cost-benefit analysis.

1.4 Our approach

The research was undertaken in four stages, as summarised in **Figure 1** below. For the purposes of efficiency, some activities overlapped and were completed concurrently. This report represents work as part of Phase 4 of this process.

Figure 1: Summary of methodology



Allen + Clarke commenced this research by developing an understanding of how tertiary education providers facilitate training and support for apprentices and employers before and during the delivery of their apprenticeship programmes. We undertook a literature review, examining published research on work-based training in the construction and infrastructure sector in New Zealand and other comparative jurisdictions. We also spoke to ten 'key informants' from ConCOVE, Te Pūkenga, and construction and infrastructure representative bodies through semi-structured interviews about what is working well, potential challenges, and suggestions for improvement.

To capture feedback on the training and support provided to apprentices and their employers during a work-based training programmes, *Allen + Clarke* gathered administrative data from different WBL providers offering in-work training programmes on the progression, and completion rates of their apprenticeship programmes. We also collected quantitative and qualitative data from employers, training advisors and apprentices through a survey, focus groups and one-on-one interviews. Written feedback was also received from some participants.

We received 235 responses to the online survey, from apprentices (143), training advisors (48), and employers/workplace trainers (44). We held five online workshops (including two with training advisors and one with employers) between 9 May – 4 June 2024. We also spoke to two individuals who could not attend one of the scheduled focus groups. To maximise engagement, we adopted a flexible approach and offered interviews with stakeholders that could not attend the scheduled workshops. Interviews and workshops were conducted online. Key insights were identified from the workshop/interview notes and regularly reported to ConCOVE. All data was synthesised and analysed to form the findings outlined in this report.

ConCOVE also established an Advisory Group, consisting of representatives of several key sector organisations, to support the research. The Advisory Group provided guidance to support the data collection and analysis at several stages of the research.

1.5 Definitions

This report has aligned the definitions of the construction and infrastructure sectors with other work undertaken by ConCOVE, as well as Workforce Development Councils (Waihanga Ara Rau and Hanga Aro Rau). These definitions are set out in **Table 2**, below, along with other key terms used throughout this report.

Table 2: Definitions used in this report

Sector Group	Examples of industries included
WBL providers	Work-based learning providers who employ training advisors.
Construction	Carpentry services, roofing services, electrical services, kitchen and bathroom design, air conditioning and heating services, and plumbing services.
Employer	When used in relation to apprentices is used to refer to the business that provides an apprentice with their work-based training, including in the context of apprenticeships where the apprentice is employed by the WBL provider but receives their work-based training from a host business.
Infrastructure	Electricity transmission and distribution, gas supply, sewerage and drainage services, and water supply.
Support services	Architectural services, engineering design and engineering consulting services, surveying and mapping services, hardware and building supplies retailing, floor coverings retailing, electrical, electronic and gas appliance retailing, furniture and floor coverings wholesaling, and plumbing goods wholesaling.
Training advisor	The person employed by the WBL provider to act as a conduit between learners, WBL providers, and employers.
Tripartite relationship	The three-party relationship consisting of the WBL provider (usually represented by the training advisor), the learner (usually an apprentice) and the apprentices' employer.

The industries that fall within each sector group are set out in **Appendix 1**. These are based on a list of Australia New Zealand Standard Industrial Classification (ANZSIC) industry codes.

1.5.1 What is work-based learning?

Work-based learning (or workplace or work related learning – these terms are often used interchangeably) is learning that occurs in real work environments through participation in authentic work activities and interactions (Atkinson, 2016[2]). More generally, it has been described as "*any training that relates directly to the requirements of the job on offer in* [an] *organisation*" (Siregar, 2018[3]).

[2] Atkinson, G. (2016). *Work-based learning and work-integrated learning: fostering engagement with employers*. NCVER, Australia. Retrieved from **https://www.ncver.edu.au/research-and-statistics/publications/all-publications/work-based-learning-and-work-integrated-learning-fostering-engagement-with-employers**

[3] Siregar, S. (2018). A study of work based learning for construction building workers. *Journal of Physics: Conference Series,* 970, 012024.

It is used to directly connect learners with work in the workplace. Work-based learning programmes are formal, structured, and strategically organised by instructional staff, employers and sometimes other groups to link learning in the workplace to a student's classroom-based learning experiences. These programmes have formal instructional plans that relate the student's worksite learning activities to their career goals. In most cases, these experiences lead to academic qualifications (Siregar, 2018).

There are several different approaches to work-based learning in the vocational educational sector. In some models (such as apprenticeships), the learner is an employee who is located in the workplace more than in the classroom, which contrasts with other models where learners are primarily students in WBL providers, with only some time spent in the workplace or undertaking work-related projects (Atkinson, 2016).

There are three main types of work-based learning in New Zealand. These are:

- **Industry training apprenticeships**: These are the most well-known form of work-based learning, providing opportunities for learners to establish careers in new occupations. They are high-intensity and high-frequency training programmes at Levels 4 or above, and include apprenticeship programmes, and programmes at equivalent levels and credit loads, as well as the remaining modern apprenticeship programmes.
- **Managed apprenticeships:** These are apprenticeship programmes involving non-industry training learners who are enrolled at non-traditional industry WBL providers, for example, Te Pūkenga subsidiaries.
- **Traineeships:** These are programmes involving industry training learners that provide short programmes, often at lower levels. Traineeships often cater for established workers and employers who need supplementary skills for their workers to help them continue to adapt to changing technologies and other working conditions. Traineeships are also used to train new employees.

While there are other forms of work-based learning, such as simulation and placements, training advisors are not involved in these forms of work-based learning. The report focuses only on the involvement of training advisors in industry training apprenticeships and managed apprenticeship programmes (apprenticeship programmes).

1.5.2 What is a training advisor

During their training, apprentices are supported by a range of people in different roles (Mikkonen, 2017). These range from workplace instructors (namely their employer and work colleagues) to academics working for the relevant vocational WBL provider (e.g. Industry Training Organisation (ITO) and Private Training Establishment (PTE) etc) including lecturers, educators, teachers, and instructors.

All apprenticeship programmes use the services of intermediaries, such as training advisors, to support learners during their training programmes and assess their skills and competencies. This is typically a non-teaching role designed to decouple support and assessment from education and training (Esmond, 2018). Katz and Elliot (2020) noted that "*intermediaries provide immense value to the apprenticeship system and in many cases are the key players in making apprenticeships a reality*".

This role is mostly performed by training advisors; however, some WBL providers share this function across a range of different intermediaries, such as workplace supervisors, mentors, assessors, and guides. Further, the context in which apprenticeships take place in New Zealand varies greatly, both between and within the construction and infrastructure trades. Variable factors range from the size and maturity of the business that employs an apprentice on a day-to-day basis through to the nature of the legal relationship between the apprentice, the WBL provider, and the employer.

These factors have led to differences in the nature and extent of the role and responsibilities of training advisors employed by different WBL providers. While some are required to assess the work of apprentices, others are not. Similarly, some training advisors are responsible for placing an apprentice with a host business, while many are not. Our research indicates that some training advisors look after less than 30 apprentices, while others are responsible for over 200 apprentices. Given these differences, it is not uncommon for training advisors to be referred to by another job title, such as customer service account managers and regional managers.

Given this variation in their roles and responsibilities, it is difficult to provide a coherent, consistent, and common definition that encompasses all their current functions. However, through our engagements with relevant stakeholders, we noted these individuals shared a common and fundamental function across the various contexts and responsibilities; namely that of a **Learning Navigator**.

In any culture, navigators are recognised as highly skilled, highly valuable individuals who are both at the centre and essential to the success of, any journey. They are required to understand the systems in which they operate and how to utilise the tools available to them to guide a group of people to safely and efficiently arrive at the intended destination. They must also have the knowledge and skills necessary to support those they are guiding to respond appropriately to challenges that arise during the journey. Their effectiveness therefore depends on a combination of their own knowledge and skills, the availability and quality of the tools they can access, and their relationships with the other people involved in the journey.

Redefining the position as a **Learning Navigator** is a proposed alteration to the mental models of system actors. For this change to be successful, a further transformative change is required. WBL providers must understand their role and responsibility within the system as one of facilitating the development of the construction and infrastructure workforce as a whole, rather than merely the sub-sectors within which they offer apprenticeships. This change in thinking is essential, as it will help ensure the role of the **Learning Navigator** is focused on guiding apprentices along the journey that best suits their needs, as opposed to one that meets those of the WBL provider. Given this is an alteration to an implicit, transformative condition, the redefinition of the function and the responsibility of WBL providers require, and must be supported by, changes to structural and relational conditions.

This report describes the conditions in apprenticeship systems that determine the successfulness of a training advisor (or **Learning Navigator)** at guiding apprentices, employers, and WBL providers through the apprenticeship journey. These conditions will contribute to a thriving construction and infrastructure sector, with a competent, motivated, and passionate workforce.

1.6 What are the six conditions of systems change?

1.6.1 Framework overview

In 2018, John Kania, Mark Kramer and Peter Senge published a paper exploring the concept of systems change.[4] Their paper, "*The Water of Systems Change*" outlines a framework for understanding why "problems" within a system exist, and how the system can be changed to remove those problems. The framework identifies six interdependent conditions that typically play significant roles in holding a system together.

These conditions exist with varying degrees of visibility to system actors, driven by how explicit or tangible they are to most people. While these conditions can be independently defined, measured and targeted for change, they are also intertwined and interact with each other. The interaction can be mutually reinforcing (e.g., a change in community mental models may trigger a policy change) or counteracting (e.g., scaling effective practices may be thwarted by poor relationships between players in the system). Changemakers need to ensure they are aware of the relationships, power dynamics, and especially the underlying mental models embedded in the systems in which they work.

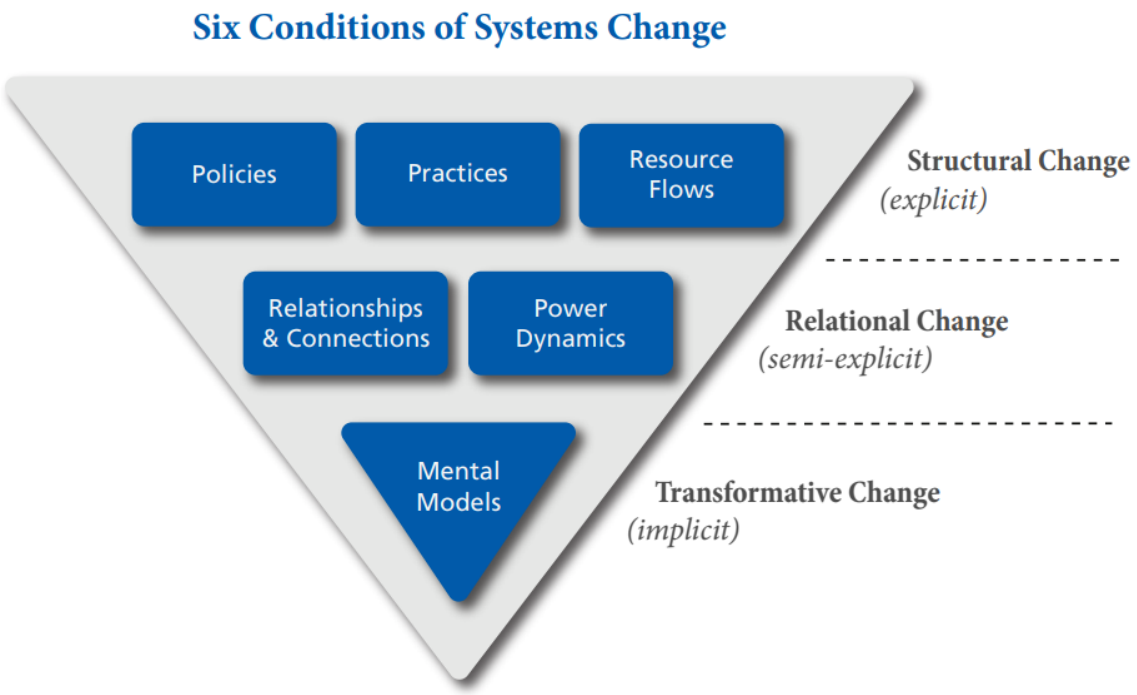
The framework sets out the following definitions for the six conditions:

- **Policies:** Government, institutional and organisational rules, regulations, and priorities that guide the entity's own and others' actions.
- **Practices:** Espoused activities of institutions, coalitions, networks, and other entities targeted to improving social and environmental progress. Also, within the entity, the procedures, guidelines, or informal shared habits that comprise their work.
- **Resource Flows:** How money, people, knowledge, information, and other assets such as infrastructure are allocated and distributed.
- **Relationships & Connections:** Quality of connections and communication occurring among actors in the system, especially among those with differing histories and viewpoints.
- **Power Dynamics:** The distribution of decision-making power, authority, and both formal and informal influence among individuals and organisations.
- **Mental Models:** Habits of thought—deeply held beliefs and assumptions and taken-for-granted ways of operating that influence how we think, what we do, and how we talk.

As shown below in **Figure 2**, these conditions can be organised in a hierarchical framework according to the nature of change to a system that can be expected from their alteration.

[4] Kania, J., Kramer, M., & Senge, P. (2018). The water of systems change.

Figure 2: The six conditions of systems change[5]



Utilising the framework, understanding a particular problem with a system and how to shift it requires an understanding of the relevant conditions at each level of the hierarchy, as well as the interactions between conditions at the same and different levels of the hierarchy. These interactions necessitate a holistic approach to addressing problems within the construction and infrastructure apprenticeship system, one that accounts for the conditions as they are currently and that also accounts for the effect of a proposed change in one condition on the other conditions.

1.6.2 Applying the framework

Utilising the framework first requires the identification and definition of the problems within the system. In this context, "problems" refer to circumstances that cause difficulties for both system actors and the system itself. The existence of such problems creates inefficiencies within the system and increases the likelihood of system failures occurring.

Having identified the relevant problems, the next step is to understand the existing conditions, and their interactions, which have created and that continue to embed the problem within the system. Following this, proposed alterations to those conditions can be identified and their practicality assessed. The final step is to consider the interactions between the proposed altered conditions to ensure that any alterations are mutually reinforcing, rather than counteracting.

[5] Kania, J., Kramer, M., & Senge, P. (2018). The water of systems change.

2 Review of literature and workforce data

2.1 Literature Review

At the outset of the research, a literature review was conducted to support subsequent steps in the research project. The literature review examined published research and grey literature on work-based training in the construction and infrastructure sector in New Zealand and other comparable jurisdictions. 72 documents were included in the review based on their relevance to the research questions and the transferability of their findings to the New Zealand context. These documents came from a range of education systems across Western Europe, North America, Australia, and the United Kingdom. The findings of the literature review were incorporated under five focus areas:

- the apprenticeship system in New Zealand
- features of apprenticeships
- developing strong workplaces
- the role of training advisors
- the role of mentoring in apprenticeships.

