Occupational Health and Safety Site Induction Training: An Insight into New Zealand's Construction Industry

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Abstract

New Zealand's construction industry has an extremely poor occupational health and safety (OHS) record. The industry consistently experiences comparatively high workplace fatalities and injuries, placing a significant financial and social burden on the affected individuals, their families, organisations, and the wider community. As legal intervention alone cannot improve such outcomes, other approaches, such as OHS training, are critical. Site inductions are one form of OHS training, focusing on introducing new employees, contractors, and visitors to the work environment, making them a vital component of integrating new workers within the workplace. OHS site induction training is crucial, as workers are at greater risk for work-related injuries during their first months of a new job.

While some research is available on OHS training practices within New Zealand's construction industry, there is a dearth of research on OHS site induction training. This gap is problematic as site induction training is typically the workers' first on-site OHS experience. Therefore, this study explores the current state and effectiveness of OHS site induction training within New Zealand's construction industry through the application of the Adult Learning Theory (ALT) and the Transfer of Training Theory (ToT).

A mixed-methodology approach was applied in this study; a nationwide survey targeting construction workers within New Zealand was used in combination with stakeholder interviews. One hundred completed survey responses were gathered, and 12 stakeholders were interviewed. Data collected from the participants highlighted four key themes that impact OHS site induction training effectiveness: organisation, trainer, trainee, and training characteristics.

As the findings of this study show, some assumptions and factors of ALT and ToT have been incorporated into the design and delivery of OHS site inductions, albeit not necessarily intentionally. However, there are still considerable areas for improvement. Notably, there needs to be a more significant focus on trainee engagement before, during, and after the induction process to ensure that the content and delivery are suitable for the intended audience and to promote a positive organisational safety culture. Doing so can aid in changing the perception of OHS site inductions as a 'tick in the box' compliance exercise and ensure workers feel their health, safety, and well-being are a priority. Another key finding was survey participants' overwhelming preference for OHS site inductions to include some form of in-person interaction, with stakeholders recommending that online platforms be used only as a supplementary tool.

This study has examined the current state and effectiveness of OHS site induction training within New Zealand's construction industry through a broad lens. As such, this thesis has provided a general overview of the research area, indicating key trends rather than an in-depth examination of each influencing factor. Further research should be conducted on a larger scale, focusing on a smaller set of influencing factors. Specific areas that require further investigation include the feasibility of implementing a standardised approach to OHS site induction trainer qualifications to improve the quality of inductions delivered and using pre-site competency assessments to reduce the content and length of OHS site induction training.

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements) nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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Ethics Approval

This research was approved by the Auckland University of Technology Ethics Committee (AUTEC) on the 12th of May 2022, AUTEC Reference Number 22/104.

Chapter One: Introduction

1.1 Introduction

This thesis will explore the current state and effectiveness of Occupational Health and Safety (OHS) site induction training within New Zealand's construction industry. The current state and effectiveness will be analysed by applying relevant learning theories, namely the Adult Learning Theory (ALT) and the Transfer of Training Theory (ToT). This chapter provides an overview of the context and rationale for this research. The aim, scope, and significance will be presented, followed by a summary of each chapter within this thesis.

1.2 Research Context and Rationale

New Zealand's construction industry has an extremely poor OHS record. With 12 deaths, construction was the second most hazardous industry in New Zealand between November 2021 and October 2022 (WorkSafe, 2023a). The industry consistently experiences comparatively high levels of fatalities, with 69 overall workplace deaths from November 2015 to October 2022, placing construction in third place behind transport, postal and warehousing (98 fatalities), and agriculture (101 fatalities) (WorkSafe, 2023a). The latest figures from November 2021 to October 2022 showed there were 5,808 construction-related injuries that resulted in more than a week away from work, putting the construction industry in first place for workplace injuries (WorkSafe, 2023b). New Zealand's construction industry has also had the highest number of new work-related claims since 2019, with 32,823 new claims made in 2022 (ACC, n.d.). While these figures are high, the actual numbers are likely to be significantly higher, with the under-reporting of incidents common within the construction industry (Okorie & Musonda, 2020). Such adverse outcomes place a heavy financial and social burden on the affected individuals, their families, organisations, and the wider community (Namian et al., 2016; Robson et al., 2012). Workplace injuries, illnesses, and fatalities negatively impact organisations through lower productivity levels, high worker turnover, and increased insurance costs (Arcury et al., 2010; Namian et al., 2016; Waehrer & Miller, 2009). Individual consequences in addition to injury may include anxiety, depression, decreased self-worth, financial issues, low job satisfaction, and family pressures (Lax & Klein, 2008; Mylett & Markey, 2007).