The literature review, including the research questions and methodology employed is set out in **Appendix 2**.

As part of the literature review, a systems change lens was applied to the review findings to understand, examine, and address problems within the construction and infrastructure apprenticeship system. Key insights include:

- A consolidated approach to simultaneous alterations of all conditions of systems change to address problems with the construction and infrastructure apprenticeship system has not been attempted in New Zealand, leading to some significant problems remaining in place.
- Significantly different apprenticeship models are successful overseas, indicating that there is potential to make major changes to New Zealand's apprenticeship system to address problems that remain in place.
- Alterations to structural and relational conditions could be used to support more difficult, long term, transformative changes.
- Understanding problems within the construction and infrastructure apprenticeship system requires applying a systems change lens not just to the system as a whole, but also to individual organisations operating within the system.
- Training advisors and WBL providers are both affected by, and able to contribute to altering, all six conditions of systems change, making them potentially highly influential actors within the construction and infrastructure apprenticeship system.
- There may be a need to alter multiple, or even all, of the six conditions of systems change simultaneously to embed long-term changes in a system.

These insights, and the underlying literature, provide a strong foundation for subsequent phases of this research project. In particular, they indicate a need for a holistic approach to analysing data collected during engagement with stakeholders, actively exploring and considering the relationships between conditions operating at all levels of the hierarchy.

2.2 Data on work-based learners

In 2022, the total number of industry training learners in New Zealand was 158,585 learners, an increase of 4.4 percent from 2021 (up 6,695 learners).[6] The number of trainees increased by 1.6 percent to 75,570 (42,935 males and 32,270 females), while apprentices increased by 7.4 percent to 84,275 (68,930 males and 15,080 females). This was the highest total industry training participation since 2010.

In 2022, 3 percent of the New Zealand workforce were apprentices. Of those apprentices, 18 percent (15,080) were females, an increase from 17 percent in 2021. In terms of age distribution, 51,400 apprentices (61 percent) were aged under 30 years, while 13,235 apprentices (15.7 percent) were 40 years or older. While the largest proportion of apprentices were European (52,325 or 62.1 percent), Māori and Pasifika made up 19.2 percent (16,160) and 8.5 percent (7,175) respectively. While 13,155 apprentices completed a qualification, 11,640 apprentices (13.8 percent) withdrew from their course. The construction industry hosted the highest number of apprentices (44 percent or 37,255), followed by retail (13 percent or 10,840), and manufacturing (10 percent or 8,460).

In 2022, 2.7 percent of national workforce were trainees. 43 percent of trainees were women: a drop of three percent from 2021. 50,070 trainees (66.3 percent) were under 30 years, and 25,505 trainees (33.8 percent) aged 40 years or older. Only 49.2 percent (37,170) of trainees were European, while Māori and Pasifika made up 19.1 percent (14,430) and 9.9 percent (7,500) respectively. While 23,755 trainees completed a qualification, down 2.6 percent on the previous year, 15,025 trainees (19.9 percent) withdrew from their course. The industries with the most trainees were: healthcare and social assistance (17 percent or 12,965), manufacturing (14 percent or 10,740), and agriculture, forestry, and fishing (11 percent or 8,455).

2.2.1 Māori and Pacific Peoples

In 2003, Māori represented 14 percent and Pasifika represented 1.9 percent of Modern Apprenticeships. By December 2010, representation had risen to 16 percent Māori and 7 percent Pasifika engaged in apprenticeship (Holland, 2013). While Alkema (2016) observed that the rates of Māori and Pasifika subsequently declined between 2010 and 2016, as noted above by 2022 the rates for Māori had risen again to 19.2 percent, while the rates for Pasifika were 8.5 percent.[7]

Currently, there is little evidence to draw on regarding Māori educational outcomes in vocational education and training. While undertaking a review of literature relating to Māori experiences and achievement in the building and construction sector, Smiler (2023) noted a

[6] https://www.educationcounts.govt.nz/statistics/new-zealands-workplace-based-learners#1
[7] https://www.educationcounts.govt.nz/statistics/new-zealands-workplace-based-learners#1

distinct lack of research within the construction and infrastructure trade conducted from a Kaupapa Māori perspective, as well as little research that could be used to guide evidence-informed interventions for Māori apprentices.

2.2.2 Women

A report by the Human Rights Commission in 2006 emphasised how women have historically been significantly underrepresented in apprenticeship programmes, comprising just 8.5 percent of the Modern Apprenticeship scheme at the time (and only 0.5 percent in the building and construction industry). Despite ongoing efforts to raise the profile of women in trade, traditionally male-occupational trades have continued to be dominated by men.

Across 251 apprentices, Chan (2011) found traditional distributions of gender in trade occupations remained, with women more likely to be represented in industries such as hairdressing, hospitality, and dairy, compared with little to no representation in typically male-dominated industries such as building, engineering, and joinery. Currently only 18 percent of apprentices are females.[8]

[8] https://www.educationcounts.govt.nz/statistics/new-zealands-workplace-based-learners#1

3 What we heard about the apprenticeship system

From the literature review, survey data and stakeholder interviews, we noted that the apprenticeship system in the construction and infrastructure sector is, overall, working well. We identified many mental models, relationships, power dynamics, polices, practices, and resource flows that contribute positively to the current state of the system.

However, the extent to which these positive conditions exist across the system varies, giving rise to several system-level challenges, which are discussed in this section. The positive conditions that we heard are set out in, and have formed the foundations of, the subsequent section of this report, which describes the actions system actors should undertake to overcome the challenges we have identified and embed what works well throughout the system.

Table 3 below provides an overview of the system-level challenges and the associated level of impact on learners, training advisors, employers, and the construction and infrastructure system overall.

Table 3: Impact assessment

Challenge	Impact on learner	Impact on TA[9]	Impact on Employer	Impact on system[10]
Training advisors do not always have the capacity to adequately support their apprentices and employers.	H[11]	H	H	H
Training advisors are not always enabled to adequately support their apprentices.	H	H	M	M/H
Apprentices don't always feel empowered to advocate for themselves.	H	M	M	M
There is a reluctance to value soft skills in training advisors, despite the acknowledgement that these skills are just as important as technical skills.	H	H	H	H
There is limited support for apprentices who wish to switch trades part-way through an apprenticeship.	H	M	M	H
There is a lack of consensus of the roles, responsibilities, and rights of the different actors within the tripartite[12] relationship.	H	H	H	H

[9] Training advisor
[10] Apprenticeship system
[11] H = high impact; M = moderate impact; L = low impact
[12] The tripartite relationship or structure, within this context, is the relationship between learners/apprentices, WBL providers, and workplace trainers/apprentice employers.

Challenge	Impact on learner	Impact on TA[9]	Impact on Employer	Impact on system[10]
Not all apprentices (and employers) have a clear understanding of the apprentice progression pathway.	H	M	H	M

Understanding the challenges and successes of the current state provides a baseline to identify opportunities for an improved future state through the lens of the six conditions of systems change. This section outlines these challenges in more detail, and the following section provides an analysis of the findings through the conditions of systems change.

3.1 The challenges with the apprenticeship system

3.1.1 Training advisors do not always have the capacity to adequately support their apprentices and employers

Many stakeholders advised that training advisors are often unable to provide the level of support to their apprentices that is sometimes required. Training advisors frequently raised this themselves. A lack of time and heavy caseloads were cited as the most likely causes of their inability to adequately support apprentices. For example, the word "time" came up 88 times across 21 stakeholder engagements, providing an indication of how central time management is to the work of training advisors – particularly, training advisors having enough time with their apprentices and workplace trainers to build and facilitate strong relationships. Importantly, the time a training advisor might be required to spend with a particular apprentice or employer can vary significantly, depending on the characteristics of the apprentice or employer.

In one of the apprentice focus groups, stakeholders said that there is often *"not a lot of one-on-one face time, but it was available if requested"* and that it would be useful for training advisors *"to spend more time on-site and make more of an effort getting to know their apprentice/s*". In another focus group with training advisors, one stakeholder said that:

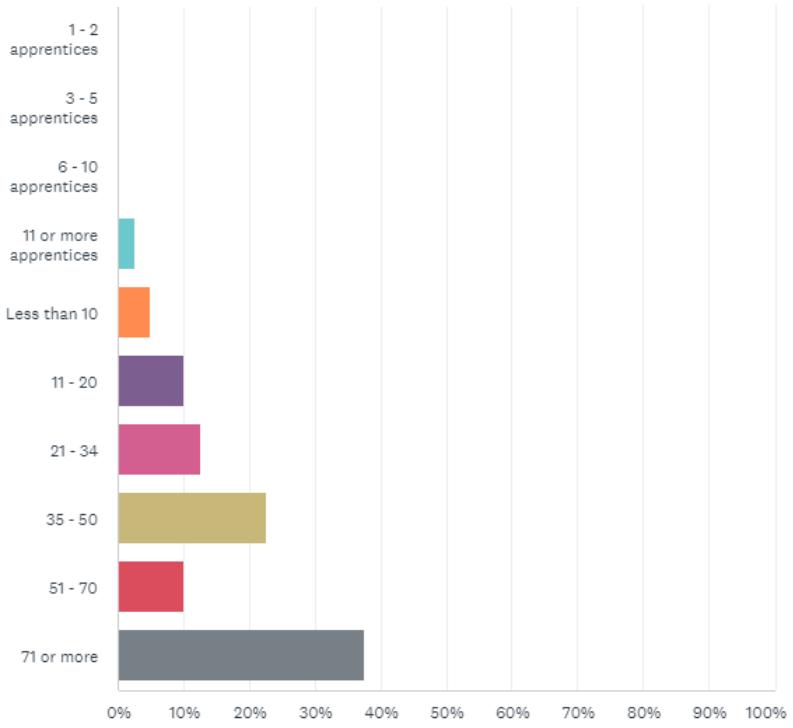
> *"Having less trainees and less time pressure means you can take time and spend it with the trainees and unpack broader issues such as issues at home or outside the apprenticeship" and that "In our role you have to be generous with your time – should be led by what's needed by the learner on the day".* (Training Advisor)

Another training advisor noted that when they have been asked by their apprentices for help:

> *"We often don't have time to help and have to say no – push the responsibility back on the learner"* and that *"the workload is never done – you want to spend the time with the apprentices but it's really hard. We do have support from [*TA's employer*] now, but haven't in the past."* (Training advisor).

Seventy percent of training advisors survey respondents who answered the caseload question (see **Figure 3** below) indicated that they had a caseload of more than 35 apprentices, while the biggest group was those with caseloads of 71 apprentices or more. Based on our qualitative data collection, caseloads of 71 or more was not seen as being particularly high within the context of the apprenticeship system. However, large caseloads increase the number of site visits, assessments (if applicable), and relationships training advisors need to maintain. The higher the number, the more challenging it is to provide the time-intensive support required by some apprentices and workplace trainers.

Figure 3: How many apprentices do you currently support?

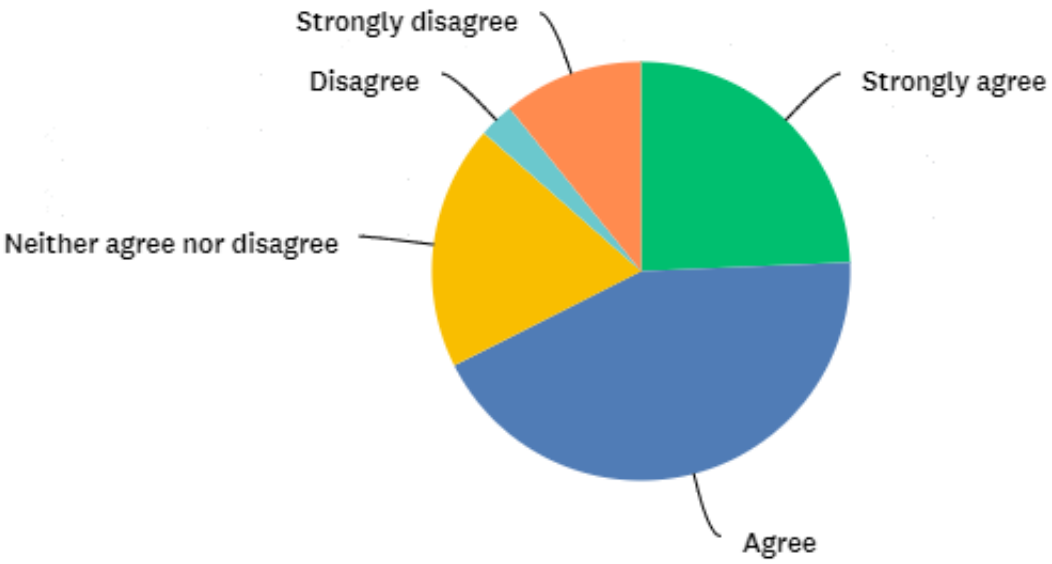


3.1.2 Training advisors are not always enabled to adequately support their apprentices

Several training advisors noted that some WBL providers offered robust training and ongoing development and support, which they said enabled them to adequately support their apprentices.

Responses to the survey question on this topic (see **Figure 4** below) shows the variation in satisfaction in on-job training that training advisors have experienced. The inconsistent approach to training, ongoing development and support that training advisors receive has the potential to negatively impact the quality of navigation provided through apprenticeships at both an individual and system level.

Figure 4: The training I have received from my tertiary provider has been satisfactory



In the focus group with training advisors, one stakeholder stated that his *"training at* [previous employer] *was pretty bad, the job wasn't explained well to me when I started",* yet another stakeholder said the training they had received at the same employer was good – showing the variation in experiences even within the same company.

Most stakeholders highlighted the importance of the role training advisors in the training systems. However, in some instances, stakeholders highlighted poor attitudes towards supporting the important work training advisors undertake: "*There's not much training at* [previous employer]*, culture was that being a TA wasn't hard and didn't require that much effort which isn't the case."* This attitude was not verbalised so explicitly during the course of our engagement, but the lack of respect for the work that training advisors do was evident in the way that some stakeholders spoke about their experiences with training advisors.

We also heard examples of support systems that are working well. Some examples include:

- A dedicated Pastoral Care role within a WBL provider that training advisors can refer their apprentices to when required.
- Buddy systems such as ride-alongs or work-shadowing that allow for peer support between new or junior training advisors and more senior training advisors.

While we acknowledge that these types of initiatives are limited to the capability of the individuals operating in these roles, there could be scope for stronger supports (such as these) from WBL providers. These positive experiences show there are established tools and practices that are providing support for training advisors. However, our findings indicate that these tools are not currently used at a system level.