As legal intervention alone cannot improve such outcomes (Ricci et al., 2016), other approaches, such as OHS training, are vital (Mylett & Markey, 2007). Multiple studies have linked effective OHS training to reduced workplace incidents and improved organisational culture, thus reducing the likelihood of such adverse outcomes (Bahn & Barratt-Pugh, 2014;

Dong et al., 2004; Freitas & Silva, 2017; Waehrer & Miller, 2009). However, ineffective training interventions do not yield tangible benefits and can result in wasted resources (Albert & Routh, 2021; Ford et al., 2018). Therefore, training interventions must be purposefully designed to enhance workplace safety performance.

Site inductions are one form of OHS training; these focus on introducing new employees, contractors, and visitors to the work environment and are a critical component of integrating new workers within the workplace (Hughes & Ferrett, 2013; Okorie & Musonda, 2020). As OHS site inductions are often the workers' first organisational experience, they set expectations of, and familiarity with, the organisation and its underlying rules (Casio, 2006; Samosamo et al., 2014). OHS site induction training is a critical component of OHS management, as the first few months of a new job are when workers experience a higher risk of work-related injury (Smith & Mustard, 2007). OHS site induction training enables workers to become orientated with the hazards and safety procedures within their workplace, reducing the time required to adapt to their new surroundings, thereby reducing their risk of injury or illness (Burke et al., 2006).

Learning theories will be applied in this research to analyse the effectiveness of current OHS site induction training practices within New Zealand's construction industry. While learning approaches have been applied internationally within an OHS and construction context (refer to Chapter 3), their application in New Zealand has been limited. While many theories regarding effective learning and training methods exist, ALT and ToT have been chosen because of their relevance and applicability.

ALT was developed from a need for a specific theory on how adults learn as well as highlighting the importance of trainees' characteristics during learning (Galbraith & Fouch, 2007; Noe, 2017). As described by Knowles (1990), ALT is based on several assumptions:

1. Adults need to know why they are learning something
2. Adults require self-direction and autonomy
3. Adults bring work and life-related experiences into the learning environment
4. Adults enter the learning environment with a problem-centred approach
5. Adults are motivated to learn through both extrinsic and intrinsic motivators

ToT refers to the trainee's ability to successfully apply the skills, knowledge, and behaviours learned during training within their workplace to improve their job performance (Namian et al., 2016; Velada et al., 2007). Namian et al. (2016) estimate that only 10–15% of training investments translate into tangible benefits, with the remainder being a waste of financial resources and time. Therefore, ToT should be considered during the design and implementation of training programmes to improve learning and OHS outcomes (Namian et

al., 2016; Noe, 2017). The ToT model identifies several influencing factors on training, including organisation characteristics, trainer characteristics, trainee characteristics, and training characteristics (Grossman & Salas, 2011).

While research is available on the current state and effectiveness of OHS training in New Zealand's construction industry (Gao et al., 2019; Lamm et al., 2017), there is a distinct dearth of research focusing on OHS site induction training. As previously highlighted, this gap is problematic as OHS site induction training is commonly the workers' first on-site OHS training experience. Moreover, information regarding the current state and effectiveness of OHS site induction practices within New Zealand's construction industry is lacking, hence the need for this study. While learning approaches, like ALT and ToT, have been applied internationally within an OHS and construction context, there is an absence of their application within New Zealand. These gaps have guided the research questions identified in the following section.

1.3 Research Aims and Scope

Drawing on the gaps identified in the previous section, the primary aim of this research is to answer the question: "What is the current state and effectiveness of OHS site induction training within New Zealand's construction industry?"

The secondary research questions are:

1. What are the OHS site induction training experiences of construction workers within New Zealand?
2. What is the perceived effectiveness of the OHS site induction training received from the construction workers perspective?
3. What are the current OHS site induction training best practices and areas for improvement?
4. To what extent have ALT and ToT been applied within OHS site induction training to improve worker retention and application of knowledge?

These research questions will guide the research design, the data collection, and the targeting of participants required to capture the necessary information in sufficient depth and detail. A multidisciplinary perspective will be used to answer these questions, employing a mixed-methods methodology, enabling in-depth data to be collected through an online survey and semi-structured interviews. The targeted participants for the survey were construction workers in New Zealand, aged 18 years or over, who had completed an OHS site induction training within the past year. The targeted stakeholders for the interviews were domiciled in New Zealand, aged 18 years or over, with expertise, experience, or unique

insights into the construction industry, adult learning and development, and/or OHS site induction practices.

1.4 Thesis Structure

This thesis comprises seven chapters: Chapter One (Introduction), Chapter Two (Background), Chapter Three (Literature Review), Chapter Four (Methodology), Chapter Five (Research Findings), Chapter Six (Discussion), and Chapter Seven (Conclusion).

Chapter One presents the rationale for the research topic, highlighting the need for effective OHS site induction training within New Zealand's construction industry. This chapter also outlines the research aim and subsequent research questions and provides an overview of each chapter.

Chapter Two provides contextual background on OHS site induction training within New Zealand's construction industry. The current state of New Zealand's construction industry is discussed, followed by an explanation of OHS and OHS training, along with context to OHS site induction training within construction. This chapter will also begin to identify the research gaps.

Chapter Three will review the literature pertinent to ALT and ToT and, where possible, link this to OHS site induction training, particularly within New Zealand's construction industry. Each theory is defined, and each component or assumption is analysed, whilst continuing to identify gaps within the literature available.

Chapter Four describes the methodology used in this study and justifies why particular research design choices were made. The aim of this research is identified, and the research design and philosophical underpinnings are explained. This chapter also describes the data collection and analysis process and the rationale behind the mixed-methods methodology employed. Research validity, reliability, and ethical considerations will also be discussed.

Chapter Five presents the findings of this research. The quantitative and qualitative data collected are presented in tables and figures. Statistical data from the survey are presented concurrently with the insights gathered from the survey participants and the stakeholder interviews. These findings are categorised into the following four themes:

- Theme One: Organisation Characteristics
- Theme Two: Trainer Characteristics
- Theme Three: Trainee Characteristics
- Theme four: Training Characteristics

These four themes are broken down further into sub-themes where appropriate. These themes are not isolated from one another but are interconnected and intertwined with each research question. Although each theme can be linked to a specific research question, the findings have implications at several levels and relevance to more than one research question. The research questions were designed to explore different aspects of the same problem, and the themes that emerged in the analysis speak to the interconnectedness of this study's focus. By examining the themes as they relate to each research question, this thesis provides a more nuanced understanding of the issues being studied.

Chapter Six discusses the research findings presented in Chapter Five in greater detail. The themes identified are analysed in line with the research questions and theoretical underpinnings.

Finally, Chapter Seven provides a reflective outline of each chapter, and significant findings are presented. Recommendations for improvement, research strengths and limitations, and further research areas will also be provided.

1.5 Chapter Summary

This chapter has provided an overview of the thesis topic, including the contextual background and rationale for the research. The importance of OHS site induction training within New Zealand's construction industry was introduced. The research aim and scope were outlined alongside the research's significance and intended contributions. The structure of this research was outlined; this thesis comprises seven chapters: Chapter One (Introduction), Chapter Two (Background), Chapter Three (Literature Review), Chapter Four (Methodology), Chapter Five (Research Findings), Chapter Six (Discussion), and Chapter Seven (Conclusion). The following chapter provides background to the thesis topic, examining OHS induction training within New Zealand's construction industry in further detail.

Chapter Two: Background

2.1 Introduction

As previously noted, New Zealand's construction industry has a poor OHS record. With 12 deaths, construction was the second most hazardous industry in New Zealand between November 2021 and October 2022 (WorkSafe, 2023a). From November 2021 to October 2022, 5,808 construction-related injuries resulted in more than a week away from work, placing the construction industry in first place (WorkSafe, 2023b). New Zealand's construction industry has had the highest number of new work-related claims since 2019, with 32,823 new claims made in 2022 (ACC, n.d.). Poor OHS outcomes heavily burden society (Robson et al., 2012) while workplace injuries, illnesses, and fatalities negatively impact organisations through lower productivity levels, high worker turnover, and increased insurance costs (Arcury et al., 2010; Namian et al., 2016; Waehrer & Miller, 2009). Individual consequences may include anxiety, depression, decreased self-worth, financial issues, low job satisfaction, and family pressures (Lax & Klein, 2008; Mylett & Markey, 2007). However, legal regulation alone cannot improve such outcomes (Ricci et al., 2016), and other approaches, such as OHS training, are vital (Mylett & Markey, 2007). Multiple studies have linked effective OHS training to reduced workplace incidents and improved organisational culture, thus reducing the likelihood of such adverse outcomes (Bahn & Barratt-Pugh, 2014; Dong et al., 2004; Freitas & Silva, 2017; Waehrer & Miller, 2009).