3.1.3 Apprentices do not always feel empowered to advocate for themselves

Power dynamics can significantly impact relationships on-site, and training advisors can play a key role in advocating for apprentices. Some apprentices said (either explicitly or implicitly) that they would like their training advisors to be more involved in their relationship with the workplace trainer/employer and act as a buffer, *"so power isn't all in the hands of the employer."* Some apprentices further emphasised that the balance of power is often held by employers/workplace trainers, which can have detrimental impacts on an apprentice's ability to progress: *"It can be messy to get things signed off – sounds complicated. There's a lot of room for people to suffer at the hands of their employer."*

Some stakeholders highlighted that apprentices are not allowed to fill a subcontractor or contractor role directly with a client, and that training advisors should (and often do) have a degree of oversight regarding this. These stakeholders considered it would be appropriate for training advisors to ensure that apprentices are aware of this regulation and that they aren't at risk of exploitation or unintended infringement.

Training advisors have the ability to balance the power dynamics between apprentices and their employers, advocate on behalf of apprentices, and mentor apprentices to advocate for themselves.

3.1.4 There is a reluctance to value soft skills in training advisors, despite the acknowledgement that these skills are just as important as technical skills

Almost all stakeholders agreed that training advisors wear several different hats, including (but not limited to) technical/sector specific navigator, academic navigator, assessor, mentor, advisor, and sometimes even acting as a counsellor. Most stakeholders agreed that possessing the soft skills required to adequately perform these functions – or being willing and able to develop them – was important:

> *"It's important that training advisors have good interpersonal, communication, relationship skills – need to have someone to talk to. Doesn't matter if they have great technical skills – people skills much more important. Technical skills and education comes from employer." (*Apprentice).

Some stakeholders highlighted that soft skills were just as important to the apprenticeship journey as technical skills:

> *"Retention of apprentices can come from knowledge in how to teach as well as the practical experience in that trade." (*Apprentice employer/workplace trainer).

However, prioritisation of these skills when recruiting training advisors appears to be lacking and was noted by many as being a point of dissonance in the system:

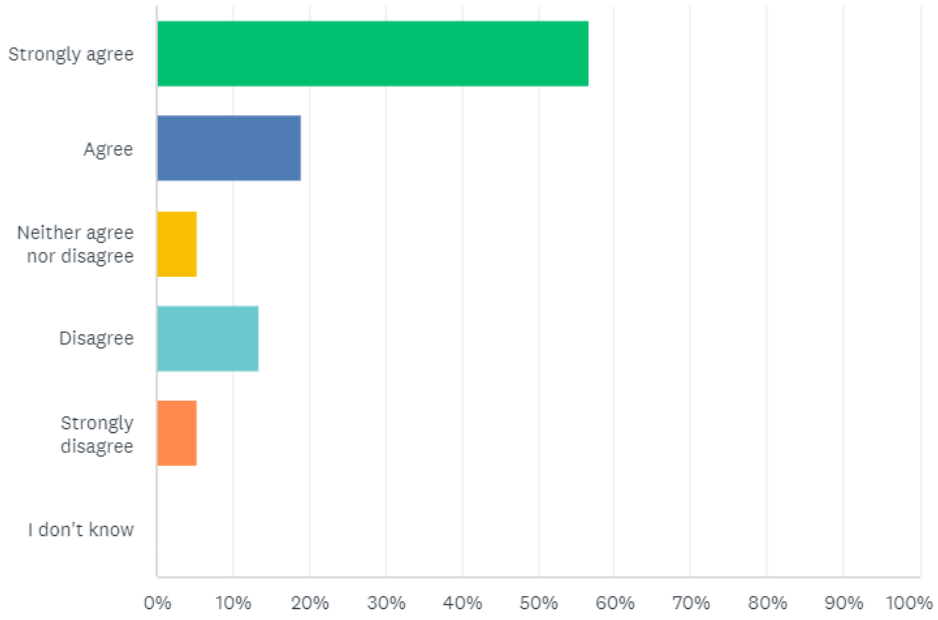
> *"Soft skills are hard, some people have them some people don't. Needs to be an important part of recruitment. Technical skills are still important too though – with hands on experience. Good literacy and numeracy to help out and effectively QA issues with apprentices."* (Education provider).

It was also evident that many stakeholders felt that:

> *"Technical skills are also important as* [training advisors] *need to be able to help when apprentices are reaching out for specific reasons. Also important that* [training advisors] *can provide that technical guidance also as it relates to apprentices studies (as well as on the job work)."*

This was reinforced by the survey results which showed that most training advisors had previously worked in the trade that they were now advisors in (see **Figure 5**).

Figure 4: Prior to working as a Training Advisor, I worked in the specific areas that the apprentice(s) are studying



Some stakeholders noted that technical knowledge is important as it enables training advisors, particularly those conducting assessments, to identify gaps in an apprentice's knowledge or skills:

> *"It helps [*when training advisors have technical expertise*], as some people aren't good at communication. Some apprentices have the skills but cannot communicate this to someone who doesn't understand building. Can't communicate the process they follow. An experienced builder will understand the activity even if the process is different."* (Education provider).

The lack of a unified view of what experience makes a 'good' training advisor within the sector has led to a culture of categorising training advisors as a 'Jack of all trades' and – importantly – 'a master of none'. Due to the lack of value placed on soft skills within an environment that traditionally values technical skills, some stakeholders explicitly (or implicitly) said that the work training advisors do isn't always respected within the construction and infrastructure industry.

3.1.5 There is limited support for apprentices who wish to switch trades part-way through an apprenticeship

We heard from some stakeholders that not all apprentices end up in a trade that best aligns with their goals and aspirations. One stakeholder noted that it's not uncommon for apprentices to be encouraged (or even coerced) into a particular trade by family for reasons such as a family history or family business within a particular trade.

In one focus group, the training advisors attending said that some of the apprentices they have worked with are *"just not in the right trade"* but that *"it's up to the learner as to whether they are up to the challenge".* They noted that while training advisors support any decisions apprentices make to change trade qualifications, *"part of that support needs to be emphasising the need for apprentices to take ownership of their learning journey."*

Despite being perfectly situated to identify situations such as those described above, under the existing system conditions, training advisors and WBL providers are financially disincentivised from guiding apprentices to a different trade that might be better suited for them. As a result, some apprentices do not gain an apprenticeship qualification, take a long time to do so, or leave the trades altogether. This could negatively impact on the attraction and retention of people into the trades.

A future state that addresses this challenge could be mutually beneficial to the system if all WBL providers and training advisors were incentivised (or at least enabled) to provide free and frank guidance to apprentices who may have signed up for a trade that they are not best suited to.

3.1.6 There is a lack of consensus of the roles, responsibilities, and rights of the different actors within the tripartite relationship.

We heard that the role of training advisors is often fluid and inconsistently defined across the construction and infrastructure sector. Some stakeholders highlighted that

> *"There isn't consensus on what a 'good TA' is. Employers and apprentices have different expectations on this front."*

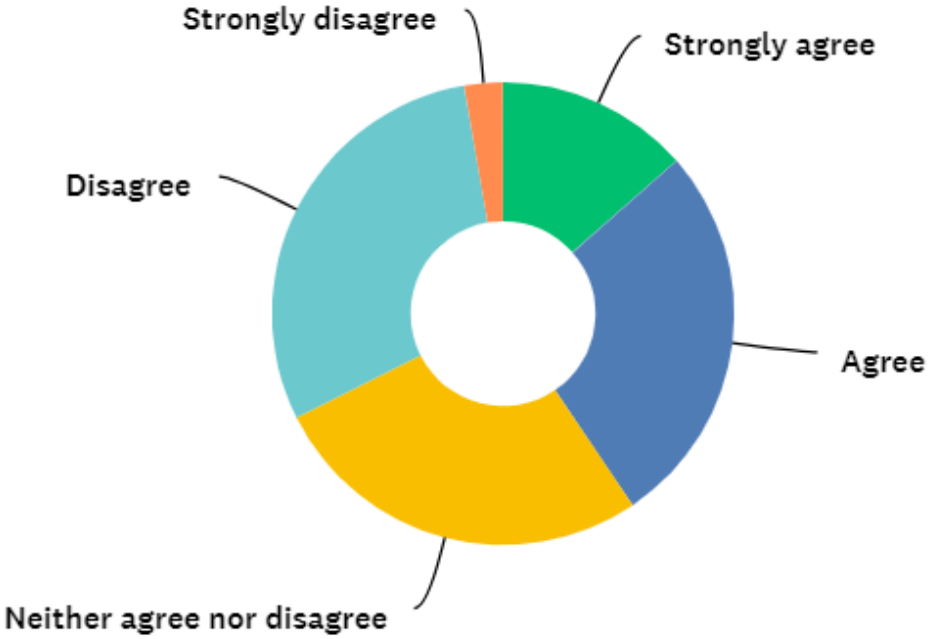
In particular, some stakeholders highlighted a lack of clarity around who was responsible for training apprentices, which is driven in part by the title 'training advisor'. A few stakeholders believed that training advisors have some responsibility for training, though most believed that employers were largely responsible for the on-site training of their apprentices.

> *There is a breakdown in understanding from employer – they have a major role in training, not all employers know that. Not all employers cover all the areas apprentices need to get signed off. Training advisors should be keeping apprentices on track, keeping employers accountable too.* (Training advisor).

Some stakeholders noted that in managed apprenticeships and within Polytech institutions there is a variation in training responsibilities across the types of people who might fill a training advisor type role. This is to be expected, with tutors being key off-site trainers for apprentices.

This variation in understanding was also reinforced by survey responses from training advisors who had mixed experiences in being asked to deliver training to apprentices (see **Figure 5**).

Figure 5: Employers (including workplace trainers) often ask me to deliver training to the apprentice



Some stakeholders spoke about the culture of apprentices being considered *"employees first and then apprentices",* with training taking a backseat to the labour needs of employers. A few stakeholders surmised that this culture could be a result of many construction employers being small businesses, so they do not always have the resources to adequately support their apprenticeship development and training. A few stakeholders also highlighted that the *"support for employers is very limited and most employers think the trainee is coming to courses to be trained, when in fact most training should be taking place on job".*

We heard from some apprentices that they have had experiences where they are unable to finish particular unit standards because they haven't had exposure to particular types of work with their employer. This exemplifies the challenge of apprentices not always understanding what they are entitled to though their apprenticeship, and not feeling they have enough agency within the power dynamic between them and their employer.

It is in situations such as these where 'good' training advisors are currently intervening and identifying opportunities for apprentices to thrive in spite of their employment limitations. However, this is not happening at the system level and therefore is an ongoing challenge in the trades training system.

3.1.7 Not all apprentices and employers have a clear understanding of the apprentice progression pathway

We heard from several stakeholders, particularly apprentices, that they and their employers did not always have a clear understanding of the progression pathways for apprentices. Some of these stakeholders emphasised the opportunity for training advisors to take ownership of this challenge and to guide apprentices and employers through the process.

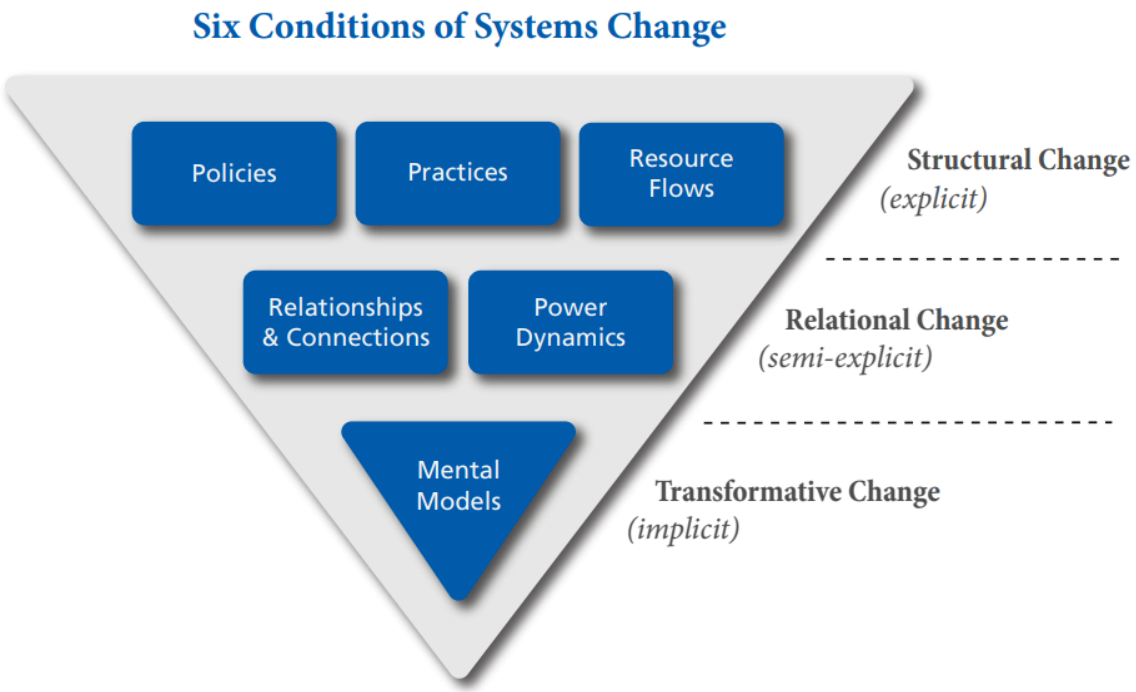
Some stakeholders discussed the importance of clear expectation setting and the use of onboarding meetings as being helpful tools to understanding their progression pathway. Training plans were also cited as being important and useful tools for all parties to plan and monitor against.

Additionally, regular progress meetings between all three parties in the tripartite structure were cited as being helpful for keeping apprentices and employers on track with learning and training respectively.

4 The apprenticeship system and the six conditions of systems change

This section of the report discusses alterations to the six conditions of systems change that, if implemented consistently across the sector, are likely to address the challenges identified in the preceding section. For convenience**, Figure 7** below, repeats the six conditions of system change diagram presented earlier in this report.

Figure 6: The six conditions of systems change[13]



Recognising the significant variation in the contexts in which WBL providers and training advisors operate, the discussion in this section is necessarily high-level. Specific recommendations for WBL providers are provided in relation to each condition. These recommendations aim to provide mandates to WBL providers to undertake actions that respond to the alterations that are discussed in relation to each condition. Recommendations are targeted at WBL providers, given that they employ and are responsible for the work of training advisors.

[13] Kania, J., Kramer, M., & Senge, P. (2018). The water of systems change.