This chapter provides contextual background on OHS site induction training within the New Zealand construction industry. Firstly, the current state of New Zealand's construction industry is discussed, identifying its economic contributions, demographic characteristics, workforce pipeline, and health, safety, and well-being performance. Secondly, an explanation of OHS and OHS training is given, including the legislative requirements under the Health and Safety at Work Act (2015). The benefits of OHS training are then explicated. This is followed by a discussion on OHS site induction training, including identifying the recommended content. Thirdly, context is given regarding OHS induction training within the construction industry, highlighting the barriers currently faced. This chapter will also begin to identify research gaps regarding the current state and effectiveness of OHS site induction training within New Zealand's construction industry.

2.2 New Zealand's Construction Industry

As per the Australian New Zealand Standard Industrial Classification (ANZSIC), "The construction industry includes firms engaged in the construction of buildings and other

structures, additions, alterations, reconstruction, installation, maintenance and repairs" (Ministry of Business, Innovation & Employment, 2013, p.13). The construction industry is commonly separated into different sectors, including residential, commercial, heavy and civil engineering, and construction services (Ministry of Business, Innovation & Employment, 2021a). This research includes each of these sectors. The following section discusses the construction industry's economic contributions within New Zealand.

2.2.1 Economic Contribution

The construction industry is a significant business sector in New Zealand, being the fourth largest employer in 2021 (Ministry of Business, Innovation & Employment, 2021a). Construction contributed 6.9% to New Zealand's GDP in 2020, making it the fourth largest contributor at $22.5b (StatsNZ, 2020b), reflecting a steady increase from sixth place in 2010, with a GDP contribution of 5.4% (Ministry of Business, Innovation & Employment, 2021a). The construction industry also plays a vital role in most of New Zealand's regional economies. In the year ended March 2020, only four of the 16 regions (Taranaki, Wellington, Marlborough, and Southland) had contributions less than 6% (StatsNZ, 2022b). Section 2.2.2 identifies the demographic characteristics of the industry.

2.2.2 Demographic Characteristics

The construction industry made up 12.5% of New Zealand businesses as of February 2021, with approximately 70,629 enterprises (StatsNZ, 2021b). As previously highlighted, construction was the fourth largest employer from July 2020 to June 2021, employing 10% of the national workforce, with 275,600 workers (Ministry of Business, Innovation & Employment, 2021a). This figure is steadily growing; compared to June 2020, there were an additional 11,014 more jobs in the sector in June 2021, making it the industry with the most significant percentage increase in employment (Ministry of Business, Innovation & Employment, 2021a). This growth in the workforce reflects the increasing levels of construction activity across New Zealand, despite the impact of the COVID-19 pandemic (Ministry of Business, Innovation & Employment, 2021a). While the number of part-time employees decreased by 8.6% from December 2020 to December 2021, the number of full-time employees increased by 3.9% over the same period (StatsNZ, 2022a).

99% of New Zealand's construction industry enterprises were classified as small-to-medium enterprises (SMEs) in February 2021, employing 70% of the workforce (StatsNZ, 2021b). An SME comprises 0-49 employees (New Zealand Small Business Council, 2019). Small companies are those having less than 20 employees (Ministry of Business, Innovation

& Employment, 2022); as of February 2021, 52.8% of the construction industry's workforce was employed within a small company (StatsNZ, 2021b).

Average hourly earnings have increased steadily in the past decade, catching up with the national average (Ministry of Business, Innovation & Employment, 2021a). The average hourly rate in the quarter ending December 2021 was $33.36, an increase of $1.55 (2.8%) from the December quarter in 2020 (StatsNZ, 2022a). Despite this increase, pay gaps between male and female workers remain prevalent (Ministry of Business, Innovation & Employment, 2021a).

As the workforce size within the construction industry has grown, so has the diversity. In 2020, one-third of the workforce identified as being Māori (15%), Asian (11%), or Pacific (7%) ethnicity, reflecting an increase of 2% from 2018 (Ministry of Business, Innovation & Employment, 2021a). The construction sector is becoming increasingly gender-diverse; over the past decade, the number of female workers has increased by 72%, compared to a 58% growth in male workers (Ministry of Business, Innovation & Employment, 2021a). Despite the increase in female workers employed within construction, the overall ratio of female to male employees is still lagging, with less than 20% female participation in the industry (Construction Sector Accord, 2021). Compared to the national population, workers in the construction industry tended to be younger, with 46% of workers aged between 15-39 in the year ended December 2020 (Ministry of Business, Innovation & Employment, 2021a).

A significant workforce issue is the lack of available high-skilled workers. This skill shortage has arisen from issues including a limited flow of skilled migrant workers due to the COVID-19 pandemic and subsequent border restrictions, problems with the retention of staff due to both national and international competition for construction, and lower rates of female employment (Ministry of Business, Innovation, & Employment, 2021b). This skills shortage is also intertwined with low resource availability and supply-chain lags; during a skills shortage, skilled staff may not be available to complete a project later when the resources become available (Ministry of Business, Innovation & Employment, 2021b). The following section highlights the workforce pipeline for New Zealand's construction industry.

2.2.3 Workforce Pipeline

As the demand for construction grows, so too has the number of workers training in construction-related qualifications and apprenticeships. There was a 114% increase in construction-related apprenticeships from 2011-2020, with the most significant increase of 21% observed from 2019 to 2020 (Ministry of Business, Innovation & Employment, 2021a). There was a 26% increase in the total number of domestic and international students

enrolled in construction-related qualifications between 2011-2020 (Ministry of Business, Innovation & Employment, 2021a). Notwithstanding these increases, there is an ongoing concern about worker capacity and the capability to meet the increased building activity demands, particularly when paired with the skill shortages discussed in the previous section (Ministry of Business, Innovation & Employment, 2021a). Section 2.2.4 identifies the current state of health, safety, and well-being within the industry.

2.2.4 Health, Safety, and Well-being

As identified in Section 2.1, from November 2021 and October 2022, construction was the second-highest industry by fatality count, with 12 fatalities, behind the transport, postal and warehousing industry, with 14 deaths (WorkSafe, 2023a). This number reflects a slight decrease increase from the previous 12-month period, when 14 construction industry deaths occurred (WorkSafe, 2023a). Over the period November 2021 to October 2022, there were 5,808 injuries resulting in more than a week away from work, placing the construction industry in first place (WorkSafe, 2023b). This number has slightly increased since the previous 12-month period, where 5,796 injuries resulted in more than a week away from work (WorkSafe, 2023b).

In 2020, the construction industry had the third-highest incidence claim rate of 141 claims per 1,000 FTEs[1], well above the national rate of 89 (StatsNZ, 2021a). The claims made in 2020 from the construction industry led to an accumulated 906,233 days off work, with an average of 32 days off per claim (Work Should Not Hurt, n.d.). The construction industry has consistently had the highest number of new work-related claims since 2019, with 32,823 new claims made in 2022 (ACC, n.d.). Due to under-reporting the actual number is likely to be higher (Okorie & Musonda, 2020). A New Zealand study on the construction industry found that only 28% of employers said serious harm incidents within their companies were reported to WorkSafe (Site Safe, n.d.-a).

New Zealand's construction industry also performs poorly in worker mental well-being. A MATES in Construction study involving 1,202 participants found that 4% (approximately 48 respondents) had seriously thought about committing suicide in the last four months, with 2% (approximately 24 respondents) reporting that they had actually made plans to end their life (Morrison et al., 2022). The three most common issues of concern were high workload (37%), COVID-19 protocols (31%), and pressures from delays (30%). Only 33% of respondents reported that their employer had checked on their welfare at work in the last year (Morrison et al., 2022). From 2007 to 2019, there were 583 reported suicides

[1] An FTE is the hours worked by one person on a full-time basis.

in the industry, ranging from 35 to 65 suicides each year (Jenkin & Atkinson, 2021). These high rates of suicide within the construction industry are not limited to New Zealand, with suicide being the leading cause of death within construction internationally (Tijani et al., 2021).

Workplace illnesses, injuries, and fatalities heavily burden society, businesses, and individuals (Robson et al., 2012). Organisational consequences of workplace illnesses, injuries, and fatalities include lower productivity levels due to disruptions within the work cycle (Waehrer & Miller, 2009), costs incurred from lost production time (Namian et al., 2016), the cost of replacement workers and high worker turnover (Waehrer & Miller, 2009), and increased insurance costs (Arcury et al., 2010). Alongside the organisation, poor OHS outcomes can negatively impact workers' welfare. Workplace injuries and illnesses can cause anxiety, depression, decreased self-worth, family pressures, financial issues, and low job satisfaction (Lax & Klein, 2008; Mylett & Markey, 2007). These individual consequences can have flow-on effects for the employer, resulting in reduced worker performance once the employee has returned to work (Lax & Klein, 2008). A significant outcome is the financial impact; in 2006, New Zealand workers covered an estimated 46.4% of the total financial costs caused by occupational injury and illness (Pezzullo & Crook, 2006). ACC payouts are funded by ACC levies, which are paid for by New Zealand employees, employers, and self-employed individuals. In 2020, ACC paid out $153 million to injured construction workers (ACC, 2021). The following section provides an overview of OHS, OHS training, and OHS site induction training.