4.1 Transformative conditions

4.1.1 Mental models

To address the challenges identified in the preceding section, two transformative changes to the mental models of the participants in the construction and infrastructure apprenticeship system are required.

Firstly, a system-level understanding of the core function, and importance, of the individual who supports the apprentice, the WBL provider, and the host business must be defined and communicated. Our research identified that this core function is to navigate the apprenticeship journey. Defining this role as a **Learning Navigator** clearly communicates this core function. The definition also leverages cross-cultural understandings of the importance of navigators to make the crucial importance, and inherent mana, of this role explicit.

The clarification of the training advisors' core function and central importance provides a logical foundation for mutually reinforcing alterations to conditions at all levels of the hierarchy.

Secondly, the mental models of WBL providers and training advisors must recognise that their role is to facilitate system-wide workforce development, as opposed to the development of trade-specific workforces. This is an essential mutually reinforcing alteration, as training advisors must be enabled to guide existing apprentices to other trades where this is the most appropriate journey for that apprentice. If their mental models are altered in this way, any potential issues relating to apprentice recruitment will be mitigated. This is because WBL providers will "gain" apprentices referred from other WBL providers, likely at approximately the same rate that they "lose" the apprentices who are referred away.

Similarly, employers must recognise that when providing apprenticeships, their role is to facilitate system-wide workforce development, as opposed to their own workforce. As with WBL providers, it is likely that if the mental models of employers are altered to this effect, they will, over time, gain access to an increasingly large, competent, motivated, and passionate workforce.

At the system level, these altered mental models are likely to result in a larger, more passionate, more competent, and more motivated construction and infrastructure workforce, as individual workers will have been supported to train in the trade that best suits their personality and interests. However, as discussed, these alterations to mental models must be supported by accompanying alterations to relational and structural conditions. **Table 3**, below, provides recommendations for system level alterations to mental models. **Table 4**, below, provides recommendations for WBL providers to alter mental models.

Table 3: System level recommendations for alterations to mental models

Recommendation	Justification
Adopt a consistent system-level understanding of the core function of training advisors in construction and infrastructure apprenticeships.	A consistent system-level understanding of the role of training advisors in apprenticeships will provide a foundation for cohesive, long-term alterations to other system conditions aimed at improving the support provided by and to training advisors.

Recommendation	Justification
Adopt non-competitive, collaborative understandings of construction and infrastructure apprenticeship actors' roles in system-wide workforce development.	Non-competitive, collaborative understandings of the roles of WBL providers and employers will support system-wide workforce development by ensuring that apprentices train and become qualified in the trades that best suit their interests, aspirations and goals.

Table 4: Recommendations for WBL providers to alter mental models

Recommendation	Justification
WBL providers should consider adopting the title 'leaning navigator' for their training advisor roles as part of supporting transformative change within the construction and infrastructure apprenticeship system.	The title 'learning navigator' clarifies the core function of the individual's role in the apprenticeship, emphasising guidance and support, as well as communicating the importance of the role to the success of the apprenticeship journey. When replacing the title 'training advisor' it will also have the benefit of clarifying that the role is not responsible for providing training.
WBL providers should begin collective discussions with a view to agreeing processes that enable training advisors to facilitate the transfer of apprentices between trades.	Facilitating the transfer of apprentices between trades will support apprentices to identify, train, and become qualified in the trade that best suits their interests, aspirations, and goals, which in turn is likely to contribute to the development of a more motivated and passionate sector-wide workforce.

4.2 Relational conditions

4.2.1 Power dynamics

Two changes in power dynamics are required to embed and actualise the alterations to mental models identified in the preceding section.

Apprentices must be supported by training advisors to be aware of and exercise their agency in all facets of their apprenticeship journey. In theory, apprentices have ultimate agency in their own training journey. For example, they decide whether to undertake an apprenticeship, which trade to train in, which WBL provider to enrol with, whether to accept employment with a particular employer, whether to remain in their apprenticeship, whether to change trade, and whether to remain with their employer.

However, for a range of reasons, apprentices may not be aware of the extent of their agency, or how to utilise their agency to reach their intended destination. Training advisors should continually reinforce the extent of the agency an apprentice holds and should guide the apprentice's exercise of that agency. A training advisor should support an apprentice to exercise their agency to satisfactorily resolve disputes with their host business, receive adequate support from their WBL provider, and if necessary, transfer to an apprenticeship with another host business or WBL provider. It is important to note that 'support' in this context does not necessarily mean that the training advisor providers direct assistance to the apprentice. Rather, 'support' will often consist of advising the apprentice where and how they

can receive direct assistance to exercise their agency. For example, in the context of an employment dispute, the training advisor might guide the apprentice to seek advice from an organisation like the Citizen's Advice Bureau.

In turn, WBL providers must enable and support training advisors to support the apprentice in this way. Training advisors should be provided the authority to determine what is required to support a particular apprentice to exercise their agency. For instance, an apprentice or group of apprentices may be navigating a particularly challenging aspect of their journey and therefore require more guidance from a training advisor than usual. The training advisor should be able to request that their caseload be reduced to enable them to provide the additional guidance required. At the most extreme end of the spectrum, when an apprentice and training advisor determine that the best way forward for a particular apprentice is to change trade or WBL provider, the WBL provider should accept that determination, and facilitate the change.

Table 5, below, provides recommendations for WBL providers to alter power dynamics.

Table 5: Recommendations for WBL providers to alter power dynamics

Recommendation	Justification
WBL providers should ensure that training advisors consistently reinforce apprentices' agency in the apprenticeship program. This should include communicating the extent and possible effects of that agency and how it can be exercised.	Apprentices' lack of understanding of the extent of, and how to exercise, their agency in their apprenticeship is, in some cases, likely to contribute to poor apprenticeship outcomes. Training advisors are well placed to guide apprentices to exercise their existing agency to achieve their goals, contributing to the development of a skilled and motivated workforce.
WBL providers should ensure that they enable training advisors to exercise agency in the apprenticeship program. In particular, training advisors should be supported to determine their appropriate case load at a given time, accounting for the highly variable time required to support different apprentices at different stages of apprenticeships.	The nature and level of support required by apprentices varies significantly. Training advisors are best placed to determine the level and type of support that an apprentice needs at any point of their apprenticeship. Training advisors' judgement in this respect should be accepted by WBL providers, and WBL providers should provide the training advisor with the time and other resources necessary to provide or broker access to the support that the apprentice requires.

4.2.2 Relationships & Connections

In terms of relationships and connections, WBL providers must support training advisors to prioritise the development and continual maintenance of strong relationships with apprentices and employers. The importance of training advisors building and maintaining these relationships cannot be overstated as the strength of these relationships will help determine the level of understanding a training advisor has of the apprentice's progress in their apprenticeship journey.

Training advisors must have an up-to-date and comprehensive understanding of each of their apprentices needs and aspirations if they are to be able to facilitate access to appropriate support in a timely manner. Having that understanding requires that apprentices feel confident raising issues and seeking guidance from their training advisor. That confidence can only exist where apprentice's trust that their training advisors' primary interest is the apprentice's success, and that their training advisor has the knowledge, skills, and access to the tools required to provide adequate support and guidance.

The ultimate responsibility for ensuring that training advisors have an up-to-date, comprehensive understanding of an apprentice's needs; that their primary interest is the success of the apprentice; and that they have the knowledge, skills, and tools required to provide adequate support and guidance, rests with the WBL provider, as the training advisor's employer. WBL providers can therefore support training advisors by providing the foundations required to enable them to develop and maintain adequate relationships with apprentices.

The nature and level of support required from WBL providers will vary depending on the apprentice, the employer, and the training advisor. In some cases, all that will be required is the provision of adequate time to develop and maintain these relationships. In other cases, the training advisor may require professional development support to understand how to develop and maintain effective relationships.

As mentioned above, training advisors must also build and maintain adequate relationships with employers. The foundations of adequate relationships with host businesses are largely identical to the foundations of adequate relationships with apprentices. Training advisors must have an up-to-date and comprehensive understanding of the needs and aspirations of the employer, which requires that employers feel confident raising issues and seeking guidance from the training advisor. As with apprentices, this requires that the employer trusts that the training advisor has the necessary skills, knowledge, and tools required to provide adequate support and guidance.

A potential complication is that occasionally, the interests of the apprentice and the employer may appear to be contradictory. Because the training advisors' primary interest should be the success of the apprentice, employers may feel that the training advisor may be working against their interests. However, so long as employers' and training advisors' actions are predicated on the mental models discussed in the preceding section, the interests of the apprentice and the employer are likely to be aligned. For example, an employer providing an apprentice the opportunity to work for another business to demonstrate competence in an area of work that the employer does not have scheduled is in the apprentices' interest and is in the interest of the employer in facilitating the development of a sector-wide workforce.

WBL providers must also build mutually supporting relationships with other WBL providers, particularly with those providing training in other trades. These relationships must not be competitive, rather they should serve to develop trust that WBL providers are aiming to support sector-wide, rather than trade specific, workforce development. The purpose of these relationships is to create a training sector that collaborates to support individuals to identify and become qualified in the trade that best suits the individual. These relationships will require WBL providers to demonstrate to one another that they are actively facilitating apprentices to change WBL providers, where that is appropriate for the apprentice.

Table 6, below, provides recommendations for WBL providers to alter relationships & connections.

Table 6: Recommendations for WBL providers to alter relationships & connections

Recommendation	Justification
WBL providers should ensure that training advisors are provided adequate support to develop and maintain strong, trusting relationships with apprentices and employers, including providing adequate time to develop and maintain these relationships.	The strength of the relationship between a training advisor, apprentice, and employer is, in large part, determinative of the level of knowledge a training advisor has of apprentices' and employers' experience of their apprenticeship, including whether they require additional support. The investment required from the training advisor to be able to develop and maintain these relationships can vary significantly, which must be recognised by WBL providers.
WBL providers should build mutually supportive relationships with other WBL providers, particularly with those providing training in other trades, to facilitate the transfer of apprentices between WBL providers and trades.	Mutually supporting relationships between WBL providers will be essential to enable the transfer of apprentices between trades.

4.3 Structural conditions

The transformative and relational alterations described above must be supported by corresponding structural alterations. This sub-section sets out changes to policies, practices, and resource flows which will enable and reinforce the altered mental models, power dynamics, and relationships in the construction and infrastructure apprenticeship system.

4.3.1 Policies

WBL providers' internal policies have significant impact on the ability of training advisors to fulfil their navigating function within the apprenticeship system. For instance, it is WBL providers' policies that determine the time training advisors can invest in developing and maintaining relationships with each apprentice they are responsible for, that determine the nature and extent of pastoral or learning supports that training advisors can broker for apprentices, and that determine the extent to which training advisors can guide apprentices to change host business or WBL provider.

Policies should ensure that training advisors:

- are clear from before their employment commences what their core function will be, and what they will be expected to do while fulfilling that function
- are not expected to perform activities that detract from their ability to effectively fulfil their core function, for example providing on call Information Technology support for apprentices or host businesses

- are remunerated appropriately, recognising that they are central to the success of any apprenticeship journey and the value of the skills and knowledge that are required to effectively perform their role
- are supported to reduce or increase their caseload at a given time, acknowledging that different apprentices and employers will require different levels of support
- are incentivised to support apprentices to exercise their agency in their apprenticeship journey
- are incentivised to redirect apprentices into different training programmes, where appropriate
- have the authority to hold host businesses accountable to their training obligations
- are adequately trained to recognise when an apprentice or host business needs additional support, what that support should be, and how to broker the support that is required
- when conducting an on-site visit, are adequately prepared to discuss the apprentice's progress on their journey with the apprentice and on-site supervisor
- can provide apprentices with access to the pastoral care or learning support that the apprentice requires
- can provide host businesses with access to supports required to effectively train apprentices
- are provided ongoing opportunities to learn how to better fulfil their core function from other training advisors.

These alterations will likely necessitate a degree of internal reorganisation on the part of some WBL providers. For instance, some WBL providers may need to establish small Information Technology or administrative support teams and associated hotlines to remove these functions from their training advisors. We recommend that WBL providers assess their policy suites to determine what policies must change to support the transformative and relational alterations this research has identified.

Table 7, below, provides a recommendation to WBL providers in relation to altering their policies.

Table 7: Recommendation for WBL providers to alter policies

Recommendation	Justification
WBL providers should undertake regular and comprehensive reviews of their internal policies with a view to ensuring that training advisors are only required to carry out activities that directly relate to their navigating function, and that they are adequately supported by WBL providers to do so.	Training advisors' ability to effectively carry out their navigating function in apprenticeships can be significantly compromised where they are also required to undertake activities that reduce the time they have available to perform that navigating function. If non-core functions are retained, training advisors are likely to be able to effectively service fewer apprentices and employers.

4.3.2 Practices

During our research, several practices were identified that, when utilised, enable training advisors to effectively guide apprentices and host businesses through the apprenticeship journey. These are:

- conducting a meeting at the beginning of an apprenticeship, attended by the apprentice, the training advisor, and a representative of the host business to ensure that all parties have a clear understanding of their roles, responsibilities, and rights under the training agreement and the progression pathways through the apprenticeship journey
- meeting more regularly with apprentices during the first 6 to 12 months of an apprenticeship, so that the training advisor learns about the apprentices' needs and aspirations, and the apprentice learns the extent of the knowledge and skills held by the training advisor, supporting the development of a trusting relationship
- holding less formal, off-site meetings with apprentices in small groups regularly throughout the apprenticeship, to provide an opportunity for apprentices to develop supportive communities of practice
- demonstrating ongoing investment in the interests of their apprentices by regularly checking in with apprentices by text, phone call or email, as well as in-person visits
- adapting the nature and level of support they provide to apprentices depending on the characteristics of the apprentice and the employer, enabling training advisors to provide apprentices with the support required in their circumstances, while not overinvesting time in apprentices who do not require extensive support
- participating in shadowing style professional development (such as a ride-along), where training advisors spend a few days a year throughout the course of their employment travelling with one of their colleagues to learn different ways of working
- working with apprentices to set goals throughout their apprenticeship, and clearly communicating progress against these goals with employers.

These practices should be codified in policy to ensure that they are consistently carried out, and that the resulting expectations on training advisors are clear.

Table 8, below, provides a recommendation for WBL providers in relation to altering the practices of their training advisors.

Table 8: Recommendation for WBL providers to alter practices

Recommendation	Justification
WBL providers should undertake regular and comprehensive assessments of the current practices of their training advisors with a view to identifying those practices that best enable training advisors to support apprentices and employers to navigate the training journey. Those practices should then be codified in policy.	Based on our engagement, it appears that there are a range of highly effective practices carried out by some training advisors, but these practices are not always implemented or required. Identifying and codifying these highly effective practices in policy is likely to be an efficient way for WBL providers to quickly improve the experience of apprentices.