2.3 Occupational Health and Safety

The following sections establish the background of OHS training and OHS site induction training. Before these areas can be discussed, OHS itself must first be understood. OHS, as a focus of research and regulation, is a relatively recent phenomenon, with consideration for workers’ health and safety arising in response to labour movements and worker concerns stemming from the industrial revolution (Hughes & Ferrett, 2013). Occupational health is concerned with protecting peoples’ bodies and minds from illnesses arising from the materials, equipment, or processes used in the workplace. In contrast, occupational safety is concerned with protecting people from physical harm (Hughes & Ferrett, 2013). Therefore, OHS is a multidisciplinary field concerned with anticipating, recognising, evaluating, and controlling workplace hazards to prevent harm to workers’ health, safety, or well-being, encompassing all working environments and all forms of work (Alli, 2008; Lamm, 2009). OHS can also protect other personnel impacted by the work

environment, including customers, suppliers, employers, and members of the public (Kirch, 2008).

As OHS encompasses all workplaces and forms of work, the hazards it aims to provide protection from vary widely. Some hazards have been the focus of OHS for many years while others are comparatively new, requiring the field of OHS to be constantly updated. Such hazards include physical hazards, chemical and other hazardous substances, work organisation and the psychosocial work environment, and changes to labour markets, work organisation, and workforce demographics (Quinlan et al., 2010).

As workplace hazards differ, so do the disciplines and professions involved. The causes of occupational injury and illness have been analysed from numerous disciplinary perspectives, with the most prominent including medical and health science, occupational epidemiology, work psychology, ergonomics, occupational hygiene, safety engineering, sociology, work relations, legal, and economics (Kirch, 2008). The focus of each discipline varies widely, often leading to conflicting assessments of the primary causes of illness and injury, exacerbated by minimal cross-disciplinary dialogue (Quinlan et al., 2010). Training has historically been the focus of the work psychology realm, highlighting the contribution of worker characteristics and behaviour to illness and injury. However, it is important to mention the criticisms of contributions from this field, with a significant criticism being the undue emphasis on individualised causes of injury and illness. This individualised view enables employers to place the responsibility upon the individual worker, thus providing the rationale for implementing typically inexpensive interventions, such as upgrading training (Quinlan et al., 2010). While training can effectively influence OHS outcomes (see Sections 2.3.1 and 2.3.1.2), it is vital to note that training alone cannot ensure the health and safety of workers.

2.3.1 Occupational Health and Safety Training

Under both OHS practice and common sense, removing hazards is preferable to preventing exposure and incident. However, when workplace hazards cannot be removed, the next best option is to control them (Ricci et al., 2016), with training being an important and widely adopted component of OHS management (Legg et al., 2009). OHS training encompasses planned procedures that provide participants with the knowledge, skills, and competencies necessary to achieve desired safety behaviours (Namian et al., 2016; Robson et al., 2012). Providing OHS information and training to employees aids in developing their awareness and understanding of the hazards and risks related to their job and working environment (Hughes & Ferrett, 2013; Weinstock & Slatin, 2012). OHS training also informs workers of the control measures in place and the related health and safety procedures that

must be followed (Quinlan et al., 2010). OHS training should be provided to workers during an induction and every time they are exposed to new or increased workplace risks due to changes in job responsibilities, the introduction of new equipment or technology, a change in the system of work, or an increase in the employment of vulnerable employees (Hughes & Ferrett, 2013). There are several forms of OHS training; these include site inductions, job-specific, supervisory and management, specialist, and informal training like 'toolbox talks.' Common OHS training methods include e-learning, hands-on practice, classroom theory lessons, and visual materials (Gao et al., 2019; Ricci et al., 2016). Multiple factors influence the effectiveness of OHS training; these are discussed in detail in the literature review provided in Chapter 3.

2.3.1.1 Legislation Regarding Occupational Health and Safety Training. Until the introduction of the current Health and Safety at Work Act 2015, New Zealand's health and safety legislation was "piecemeal, complex and unwieldy" (Lamm, 2010, p. 169). There was little to no focus on training until the introduction of the Health and Safety in Employment Act of 1992. For this reason, only legislation resulting from the Health and Safety in Employment Act 1992 has been discussed below.