4.3.3 Resource flows

In the six conditions framework, resource flows are not limited to financial resources. Resources include the flow of people, knowledge, information, and other assets within a system.

Through the course of this research, it became apparent that the movement of apprentices within the apprenticeship system is highly constrained. Apprentices are largely disincentivised from changing trade, WBL provider, or employer. This is likely to introduce significant inefficiency into the system, as individuals remain in non-optimal situations. Removing barriers to the flow of apprentices is a key alteration required to increase the output of competent, motivated, passionate workers within the construction and infrastructure apprenticeship system. As discussed above, training advisors, actively supported by WBL providers, have a crucial role to play in removing these barriers, and facilitating the movement of apprentices to situations that best suit their goals and characteristics.

In terms of financial flows, we recognise that WBL providers operate within financial constraints, some of which are largely out of the WBL providers' control. However, WBL providers must take all possible steps to mitigate the effects of these constraints on the work of training advisors, given the central importance of training advisors' core function to the development of a sector-wide workforce. Key alterations are likely to include removing any blanket 'quotas', driven by funding models, on the number of apprentices training advisors are required to be responsible for at any one time and renumerating training advisors commensurate with the value of their knowledge, skills, and responsibilities.

Information and knowledge flows within the system are also a key consideration. Training advisors should support apprentices and employers to communicate effectively regarding an apprentice's development. Training advisors should also ensure that they provide apprentices and employers with the information that they require to progress an apprentice's learning journey. Further, training advisors can fill a crucial role as a 'backstop', ensuring that essential information regarding an apprentices' progress is transferred consistently between apprentices, employers, and WBL providers. Improved information and knowledge flows are likely to be supported by the formation of communities of practice, comprised of training

advisors from different WBL providers. These communities of practice will help to ensure that lessons learnt from the different contexts and operations of different WBL providers can be shared across the sector.

Table 9, below, provides recommendations to WBL providers in relation to altering resource flows within the apprenticeship system.

Table 9: Recommendations for WBL providers to alter resource flows

Recommendation	Justification
WBL providers should work to remove barriers to the flow of apprentices within the construction and infrastructure apprenticeship system, including by supporting apprentices to change WBL provider and/or employer and/or vocation, where appropriate.	Supporting apprentices to move more freely within the system is likely to improve the experience of some apprentices, contributing to the development of the overall construction and infrastructure workforce. For instance, WBL providers might support apprentices to undertake short term placements with different employers to undertake different kinds of work, to seek permanent employment with a different employer, or, if necessary, to change the trade they are training in. Supporting apprentices to change trade is also likely to support efficient use of training advisors' time, as they will be responsible only for apprentices who are motivated to train in their trade.
WBL providers should undertake comprehensive reviews of the information that they provide, via training advisors, to apprentices' employers regarding their progress. This is to ensure that employers are consistently provided the information necessary to support apprentices to efficiently progress through their apprenticeships.	Based on our engagement, it appears that there is inconsistency in the nature and level of information provided to employers regarding apprentices' progress, both between and within WBL providers. Further, the capability and capacity of employers to independently develop an accurate understanding of apprentices' training needs can vary significantly. WBL providers can undertake reviews of the information that their training advisors provide to determine whether they are consistently and adequately communicating the aspects of apprentices' progress that employers must be aware of to facilitate effective training.

5 Conclusion

Our research identified the following challenges within the construction and infrastructure apprenticeship system:

- Training advisors do not always have the capacity to adequately support their apprentices and employers.
- WBL providers do not always enable training advisors to adequately support their apprentices.
- Apprentices do not always feel empowered to advocate for themselves.
- There is a reluctance to value soft skills in training advisors, despite the acknowledgement that these skills are just as important as technical skills.
- There is limited support for apprentices who wish to switch trades part-way through an apprenticeship.
- There is a lack of understanding of the roles, responsibilities, and rights of the different actors within the tripartite relationship.
- Not all apprentices (and employers) have a clear understanding of the apprentice progression pathway.

The preceding analysis has demonstrated that two transformative alterations to the mental models of system actors, supported by corresponding structural and relational alterations, are likely to have significant potential to address problems within the construction and infrastructure apprenticeship system.

Firstly, defining the job of the individual who supports the apprentice, the WBL provider, and the employer as an **Learning Navigator** will confirm their core responsibility within the system; namely, utilising the skills, knowledge, relationships, and tools available to them to guide apprentices, businesses, and WBL providers through the apprenticeship journey to the destination, a thriving construction and infrastructure sector, with a competent, motivated, and passionate workforce. Importantly, this definition will serve to communicate the importance of training advisors within the system, reflecting the value of the skills and knowledge they hold.

Clarifying the training advisor's core responsibility provides a logical foundation for mutually reinforcing alterations to conditions at all levels of the hierarchy.

WBL providers' mental models must recognise that their role within the system is to facilitate system-wide workforce development, as opposed to the development of trade-specific workforces. This is an essential mutually reinforcing alteration. Employers must adopt a mutually reinforcing understanding that their role in the apprenticeship system is to support the development of a system-wide workforce, rather than their own workforce.

At the relational level, two shifts in power dynamics are required. Apprentices must be supported by training advisors to exercise their agency in all facets of their apprenticeship journey. This includes satisfactorily resolving disputes with their host business, receiving adequate support from their WBL provider, and if necessary, transferring to an apprenticeship with another employer or WBL provider. Training advisors must also be enabled by their

employer WBL provider to exercise the agency required to adequately support their apprentices.

In terms of relationships and connections, WBL providers must support training advisors to prioritise the development and continual maintenance of strong relationships with apprentices and employers. WBL providers must also prioritise building mutually supporting relationships with other WBL providers, particularly with WBL providers for other trades. These relationships must not be competitive, rather they should serve to develop trust that all WBL providers are acting to develop a sector wide, rather than trade-specific, workforce.

At the structural level, WBL providers must assess, and if necessary, adapt their policies, practices, and resource flows to ensure that they actively support the mental models, relationships and connections, and power dynamics outlined above. An example of this is putting in place roles responsible for coordinating the provision of pastoral and learning support for apprentices who require it, leaving the training advisor only responsible for identifying the need for such support. Further examples may include establishing formal processes for reducing training advisors' caseloads where necessary and setting requirements for the format, participation, and content of apprenticeship commencement meetings to ensure that all parties have a clear understanding of their roles, responsibilities, and goals.

Importantly, the literature review demonstrated that these alterations to the conditions of the apprenticeship system must occur simultaneously across the system if they are to lead to sustained transformative change. This will require a high degree of collaboration on the part of WBL providers, particularly in relation to making the necessary alterations to the mental models of system participants.

The transitional period may be uncertain, and we recognise that some of our findings and recommendations may require fundamental shifts in the way actors in the system operate, particularly WBL providers, who may view some findings as inconsistent with their existing operations. However, the findings presented have been developed to ensure that they respond to the significant variation in the contexts that WBL providers operate. They are not predicated on a one-size fits all view of the system. Rather they reflect consistent themes across engagement with all participants and can be adapted based on the requirements of each WBL provider and their associated sectors.

Appendix 1: Industries within scope

Sector	Industry group	Industry
Construction	Onsite Construction and masonry	Heavy Machinery and Scaffolding Rental and Hiring
		Carpentry Services
		Concreting Services
		Fire and Security Alarm Installation Services
		Hire of Construction Machinery with Operator
		House Construction
		Non-Residential Building Construction
		Other Building Installation Services
		Other Construction Services
		Other Residential Building Construction
		Roofing Services
		Site Preparation Services
		Structural Steel Erection Services
		Bricklaying Services
	Offsite Construction	Prefabricated Metal Building Manufacturing
		Glazing Services
		Concrete Product Manufacturing
		Prefabricated Wooden Building Manufacturing
		Wooden Structural Fittings and Components Manufacturing
		Ready-Mixed Concrete Manufacturing
		Architectural Aluminium Product Manufacturing
	Electrical, Electronic, Electrotechnology and Telecommunications	Domestic Appliance Repair and Maintenance
		Electrical Services
		Electronic (except Domestic Appliance) and Precision Equipment Repair and Maintenance
		Other Telecommunications Network Operation
		Other Telecommunications Services
		Wired Telecommunications Network Operation
		Painting and Decorating Services
		Plastering and Ceiling Services
		Tiling and Carpeting Services
	Plumbing, Drainlaying and Gas fitting	Air Conditioning and Heating Services
		Plumbing Services
Infrastructure	Civil Infrastructure	Land Development and Subdivision

Sector	Industry group	Industry
		Other Heavy and Civil Engineering Construction
		Road and Bridge Construction
	Utilities	Electricity Distribution
		Fossil Fuel Electricity Generation
		Hydro-electricity Generation
		On Selling Electricity and Electricity Market Operation
		Other Electricity Generation
		Gas Supply
		Sewerage and Drainage Services
		Water Supply
Support Services	Construction and Infrastructure Services	Architectural Services
		Engineering Design and Engineering Consulting Services
		Surveying and Mapping Services
	Retail and Wholesale	Hardware and Building Supplies Retailing
		Floor Coverings Retailing
		Electrical, Electronic and Gas Appliance Retailing
		Furniture and Floor Coverings Wholesaling
		Plumbing Goods Wholesaling

Appendix 2: Literature Review

1.0 Introduction

Allen + Clarke has been engaged by ConCOVE Tūhura (ConCOVE) to conduct research on how tertiary providers, that provide work-based learning, facilitate training and support for apprentices and employers before and during the delivery of their apprenticeship programmes, focusing on the current practices by and support for Training Advisors. The project is specifically focused on the construction and infrastructure sector. This literature review has been conducted to support subsequent steps in the research project.

1.1 Scope of Research

To build capacity for greater success for apprentices participating in vocational education in the construction and infrastructure sector, the research will investigate the current state of delivery of this support, including the current systems change conditions as well the identification of best practices that might better support the experience of apprentices and employer.

The research will examine how the six conditions of systems change (policies, practices, resource flows, relationships and connections, power dynamics and beliefs) impact on the training and support provided by training advisors to learners. This will involve identifying the challenges that have the most impact on learner outcomes, and identifying the conditions that have the most potential to address those challenges.

1.2 Methodology

This literature review seeks to apply a systems change lens to consideration of a set of research questions, which will support the research team to subsequently undertake targeted examination of the role of training advisors in the construction and infrastructure apprenticeship system.

The following research questions guided the literature review:

- What role do training advisors play in encouraging learners to undertake an apprenticeship or other work-based learning programme?
- What, if any, impact do training advisors have on ensuring greater diversity within apprenticeship and other work-based learning programmes?
- What do training advisors need to do to develop and maintain a positive and healthy relationship with apprentices (or other work-based learner) and their employer?
- How can training advisors improve the workplace environment in which apprentices (or other work-based learners) are placed?
- What, if any, impact do training advisors have on the competition of apprenticeships?

- What knowledge, skills and competencies do training advisors need to possess to carry out their role?
- What is the role of mentoring in apprenticeships and other work-based learning programmes and what mentoring skills do training advisors need to possess to support this role?
- What on-going professional development do training advisors need to improve the support that they provide apprentices (or other work-based learners) and their employers?

The literature review examined published research and grey literature on work-based training in the construction and infrastructure sector in New Zealand and other comparable jurisdictions. Seventy-two documents were included in the review based on their relevance to the research questions and the transferability of their findings to the New Zealand context. These documents came from a range of education systems across Western Europe, North America, Australia and the United Kingdom.

Following the document review, five focus areas were identified that would help guide the consideration of the research questions and enable the application of a systems change lens. These were the apprenticeship system in New Zealand; the features of apprenticeships; developing strong workplaces; the role of training advisors; and the role of mentoring in apprenticeships

2.0 Apprenticeship system in New Zealand

2.1 History of the apprenticeship system

Knowledge of the history of the apprenticeship system enables understanding of what has driven changes in the system over time.

Seven documents discussed the history of apprenticeships in New Zealand, including the introduction of training advisors. These papers noted that formalised apprenticeship arrangements have been present in New Zealand since the 1890s, evolving over time in response to industry needs and government initiatives. However, the current model for workplace training and apprenticeships has remained relatively stable since it was first introduced in 1992 (Murray, 2001).

The Industry Training Act 1992 replaced previous legislation governing vocational training and apprenticeships by establishing industry training organisations (ITOs) to take over apprenticeship training. ITOs were required to set the national training standards, arrange the training, and assess its quality (but not deliver training) (Williams, 2020). The traditional apprenticeship contract was replaced by a training agreement between the trainee, the employer, and the ITO. In addition to the industries that traditionally employ apprenticeships, such as construction and motor mechanics, they were offered in other industries including tourism and travel, social services, and sports, fitness, and recreation. Apprentices were assessed on the skills they had learned, rather than the length of time they had served. Trade and advanced trade certificates were also replaced by unit standard qualifications.

In 2001, the Modern Apprenticeship Scheme was introduced to respond to the low numbers of young people in training by increasing awareness and promoting workplace-based training (Mahoney, 2010). Under this scheme, a national network of coordinators is responsible for recruiting and placing apprenticeships in workplaces, supporting their training, and providing mentorship to apprenticeships and employers to reduce the dropout rate. While the number of apprentices increased, some problems with industry training remained, including the under-representation of women in workplace training, except for traditionally female occupations such as hairdressing. The increasing technical complexity of certain trades also meant that greater theoretical knowledge was required, not just practical training.

From 2020, as part of its effort to effort to help the country's economy recover from the COVID-pandemic, the then Government injected extra funding into trades training programmes, including apprenticeships. The two main initiatives were Apprenticeship Boost programme, designed to support new (Year 1 and Year 2) apprentices by providing subsidies to employers, and the Targeted Training and Apprenticeships Fund (TTAF), which provided fee support to apprentices, and trainees at Level 3 or higher in targeted study fields. As a result of these initiatives, there has been a massive increase in the numbers of trainees and apprentices (Caldwell, 2023).

2.2 Comparison of overseas apprenticeship models

The model used in New Zealand for the training of construction apprentices differs from apprenticeship programmes in other jurisdictions, which vary from one country to the next. However, despite the variance in training and certification requirements, all these models appear to be effective (Daniel et al., 2023).

Apprenticeships are an important element of **Australia**'s approach to skill development and workforce participation. The core feature of the apprenticeship model, which integrates on- and off-the-job training and establishes a contract between the employer, apprentice and WBL provider, has stood the test of time. However, various features of the apprenticeship system have changed — primarily with the aim of improving the responsiveness of the system to meet fluctuating labour market demands and to help in areas of skill shortages (Couldrey & Loveder, 2017; Atkinson & Stanwick, 2016).

The apprenticeship system was expanded in 1985, with the introduction of traineeships. When first introduced, traineeships were of shorter duration and at lower-level qualifications than trade apprenticeships, although this is now not always the case and varies by jurisdiction (Hargreaves, Stanwick & Skujins, 2017).

A more general broadening of the apprenticeship system occurred in the mid-1990s and was supported through various, predominantly government, programmes and initiatives. These included the introduction of incentives for both employers and apprentices and trainees, although many national and state/territory-based incentives have now gone, or changed over time (Smith, 2002: Atkinson & Stanwick, 2016). The expansion also included the provision of apprenticeships for part-time workers and existing workers, pre-apprenticeships, school-based apprenticeships, and apprenticeships for people from disadvantaged backgrounds. Notably, apprenticeships became available across all age groups, shifting the focus from school leavers (Hargreaves, Stanwick & Skujins, 2017).

In **Canada**, the apprenticeship training programme is made up of two main components: classroom teaching and on-job training. The apprentice's supervisors is expected to fill out a logbook describing the tasks that the apprentice completes. This ensures that an apprentice carries out each task safely and correctly. Not all provinces or trades require certification to practice, but the possession of a Red Seal certification, which indicates that an apprentice has passed a standardised exam, is required for labour mobility within Canada (Gunderson & Krashinsky, 2016). This certification indicates that a craftsperson has passed the standardized interprovincial exam.

In the **United States of America**, apprenticeship training for craftspeople is funded by the government, the private sector, or both. These training programmes involve both classroom and on-job learning, and the number of years it takes to complete the programme varies from state to state and for different programmes (Glover and Bilginsoy, 2005). Apprenticeships are usually funded by government or the private sector. A certificate of completion is issued at the end of a training programme (Woods, 2012).

The National Vocational Qualifications (NVQs) programme in the **United Kingdom** is designed to help learners develop the knowledge, understanding and skills required to perform effectively in their chosen career (Arkani et al., 2003). To gain an NVQ, learners must demonstrate their competence through the assessment of a range of tasks and activities (Hogarth & Gambin, 2014). The assessment process is rigorous and requires learners to demonstrate a high level of commitment and dedication. Furthermore, successful completion of an NVQ will result in the awarding of a nationally recognized qualification. It takes an average of two to three years to complete apprenticeship training for craftspeople (Hogarth & Gambin, 2014). There are three stages of training within the NVQ framework. An entry-level foundation year where students try out numerous trades. Trainees are expected to complete the Level 2 NVQ within two years of training and Level 3 (fully skilled) in three years (Arkani et al., 2003). While the minimum qualification for practising a trade in **England** is NVQ level 2, it is NVQ level 3 in **Scotland**, which has also shifted away from exams, towards competency-based assessment (Gordan et al., 2009; Daniel et al., 2020).

2.3 Through a systems change lens

The brief overview of the apprenticeship system demonstrates that, over time, successive governments have sought to alter, to varying degrees and at varying times, all of the six conditions of systems change. For instance, the Industry Training Act 1992 appears to have been centred around a significant change to the power dynamics within the apprenticeship system with the establishment of ITOs. This relational change required, or alternatively, was accompanied by, major structural changes, for instance the introduction of training contacts. In contrast, the Modern Apprenticeship scheme appears to have been intended to create transformative change by seeking to alter the mental models associated with apprenticeships in New Zealand. This scheme also had a relational change component: the establishment of the national network of coordinators. Finally, the post-2020 initiatives appear to have been largely confined to altering the resource flows within the apprenticeship system.

Taken together, it appears that while attempts have been made to address problems with the apprenticeship system by altering conditions of system change, these attempts have been

piecemeal; none of these change programs appear to have actively engaged with all the six conditions simultaneously.

The overview of participation in the apprenticeship system by Māori, Pasifika, and women demonstrates that alterations to the conditions of system change since 1992 have addressed some problems with the apprenticeship system, while leaving others in place. For instance, the significant increase in Pasifika engaged in apprenticeships since 2003 should be considered a success, bringing Pasifika participation to equivalence with their population share. This success has not been matched in relation to underrepresentation of women in apprenticeships, particularly construction apprenticeships. Overseas literature appears to indicate that significant alterations to mental models will be required to address this problem.

Overall, this section provides important insights for actors within the construction and infrastructure apprenticeship system. The literature indicates that relatively piecemeal alterations to the conditions of system change can substantially address some problems. However, it appears that a consolidated approach to altering all conditions simultaneously has not been attempted in New Zealand, leading to some issues. The fact that different apprenticeship models have been successful implemented overseas indicates that there is potential to make changes to to address problems with the construction and infrastructure apprenticeship system.

3 Features of the apprenticeship system

3.1 Benefits and challenges of the apprentice system

Apprenticeship and traineeship programmes provide an important pathway for many young people to transition from school to work (Bednarz, 2014). Apprentices (and trainees) acquire occupational skills and values in a trade through their participation in work-based training, including learning how to deal with safety and risk at work (Lingard et al., 2022).

Longley and Clarke (2022) highlighted the financial benefits of undertaking an apprenticeship. They noted that, although apprentices are often paid lower wages than full-time workers, they are likely to have higher incomes than other young people engaged in full-time study. This is beneficial in the short-term for those who must support themselves while studying, but the larger financial benefits for apprentices come in the form of future earnings. Students who complete apprenticeships show higher incomes across their careers than those with similar qualifications but no apprenticeship (Butrica et al., 2023). Fersterer, Pischke, and Winter-Ebmer (2008) found that apprenticeship training raised wages for Austrian apprentices by about 4 percent per year of training. This meant for workers completing a three- to four-year apprenticeship, post-apprenticeship wages were 12 percent to 16 percent higher than the wages of those who did not complete an apprenticeship.

In addition to higher wages, apprentices benefit from greater job security and career longevity. They achieve better job matches, shorter periods of unemployment and longer job tenure. Apprenticeships also provide additional, unquantifiable, benefits to young people. They provide learners with a better understanding of workplace culture and their own occupational identity (Longley & Clarke, 2022).

Non-economic outcomes are more difficult to quantify but Lerman, Loprest and Kuehn (2020) observed that work-based learning is linked to higher confidence and self-esteem, improved health, higher citizen participation, and higher job satisfaction. As Siregar (2018) noted:

> *Work-based learning is useful in improving learners' motivation for achieving learning outcomes, improving personal and social competence (life skills), improving their understanding of the world of work. Work-based learning is an increasingly important part of the higher education curriculum. Work-based learning can spur the development of student personality and professionalism so they are ready to enter the workforce. Work-based learning tends to be a direct training of learners in the world of work. This learning is more structured by using a work-tailored curriculum.*

Employing work-based learning approaches in the construction sector has been found to have a positive influence on achievement, motivation, and continued learning. Moreover, the technical competencies of construction workers who participated in work-based learning were found to be more advanced than those that did not undertake work-based learning (Siregar, 2018).

When considering the current vocational education sector in New Zealand, Williams (2020) noted advantages of how the system in New Zealand is set up as a bottom-up, industry-led system. He considered that the on-job training aspect supports close alignment between the skills that apprentices are developing and the practical needs of the trade. The current system also has the flexibility to enable each industry to adjust its training arrangements (regarding the mix of on-job and off-job learning) to suit its context. Finally, Williams considered that the close engagement that ITOs have with employers through its training arrangement function helps ensure that ITOs are aware of the skills that are in demand, and which are not, providing a critical input to its standard setting function.

Working alongside employers and colleagues as part of on-job learning in an apprenticeship can support the development of not only the technical skills required for their particular trade, but also the soft skills, attitudes, and behaviours that contribute to success in the industry, such as teamwork, communication, and critical thinking skills (Vaughan, 2017). These soft skills included punctuality, appearance, willingness to learn, and reliability (Puchert, van Niekerk & Viljoen 2021).

However, the New Zealand apprenticeship system has not been without its challenges. In the early 2000s, employers in the building, construction, and manufacturing sectors expressed frustration with an apparent decreasing demand by young people to seek out trades as careers, as well as difficulty for those who were interested in trades to obtain an apprenticeship (De Bruin et al., 2006). For some employers, hosting an apprentice was perceived as costly, which disincentivised employers from participating in the Modern Apprenticeship scheme. This was particularly the case for smaller businesses where it was less economical to train apprentices. Poaching of fully qualified apprentices was also a point of frustration for employers, making them hesitant to put in the time and effort to train an apprentice. (De Bruin et al., 2006; Daniel, et al., 2019)

While the number of enrolments has increased, a range of challenges are still be experienced with the current apprenticeship system. for instance, Alkema (2016) noted that the current

apprenticeship training system in New Zealand largely requires apprentices to be self-directed learners. While this may work well for those who are highly self-motivated with high interest in their trade, or those in sectors with a more even mix of on-job and off-job training, it presents a challenge for apprentices who have little time outside of work to complete workbooks and assessments. Some apprentices, depending on the workplace and trade, experience long hours as part of their work-based training. Chan (2011) noted that this can make completion of necessary off-job training such as bookwork difficult, with these apprentices often using leave or days off to complete the theoretical bookwork aspect of their training.

Recent research looking into the experiences and challenges of apprentices in Canada found that apprentices can often face logistical and financial challenges that impact on their off-job and on-job learning and attendance (Correia, et al., 2024). This included transportation issues such as poor availability of transport or a long commute, and financial difficulties around the cost of tools and equipment.

3.2 Completion of apprenticeships

Apprentices form an important part of the construction sector's human and economic capital. Ensuring that apprentices successfully complete their apprenticeships and continue into qualified work is paramount to meeting the challenges faced by industry. Currently, one-in-seven apprentices withdraw from their apprenticeship before the completion of their studies.[14] As successful completion of apprenticeship training programmes remains a significant challenge in several countries, much of the available literature has sought to understand the factors involved in the completion, or non-completion, of apprenticeships.

Alkema (2016) examined research across New Zealand, Australia, Canada, the United Kingdom, Switzerland, and Germany on issues associated with non-completion of apprentices. The author generally found three main categories of factors that contribute to non-completion: system level factors; employment factors; and personal factors. In a separate study, Gambin and Hogarth (2016) identified the same set of factors.

System level factors included a poor economic climate, which young people tended to be particularly vulnerable to. This is evident in more detail when considering Bednarz's (2014) analysis of Australian apprentice non-completion data in 2010, where the author found 'being made redundant' was a commonly reported reason for non-completion. The reported rates of apprenticeship redundancy were likely impacted by the Global Financial Crisis at the time.

Low training wage was also a system level factor said to generally contribute to non-completion (Alkema, 2016), however this factor appeared to have less of an impact on non-completion for New Zealand apprentices. For example, Chan (2011) found that only 1 in 34 non-completers cited low wages as the reason for non-completion of their apprenticeship.

Employment factors made up the largest contribution to non-completion (Alkema, 2016). This included the quality of on-job training which appeared to be important to apprentices across the literature, with poor or insufficient on-job training often a main reported contributor to non-completion (Chan, 2011). Employment factors also include working conditions, such as the

[14] https://www.educationcounts.govt.nz/statistics/new-zealands-workplace-based-learners#1

physical environment, workplace culture, and workplace relationships (Alkema, 2016). Poor workplace relationships were often one of the highest cited reasons for non-completion of apprenticeships (Misko, Gu & Circelli, 2020). Conversely, a supportive workplace environment with positive collegial relationships was found to contribute to the continuation and completion of apprenticeships (Chan, 2014). Further, a workplace culture and environment that values diversity and is free of harassment is important in the retention of underrepresented groups in apprenticeships, such as women (Daniel, et al., 2019).

Regarding personal factors, Chan (2014) found that prior connection to or exposure with a trade contributed to apprentices' motivation and completion of an apprenticeship. In their study, Chan (2014) found that majority (80 percent) of apprenticeship completers expressed some form of familiarity with the trade prior to beginning an apprentice, such as through family connections, leisure activities, part-time work, or pre-trade training. This is in contrast with non-completers who had minimal exposure to their respective trade prior to an apprenticeship, often stating that they entered their trade by "happenstance". Assessments of readiness for an apprenticeship might then need to consider a young person's prior involvement in their trade of choice, and whether further exposure would support a young person's decision around the suitability of a trade. This study reflects the findings of Harris et al (2001), who observed that past life experiences underpin the workplace situations an individual faces during their apprenticeship training.

Chan (2011) found that the mismatch between apprentices' expectations of what work-based learning would occur, and the actual workplace training that they received, contributed to apprentices' decisions to discontinue their apprenticeship. Eleven of the 34 non-completers in their study cited insufficient training as reason for non-completion. Chan noted, however, that most of these non-completers did not leave the industry entirely – but rather, re-entered the industry through another employer, a formalised training programme, or considered options to enter an alternative but similar industry. These apprentices demonstrated a commitment to their vocational education and career goals, despite discontinuing their initial apprenticeship. This suggests that the quality and availability of training plays an important role in ongoing engagement and completion of apprenticeships and highlights the importance of workplaces providing ways for apprentices to meaningfully engage with their trade, including opportunities to develop a broad range of skills relevant to their trade (Chan, 2011). Working closely with employers to develop strategies to promote closer cooperation and communication as well as to develop and implement training and mentorship that is relevant to and aligns with apprenticeship goals will be important (Winchester-Seeto, Rowe & Mackaway, 2016).

Pagnoccolo and Bertone (2021) examined the interpersonal attributes and people-related generic skills among apprentices and how they affected the training of apprentices. Analysing interview data from 20 apprentices, they found that interpersonal skills training that focuses on teamwork, communication, and problem-solving complemented the technical skills taught in apprenticeship programmes. These attributes were significant to apprentices' learning and completion behaviours and, conversely, there absence was said to be a risk factor. They therefore recommended the development of strategies to integrate social and emotional training in apprenticeship programmes.

Overall, Alkema (2016) noted that single factors on their own do not necessarily lead to non-completion of apprenticeships, but rather a combination or interplay of factors may cause an

apprentice to decide not to continue. This is perhaps demonstrated by Bednarz (2014) who considers that it is the overall employment *experience* – that is, the factors of 'interpersonal difficulties with boss or co-workers', 'poor working conditions', 'low pay', and 'poor on-job training' – that contributes the most to non-completion. In their analysis, this accounted for 33.4 percent of non-completion (Bednarz, 2014). This suggests that any targeted interventions or efforts to increase engagement in and completion of apprenticeships will need to consider the wider apprenticeship 'experience' and the range of factors in play, rather than solely focusing on, for example, the training aspect.