2.3.1.1.1 Health and Safety in Employment Act 1992. The 1972 Robens Report by the UK Safety and Health at Work committee highlighted deficiencies similar to those faced in New Zealand and Australia (Lamm, 2009). The report recommended the implementation of a single Act that covered all workers to be administered by a single inspectorate. It proposed a joint, self-regulatory approach, where the primary responsibility for worker health and safety was placed on the employers and workers. The report emphasised the importance of health and safety committees and representatives to encourage worker participation (Pashorina-Nichols et al., 2017). While the UK and Australia applied the report's recommendations during the 1970s and 1980s, New Zealand did not follow suit until the introduction of the Health and Safety in Employment Act (HSEA) in 1992 (Lamm, 2009).

The introduction of the HSEA 1992 was New Zealand's first step towards developing an overarching piece of health and safety legislation administered by one enforcement authority (the Department of Labour) that covered most workers (Lamm, 2009). The Act targeted the prevention of harm within the workplace and promoted the systematic management of health and safety, focusing on training and supervision (Pashorina-Nichols et al., 2017). However, the Act failed to significantly reduce the rate of workplace incidents, with critics attributing this failure to the Act's deviation from the Robens model (Lamm, 2009). The HSEA 1992 did not cover all workers and was also criticised for ineffective enforcement. These concerns, paired with the general employment legislation review, led to

the enactment of the Health and Safety in Employment Amendment Act 2002 (Lamm, 2009; Pashorina-Nichols et al., 2017).

2.3.1.1.2 Health and Safety in Employment Amendment Act 2002. The Health and Safety in Employment Amendment Act 2002 included the requirement for worker participation regarding health and safety in line with the Employment Relations Act 2000. This Act placed the duty on employers to ensure that their workers were given the opportunity to participate in workplace health and safety management, including health and safety training, regardless of the number of workers employed (Lamm, 2010). This Amendment Act also entitled health and safety representatives to two days of paid leave a year to attend an approved health and safety training course (Lamm, 2009).

2.3.1.1.3 Health and Safety at Work Act 2015. After the Pike River Coal Mine tragedy in 2010, a comprehensive review of New Zealand's health and safety law was led by the Taskforce on Workplace Health and Safety, established in 2012 (Campbell, 2016; Pashorina-Nichols et al., 2017). The Taskforce concluded that New Zealand's health and safety performance was poor compared to Australia and the UK and that the current legislation was unsuitable (Independent Taskforce on Workplace Health & Safety, 2013). This led to the introduction of the current legislation, the Health and Safety at Work Act (HSWA) 2015, and the formation of a new government agency, WorkSafe, responsible for the regulation of workplace health and safety through education, engagement, and enforcement (Neal, 2017; WorkSafe, 2019). This new Act had implications for OHS training, as it increased the responsibilities of a larger number of duty holders (Sizemore, 2017), including OHS training requirements and increased penalties for non-compliance (Dabee, 2016).

Under the Health and Safety at Work Act (HSWA) (2015), a fundamental principle relating to risk management is that where a person has a duty under that Act, they must eliminate the risk so far as is reasonably practicable. Where it is not reasonably practicable to eliminate the risk, they must minimise it so far as is reasonably practicable. As highlighted in Section 2.3.1, when workplace hazards cannot be removed, the next best option is to control them to minimise exposure and incident. OHS training is one control that is a vital and widely adopted component of OHS management (Legg et al., 2009). Under the HSWA (2015), PCBUs[2] are responsible for providing any information, training, or instruction

[2] A PCBU means a Person Conducting a Business or Undertaking. Businesses are typically conducted to make a profit, with a degree of organisation, system, and continuity. Undertakings have elements of organisation, system, and potential continuity but are usually not conducted to make a profit or commercial in nature.

necessary to protect all persons from health and safety risks arising from work carried out (WorkSafe, 2019). The type of training required depends on the nature of the work conducted, the experience of the workers, and the risk to which workers and others are exposed (WorkSafe, 2019).