Other literature noted that employer capability and capacity can have a significant influence on the success of apprenticeship completion. Powers (2021) observed that employers who are engaged and thoughtfully plan out training can support apprentices to remain interested in their trade and help them successfully navigate their apprenticeship experience. However, Powers highlighted the importance of considering an employers' capacity to be able to provide adequate apprenticeship training. This echoes previous research in Australia by Bednarz (2014) who found that employers with the highest completion rates of apprentices tended to be larger, experienced organisations with well-established structured training and mentoring support. Conversely, employers with lower completion rates tended to be smaller, and have less experience in training apprentices.

3.3 The apprentice system and systems change

The literature discussing the features of apprenticeship systems, when viewed through a systems change lens, reveals a number of important considerations for those involved in the construction and infrastructure apprenticeship system.

It highlights how policies can be used to align the outcomes of a system with the needs of system participants. For instance, Williams (2020) explained how policies can be used to alter conditions operating at different levels; in this case, improving the quality of communications strengthened the relationship that ITOs had with employers.

The papers by Alkema (2016) and Chan (2011) both highlighted the difficulty of distinguishing between the operation of conditions at the same level of system change. It is not immediately apparent whether the problems they identify, namely apprenticeships suiting self-directed learners and requiring long hours, resulted from policies, practices, or a combination of both. Nonetheless, their discussion appears to indicate that addressing problems within the apprenticeship system is likely to require more than a surface level investigation of any issue due to potential intersections between conditions operating at the same level of system change.

The discussion by De Bruin et al (2006) and Daniels et al (2019) of the demand within the apprenticeship system provides an example of the intersection of conditions operating at different levels of system change. In the context of a lack of demand in the system, both from young people to enter apprenticeships and employers to employ apprentices, the authors note that employers were frustrated with apprentice poaching. Viewing this discussion through a systems change lens, it appears that some interaction between the mental models of both employers and apprentices and the relationships between employers was likely contributing holding in place a lack of demand from employers to train apprentices. In this situation, it is

not immediately apparent whether participants in the apprenticeship system should attempt to alter the conditions of mental models or relationships and connections.

The papers by Chan (2011) and Harris et al (2001) highlighted the relationship between past life experiences and apprenticeship completion rates. Their findings indicate that the mental models of apprentices, altered by either past exposure or lack of past exposure to a trade significantly influences the likelihood of completing an apprenticeship. This demonstrates both the likely difficulty associated with effecting change at the transformative level for the apprenticeship industry, and the length of time required to embed transformative change. However, it also provides a clear indication that transformative change is possible.

Taken together, this analysis indicates that alterations to structural and relational conditions could be used to support more difficult, long term, transformative changes.

4 Developing strong workplaces

The literature indicates that workplace culture and environment directly shape an apprentice's capacity for productivity, as well as their overall sense of wellbeing. Further, constructive workplace relationships – between workplace instructors and apprentices appear to be contribute to apprenticeship satisfaction. Training advisors can play a key role in developing workplace relationships and enhancing workplace culture and environment.

4.1 Workplace relationships

The quality of workplace relationships can have an impact on apprenticeship completion. For instance, when exploring the experiences and outcomes of Australian apprenticeship completion and non-completion, Misko (2020) found that the main reported reason for leaving a trade apprenticeship was due to difficulty getting along with their boss or co-workers. Conversely, literature has widely acknowledged that supportive workplace relationships are an important factor that contributes to on-job learning and an apprentice's engagement with and completion of apprenticeships (Mikkonen, 2017; Chan, 2011.

In the New Zealand context, Chan (2014) found that supportive and engaged employers or supervisors, and positive workplace relationships with colleagues who readily offered support, positively assisted the workplace learning process and contributed to a sense of belonging to a workplace. Apprentices who had these factors present were more likely to continue with their apprenticeship and expressed interest in remaining in the sector. Similar findings were also found in a review of construction sector apprenticeship training in the United Kingdom. Daniel (2019) found that support and mentorship provided by colleagues and more senior tradespeople contributed significantly to the success of apprenticeships by helping apprentices remain motivated to complete their training.

Colleagues can also play an important role in developing construction apprentices' problem solving and risk assessment skills. Lingard (2022) explored how communication between an apprentice and their colleagues in the Australian construction industry impacted on the apprentice's health, safety, and wellbeing. The authors found that interactions between colleagues and apprentice in the physical work environment supported apprentices to learn how to make appropriate risk assessments. Colleagues who were particularly diligent about

following site-based safety rules, and who encouraged apprentices to engage in problem solving, had a positive impact on an apprentice's on-job learning regarding risk assessment. This contribution to an apprentice's on-job learning was considered critical given the often-changing environment of a construction site.

4.2 Workplace environment and culture

Workplace environment and culture has been identified as being particularly important in the retention of underrepresented groups in apprenticeships. This is particularly important for New Zealand construction apprentices, as compared to other sectors, the construction industry has poor mental health (Roberts, 2013; Suicide Mortality Review Committee, 2016; and Caldwell, 2022). Construction workers have higher rates of mental distress than the general male population (Jacobsen et al., 2013) and the construction industry has one of the highest suicide rates (Turner et al., 2017).

Several factors have been identified that underlie the mental health issues of the construction industry, including the boom-bust cycle, the lack of work/life balance, drug and alcohol use, and the difficulties that stem from an intergenerational and ethnically diverse workforce. Additionally, the toxic masculine culture contributes to the high rates of bullying behaviours. In a large study of 1,483 Australian construction apprentices, Ross et al. (2021) found that one in three apprentices reported some experience of bullying, with 20 percent reporting being a victim of severe workplace of bullying. Common risk factors associated with bullying were working for a large employer, working for a group training organisation, not currently having an employer, not currently being in an apprenticeship, identifying as LGBTI+, and being aged 18–25.

To improve workplace culture, research has mainly focused on these risk factors. However, Caldwell (2023) explored the role of self-compassion in fostering the psychological well-being of New Zealand construction apprentices. For the purposes of their study, self-compassion was viewed as compassion directed inward towards the self, characterised in part by the ability to treat oneself with the same compassion and kindness as one would treat others in a similar circumstance. They examined relationships between self-compassion, psychological well-being, psychological distress, and exposure to workplace bullying, identifying that self-compassion was positively and significantly related to psychological well-being and negatively related to psychological distress. Their findings indicated that self-compassion interventions may have promise as an additional mechanism to improve the well-being of construction apprentices.

4.3 Workplaces and systems change

The literature on the effect of workplace relationships and environments demonstrates that understanding problems within the construction and infrastructure apprenticeship system requires applying a systems change lens not just to the system as a whole, but also to individual organisations operating within the system.

5 Role of training advisors

5.1 Involvement prior to and at start of apprenticeship

Teachers, parents and friends have a strong influence on the decision making process of students when deciding on a future career. Throughout their adolescence, a person's career path is shaped by the attitudes and expectations of those around them (Ryan et al., 2022). Misko, Gu & Circelli (2007) observed that many people believe that the pay of tradespeople was too low, by comparison with the pay for professionals. Low pay, long hours, and adverse working conditions contribute to negative stereotypes about apprenticeships among some teachers, parents and young people, which may lead to lower apprenticeship applications and enrolments (Ryan et al., 2022).

Young people are also influenced by their parent's career choice. Those with parents in higher-level occupations are less likely to pursue an apprenticeship, when compared to parents in the trades (Nawbi et al., 2019). Ryan et al (2022) also reported that many students could not discuss the option of apprenticeships with their families due to their lack of knowledge on the topic. Because of these issues, Ryan and Lörinc (2018) recommended that apprenticeship systems need to ensure that young people, their parents, and schools are provided with reliable information on high-quality apprenticeships delivered by reputable providers.

Training advisors could play an important role in the enrolment process by addressing past assumptions, removing some disincentives for new generations to undertake an apprenticeship (Smith, 2022). Early involvement of training advisors could also impact overall apprenticeship success, especially as student readiness and suitability for apprenticeship programmes has been identified as a risk to completion. Screening participants and providing support in finding suitable places to complete their apprenticeship may minimise this risk (Hay, 2021). Early involvement could also include promoting the value of apprenticeship with relevant employers, supporting placement of apprentices with appropriate employers, and working with employers to develop and implement effective training and mentorship structures.

In the United States, employers are generally required to initiate and develop their own apprenticeship programmes (Cheney, 2017). In this context 'intermediaries' (such as unions and education providers) are often utilised to promote the value of apprenticeships to employers and connect learners with employers that would provide a good fit. They also provide support to design apprenticeship programmes and apprentice registration which was considered to contribute positively to expansion of registered apprenticeship programmes in the United States (Copson, 2021).

Dubeau (2024) found that the quality of guidance provided by training advisors to apprentices has an impact on apprenticeship satisfaction. They considered that improving the quality of guidance would help enhance the apprenticeship experience for apprentices. This could include targeted upskilling of training advisors prior to apprenticeship commencement, focusing on the specific fields of study that the apprentices they are supporting are working in. Other papers considered that an important focus of this upskilling needs to be improving training advisors' mentoring techniques (Durkin, 2015).

5.2 Relationship between training advisors, the apprentice, and the employer

Employers are vital to the apprenticeship model, providing a job, training, wages, and a workplace trainer to oversee the apprenticeship. For many employers, devoting time to training

and money to apprentice wages is a challenge. Other employers may hold preconceived bias about apprentices. For instance, they may be concerned that youth apprentices cannot contribute productivity to the workplace, so are reluctant to take on an apprentice for fear that it would be a waste of time and resources (Katz & Elliot, 2020).

Training advisors need to support employers leading up to and during the apprenticeship. They should help employers through the onboarding proves and work with them to create training plans for apprentices. They need to assist businesses assess the apprentice's skills and measure and track their progress throughout the programme. They also need to help employers manage any challenges that may arise, such as building buy-in among employees, especially those who are supervising and working with apprentices (Katz & Elliot, 2020).

Consequently, the relationship that training advisors have with employers plays an important role in apprenticeship and other work-based learning programmes and is a key factor underpinning their success. For example, through a systematic review of research on construction sector apprenticeship training, Daniel et al (2019) found that close collaboration between employers and training advisors is critical for achieving successful outcomes for apprenticeship programmes.

While there have been attempts to understand the roles played by each stakeholder in these programmes, there has been little research into what each stakeholder understands about the role of the others. What research is available suggests there is a disconnect between the perceptions that stakeholders have about the role and responsibilities of other people involved in the apprenticeship system (Winchester-Seeto, Rowe & Mackaway 2016). Patrick (2008) noted that valuable and meaningful work-based learning experiences require "a shared understanding of the purpose of the experience and how … different [stakeholder] roles impact on quality". Mismatched expectations and disparate views between stakeholders have been observed about the purpose of work-based learning, communication, and approaches to overseeing learners' progress. Not only does this create misunderstandings and miscommunication, but also leads to lost opportunities to enhance student learning (Winchester-Seeto, Rowe & Mackaway, 2016).

Apprentices, like employers, have much to gain from participation in an apprenticeship (Katz & Elliot, 2020). During their apprenticeship, they work their way toward competency through a combination of on-the-job learning and related technical instruction. Their daily tasks depend greatly on their interests and employer's needs. Training advisors work closely with apprentices to ensure that the programme is mutually beneficial for all participants.

The relationship between training advisors and apprentices is also important to maximise student learning. Smith (2002) observed that apprentices value this relationship. While they look to their teachers for trade knowledge, they look to training advisors for mentorship and career advice. Examining how apprentices perceived this relationship, Sauli, Wenger and Berger (2021) found that the social relationship with the training advisor, as well as their perceived skills, were the main elements that influenced the quality of the relationship.

To strengthen this relationship, the training advisor needs to acknowledge the apprentice's existing experience and knowledge. As Boud and Costley (2007) noted "the sharing of expertise has an impact upon the power relationship between [apprentice] and [training] adviser requiring the adviser to listen and take account of the apprentice's current knowledge

and position". In their view, the power dynamic between training adviser and apprentice becomes more balanced when each offers expertise about the completion of a task. They warned that training advisors who are used to being 'the expert' may have difficulty in changing to this into a more equal apprentice/adviser relationship. However, they did acknowledge that most apprentices, by virtue of being a learner, will lack expertise in many areas. The challenge for training advisors is to find ways to share their practical knowledge with apprentices in a way that is both meaningful and supportive.

Lingard (2022) found that the way training advisors interact with construction apprentices impact the way that worker behaviour is learned and practiced in the workplace. They have an important role in setting unambiguous and high standards and demonstrating good practice.

Training advisors also need to help develop positive and supportive relationships between apprentices and their workplace trainers and work colleagues. Mikkonen (2017) observed that an employer's support for work-based training and mentoring was critical to the success of the learning environment. A lack of available resources or time to engage in work-based training hindered an apprentice's learning. Whereas trainers who were provided with the time, space, and resources to support apprentices contributed positively to learning success.

5.3 Knowledge, skills, and competencies of training advisors

Literature indicates that the support roles undertaken by training advisors are complex and multi-faceted, with different and often complementary duties. They are required to manage, guide, and assess an apprentice, as well as support, nurture, and act as an advocate or intermediary so that the apprentice can successfully complete their training. Le Maistrae et al. (2006) observed that the dual role of mentor and assessor is not an issue when an apprentice is doing well or when there is a match between the styles and personalities of the apprentice and their training advisor. However, when their work is unsatisfactory, "there is a potential for confrontation and stress". Training advisors also need to play a pastoral role, supporting the apprentice and their employer to deal with conflict and difference, as well as manage anything that goes wrong on the apprentice's behalf, such as when they become sick or there is some trauma (Winchester-Seeto, Rowe & Mackaway, 2016).

The specific knowledge, skills, and competencies held by training advisors can have an impact on the relationship they form with apprentices and the quality of support they provide to apprentices. Reviewing literature examining guidance and learning that occurs in vocational education workplaces, Mikkonen (2017) identified a range of factors that either supported or hindered apprentice learning. Training advisors who readily shared their knowledge with apprentices and were skilled in asking the apprentice questions was a direct factor that supported work-based learning. Conversely, a lack of personal engagement from the trainer tended to hinder work-based learning. These qualities and skills will be important for Training Advisors to consider as part of their role in providing guidance and support to apprentices.

Esmond (2020) observed that the role of training advisors varies partly because apprentices in more technical subjects continued to study at training facilities, while those undertaking practice-based subjects were entirely taught in the workplace. Esmond observes that they are expected to be "occupationally competent" – that is, they need to possess the level of

occupational expertise held by skilled workers, and to be certified as assessors. They do not need to be trained as a teacher (although some may teach in addition to their work as assessors). In their review of vocational education learning and guidance provided in workplaces, Mikkonen (2017) noted that having a pedagogical qualification or formal training in providing support to apprentices was a factor that supported the learning process.

Winchester-Seet et al. (2016) identified the need to develop reflection skills as this will assist them make sense of their learning environment. Reflection was seen as a significant "avenue for applying an integrating theory to the practice" (Harvey, 2010). Training advisors need an understanding of reflective practices, which include self-assessment techniques, ways to document and present learning outcomes, and the required standards of achievement and ways to operationalise them and relate them to the tasks they are performing (Boud, 2007).

The training advisor needs expertise relating to the work context. For example, awareness of and ability to intervene in situations where learning is constrained by workplace values and practices, including mediation with workplace trainers (such as employers and work colleagues). They need to link their practical knowledge of working in the construction and infrastructure sector with a conceptual understanding of learning. By possess learning consultancy skills, they will be able to support apprentices to see learning opportunities in their work and life, negotiate the complexity of their training plans, and provide suitable forms of support to manage challenges, including the dual expectations of the WBL provider and the workplace (Boud, 2007).

5.4 Involvement in assessment process

Training advisors are responsible for assessing the workforce skills of apprentices (or other work-based learners) through judgements based on observation, or discussion, rather than written tests. This includes maintaining detailed records of how their decisions have been made, based on the philosophical premise than practical knowledge can be assessed in this way (Esmond, 2020).

Only one article was identified that discussed in detail the assessment role that training advisors have in the New Zealand apprentice system. Vaughan (2012) examined a period of change to the BCITO's on-job assessment system, whereby the responsibility of assessment shifted from employers to training advisors. They found that this new assessment system utilised a range of assessment mechanisms that related back to the four principles of good assessment reflected in the *Guide to Good Practice in Industry Training Organisation Structures and Systems for On-Job Assessment* (Vaughan & Cameron, 2010). This included the use of:

- an assessment team comprised of the apprentice, training advisor, employer, and moderator;
- a training plan that guides the assessment team;
- a practice of observation and discussion with the apprentice at the beginning of the assessment;
- encouraging apprentices to establish their own way of collecting evidence of what they have learned;

- a practice of moderators occasionally accompanying training advisor visits; and
- regular professional development for training advisors and moderators by way of national moderation workshops which supported shared understanding of how to identify achievement.

Vaughan (2012) considered that the new assessment system gave apprentices the opportunity to learn more deeply, and provided evidence that a principles-based assessment system can positively support lifelong learning in a trade.

Esmond (2020) explored the role that assessors have in the apprentice system in the United Kingdom. While they have a non-teaching role, assessors are often called on fill gaps for deficient training. This occurred as opportunities for apprentices in the construction sector to meet qualification requirements had become difficult because of the industry's greater division of labour. They noted "small firms could not offer opportunities to practice some skills". Whilst many apprenticeship programmes assume that workplace knowledge sits within the possession of employers, assessors and other intermediaries could provide a broader view of industry-wide knowledge than is furnished by the practice of an individual workplace. They also observed that assessors took on a 'caring' role in their relationship with apprentices compared to teachers who assumed a more authoritative, masculine role.

5.5 Professional development for training advisors

The role of training advisors in apprenticeship schemes is essential to learner success, yet it is poorly understood (Wenham, 2019). In their study, Wenham et al observed that many training advisors reported that it was gratifying to see an apprentice grow during the course of their apprenticeship: however, the role had high demands in terms of pastoral support. While support mechanisms were in place, gaps were identified in the support they received to meet the needs of migrants and learners with mental health issues. They recommended that training advisors are provided support to deal with the diverse student issues they encounter, clear processes for tracking and managing students, training and resources to deal with high needs students, and opportunities for team building and bonding. In their view, supporting training advisors would help to better support students to successfully complete apprenticeships.

Only one articles touched on the funding for the professional development of WBL providers, although neither paper provided any suggestions to address the funding issues they highlighted. For instance, Winchester-Seeto, Rowe and Mackaway (2016) observed that the financial and other pressures that WBL providers face may affect the quantity and quality of the support they provide.

5.6 Role of training advisors and systems change

The preceding overview demonstrates the centrality of training advisors in the construction and infrastructure apprenticeship system. It shows that they are both affected by, and able to contribute to altering, all six conditions of system change, making them potentially highly influential actors within the system.

The discussion in the literature of the role of training advisors also highlights the interdependency of conditions operating at the same or different levels of change. For

instance, Boud and Costley's consideration power dynamics in the relationship between apprentices and training advisors indicates that altering the relationship and connections condition requires concomitant alterations to, at least, practices, mental models, and power dynamics.

6 Mentoring and the apprenticeship system

6.1 Role of mentoring in apprenticeships

As stated earlier, mentoring is widely considered to contribute positively to the success of the apprenticeship (Puchert, van Niekerk & Viljoen 2021). Mentoring is a dyadic relationship in which an experienced worker coaches, guides, and helps a less experienced worker (Daniel, 2023). Mentors and mentees work collaboratively to facilitate intellectual exchange, knowledge acquisition and career development.

From a systematic review of apprenticeship training in the construction sector, Daniel (2019) found that the presence of a mentoring opportunity was a key factor to the success of an apprenticeship. Correia (2024) supported this finding. They found that a formal mentorship programme improved the training experience for Canadian apprentices, with almost all participants in their study reporting that having a knowledgeable and supportive mentor helped them better navigate and get through their training. Correia noted that mentors played an important role as a source of support for apprentices, and motivated apprentices to continue with their training.

As well as supporting apprentices to develop the technical skills of their trade, mentorship has been found to contribute to apprentices more broadly, such as supporting health and wellbeing during their apprenticeships, and developing skills that contribute to success in the workplace. Based on interviews and case studies of employers who had taken on an apprentice in the United Kingdom, Hirst (2014) concluded that providing mentoring support to apprentices has a range of benefits, including: helping embed the organisational culture with the apprentice, improving communication channels between apprentice and employer, being an effect means to pass on skills and knowledge, and supporting the apprentice's overall career and personal development (Hirst, 2014).

Mentoring in apprenticeships tends to occur both formally (such as through training advisors or site managers) or informally (such as through relationships developed with colleagues) (Durkin, 2015; Buchanan, 2016; Daniel, 2023). During their research with the Building and Construction ITO, Durkin (2015) observed that the ratio of formal to informal mentoring that occurred varied, and that no one combination appeared to be best. Similarly, Hirst's (2014) review of mentoring in the United Kingdom found that three main models of mentoring are used: an employer-led model where mentoring is provided by the employer or colleagues (ie, peer mentoring); provider-led model where mentoring is provided by educators/assessors; and specific mentoring initiatives which are more often used to target underrepresented groups to engage and retain apprentices. Hirst (2014) noted there was no one best model.

Buchanan (2016) found that informal mentoring practices received through on-job learning from their colleagues played an important role in supporting the mental health of carpentry apprentices. The authors found that apprentices in organisations where such mentoring

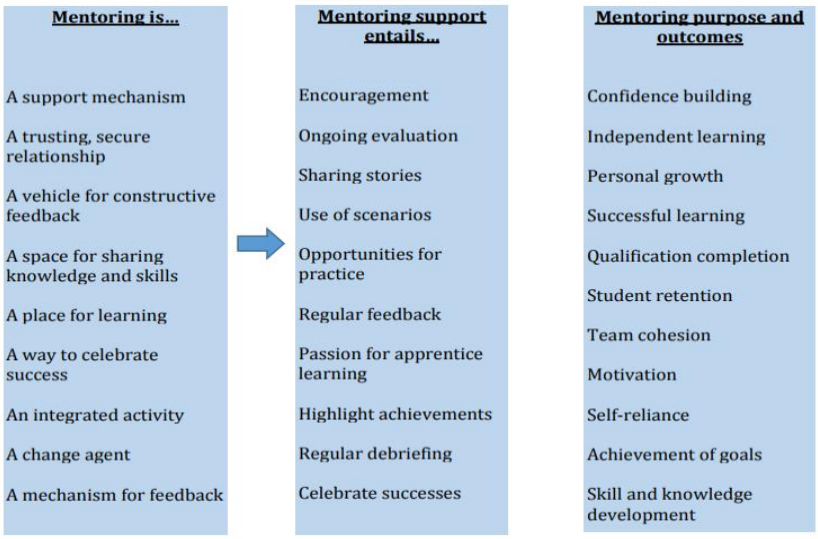
practices occurred developed important social and personal skills, as well as technical skills. Similarly, Vaughan (2017) found that workplace teachers and mentors played a critical role in supporting the development of soft skills, such as communication, teamwork, and critical thinking. They noted that working alongside mentors supported apprentices to develop both the practical skills, attitudes, values, and behaviours necessary to complete the apprenticeship, as well as "*become capable, valuable contributors to the carpentry workforce*".

Corney and Du Plessis (2010) noted that while formal mentoring has value, it is the naturally occurring informal mentoring support that is most beneficial for young people. Buchanan (2016) also considered it critical for apprenticeships to include informal mentoring built into the programme. Although they recognise the challenge of formalising a type of relationship and learning that tends to occur more spontaneously, Buchanan (2016) said employers can play a role in ensuring the apprenticeship environment supports informal mentoring to take place. Indeed, Training Advisors, as part of their engagement with employers, may also have a role in facilitating workplace environments where informal mentoring flourishes.

6.2 Factors and attributes of effective mentoring

While literature generally states that there is no one right model or approach to providing mentorship support, Durkin (2015) identified some general commonalities that help conceptualise what effective mentoring can include. Through discussions with employers, trainings advisors, and apprentices across the BCITO and HITO, Durkin (2015) developed a model for successful apprentice mentoring. **Figure 1** outlines how employers, training advisors, and apprentices generally described what mentoring means to them, the type of support largely sought from a mentor, and the value that mentorship can provide.

Figure 1: Model for Successful Apprentice Mentoring (Durkin, 2015)



Literature suggested there are specific attributes and skills that support an individual to be a successful mentor. Hirst (2014) suggested that mentors should be selected based on personal attributes, such as openness, trust, and having an ability to guide rather than direct an apprentice. They also need to be willing participants in the mentoring support relationship. Durkin (2015) stated that mentors needed to be open and honest, have good listening and questioning skills, freely shares their knowledge, encourage critical thinking and taking

responsibility, and provide regular feedback and encouragement, particularly highlighting when an apprentice has done a good job. Interpersonal and communication skills are crucial (Daniel, 2023).

In efforts to support greater uptake and completion of apprenticeships by Māori and Pasifika peoples, it is also important to consider what contributes to effective mentorship for these learners.[15] While conducting a pilot model of mentoring Māori and Pasifika apprentices engaged in the electrical trade, Holland (2013) found that, compared to their Pākehā peers, Māori and Pasifika apprentices tend to be less comfortable speaking up and asking for help. This tendency persisted even when their mentors were Māori or Pasifika from local communities. The author emphasised the need for regular face-to-face meetings between apprentice and mentor, and for mentors to utilise sensitive and deep questioning and listening skills to support better engagement of Māori and Pasifika apprentices and the success of the mentorship.

Savage (2016) explored the learning environment of Māori apprentices in the construction industry and provided training to businesses in the sector to encourage a shift in their workplace culture to one that supports Māori apprentice achievement. While a shift in culture was not embraced by all staff, Savage (2016) found that success was carried by committed individuals who supported, mentored, and supervised Māori apprentices. These supportive workplace relationships are crucial to improve the success of Māori apprenticeships.

Smiler (2023) noted that effective pastoral care and mentoring are critical to the success of Māori apprentices in the building and construction sector. Specifically, they highlighted how pastoral care and mentoring must be woven throughout the apprenticeship experience to be effective for Māori. Savage (2016) also recommended that employers should build in time and opportunities for mentorship to occur.

Given the significant role that mentorship can play in the success of an apprenticeship, Hirst (2014) suggested that it is important to provide initial training on the mentor's role and strategies to best support an apprentice, as well as ongoing support for this role. Hirst suggested that even brief initial training (such as a one-day workshop) would be effective. However, Corney and Du Plessis (2010) identified that limited funding can be a barrier for the effective implementation of such training initiatives.

Similar findings in the New Zealand context affirm this suggestion. Durkin (2015) found that providing mentorship training to ITO Training Advisors before an apprentice mentorship begins, can support the success of the relationship between mentor and apprentice. Daniel (2023) observed that to be effective, mentoring training needs to have the following: (i) a process of mentor-protégé matching; (ii) identify and train potential mentors; (iii) mentors should be motivated and rewarded; and (iv) designed to address institutional/organizational needs and well resourced. They recommended that the workload of mentors should be reduced to give them time to provide support to mentees.

[15] Although it is necessary to note the distinct lack of evidence available that considers or addresses how to transform outcomes for Māori in apprenticeships (Smiler, 2023)

6.3 Role of mentoring and systems change

The literature examining the role of mentoring in the success of apprenticeships further emphasises the benefit of applying a systems change lens to issues within the construction and infrastructure apprenticeship system, particularly in relation to the role of training advisors. Effective mentoring is closely linked to apprenticeship success, and, at the same time, mentoring can be effective in various forms. This provides participants the opportunity to use mentoring as a way of addressing a range of problems identified with the apprenticeship system. However, Buchanan (2016) acknowledged the difficulty of formalising effective mentoring relationships. This indicates a need to alter multiple, or even all, of the six conditions of system change simultaneously to embed long-term changes, which is reinforced by Smiler's view that pastoral care and mentoring must be woven through the apprenticeship experience.

When viewed through a systems change lens, Daniel's consideration of effective mentoring training provides an excellent example of a cohesive approach to addressing a problem. They identify the necessity of altering policies, practices, resource flows, and mental models in order to train effective mentors.

7.0 Conclusion

This literature review has examined published research and grey literature with a view to exploring applying the lens of the six conditions of system change to work-based training in the construction and infrastructure sector in New Zealand.

It is clear that a systems change lens provides a helpful way of understanding, examining, and likely addressing, problems within the construction and infrastructure apprenticeship system. Key insights include:

- a consolidated approach to simultaneous alterations of all conditions of system change to address problems with the construction and infrastructure apprenticeship system has not been attempted in New Zealand, leading to some significant problems remaining in place
- significantly different apprenticeship models are successful overseas, indicating that there is potential to make major changes to New Zealand's apprenticeship system to address problems that remain in place
- alterations to structural and relational conditions could be used to support more difficult, long term, transformative changes
- understanding problems within the construction and infrastructure apprenticeship system requires applying a systems change lens not just to the system as a whole, but also to individual organisations operating within the system
- training advisors are both affected by, and able to contribute to altering, all six conditions of system change, making them potentially highly influential actors within the construction and infrastructure apprenticeship system, and
- there may be a need to alter multiple, or even all, of the six conditions of system change simultaneously to embed long-term changes in a system.

These insights, and the underlying literature, provide a strong foundation for subsequent phases of this research project. In particular, they indicate a need for a holistic approach to analysing data collected during engagement with stakeholders, actively exploring and considering the relationships between conditions operating at all levels of the hierarchy.

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