2.3.1.2 Benefits of Occupational Health and Safety Training. Aside from fulfilling legal obligations, several benefits arise from providing employees with relevant OHS information and training. Effective training is proven to positively influence participants' knowledge, beliefs, attitudes, and behaviours regarding OHS (Freitas & Silva, 2017; Ricci et al., 2016). Improvements in worker safety competencies are linked to a reduction in accident severity and frequency, a reduction in injury and ill-health-related absences, and a reduction in compensation claims and insurance premiums (Dong et al., 2004; Gillen et al., 2002; Hughes & Ferrett, 2013; Namian et al., 2016; Squelch, 2001). Additional benefits include improvements in the OHS culture of the organisation (Bahn & Barratt-Pugh, 2014; Bentley & Tappin, 2010; Okorie & Musonda, 2020; Ricci et al., 2016). Subsequent outcomes can include increased staff morale and retention (Hughes & Ferrett, 2013; Legg et al., 2009), improved job satisfaction (Lamm, 2009), and higher productivity levels (Waehrer & Miller, 2009), all contributing to a positive effect on organisations' bottom-line results.

2.3.2 Occupational Health and Safety Site Induction Training

OHS site induction training involves introducing new employees, contractors, and visitors to the work environment and is a critical component of integrating new workers within the workplace (Hughes & Ferrett, 2013; Okorie & Musonda, 2020). OHS site induction training is often workers' first organisational experience. As such, it sets their expectations and familiarity with the organisation and its underlying rules, especially around health and safety standards (Casio, 2006; Samosamo et al., 2014). OHS site induction training is a vital component of OHS management, as the first few months of a new job place the workers at a higher risk for work-related injury (Smith & Mustard, 2007). A Canadian study found that worker lost-time injury claims were four times higher in their first month of employment compared to 12 months of employment (Breslin & Smith, 2006). This increased risk persisted after adjustments were made for age, sex, occupation, and industry differences. This finding has the notable implication that older, more experienced workers are at a similar risk of injury as their younger, often less experienced colleagues. The provision of OHS training early in employment, like OHS site inductions, enables workers to become orientated with the hazards and safety procedures within their workplace, reducing the time required to adapt to their new surroundings, thereby reducing their risk of injury or illness

(Burke et al., 2006). A study by Kinn et al. (2000) focusing on pipe fitters and plumbers in Ohio found that OHS site inductions were associated with a significant reduction in workplace injuries. Studies like these indicate that proper OHS orientation and training can reduce the risk of injury within the workplace.

Most OHS site induction training programmes would include the following:

- The OHS policy of the company, including a summary of the organisation and employee consultation arrangements and the identification of Health and Safety representatives (Okorie & Musonda, 2020)
- A summary of the OHS management system, including key personnel (Hughes & Ferrett, 2013)
- The workers' responsibility for OHS, including general OHS rules (Okorie & Musonda, 2020)
- The accident and near-miss reporting procedures (Employment New Zealand, n.d.)
- The emergency procedures, including the identification of on-site first aid and certified first-aiders, safe site egress, assembly points, and contact protocols with emergency services (Hughes & Ferrett, 2013)
- The hazards specific to the workplace (Okorie & Musonda, 2020)
- A summary of relevant risk assessments and control measures (Samosamo et al., 2014)
- The reporting procedures for defects or hazards (Hughes & Ferrett, 2013)
- An overview of the site layout, including the location of on-site facilities, such as the bathroom, lunchroom, and shelter (Employment New Zealand, n.d.).

As noted by Hughes and Ferrett (2013), additional content may be included depending on organisation or site-specific requirements, such as:

- Traffic management plans and operating procedures
- The correct use of personal protective equipment (PPE)
- Ergonomic considerations, like manual handling techniques
- Details of substances hazardous to health and the relevant OHS procedures.

How an induction is given should relate to the material covered and the backgrounds of the trainees (Hughes & Ferrett, 2013). How an OHS site induction is delivered also depends on various factors, such as the number of workers being inducted, the size or nature of the workplace, the structure of the organisation, and the complexity of the matters being discussed (Site Safe, n.d.-c). The learning abilities of workers can also affect their

responsiveness to OHS site induction training, and therefore the training design should be created to reflect this (Samosamo et al., 2014). OHS site induction methods commonly include on-the-job training, classroom-based learning, and e-learning such as online or app-based interactive programmes (Ricci et al., 2016; Site Safe, n.d.-c). As organisations set their own induction practices per their requirements and needs, there is no overarching model of induction training (Kumar, 2010; Samosamo et al., 2014). Indicators of a successful induction include role clarity, organisational attachment and commitment, task mastery, and values congruence (Samosamo et al., 2014).

A record containing the names of workers who have completed the OHS site induction training process should be kept and should include an overview of the content covered, who conducted the training, and the date the training was completed. The inductee should also sign this record to acknowledge the training received (Site Safe, n.d.-c). Follow-ups are recommended with each inducted worker after three months to ensure that the content delivered has been retained (Hughes & Ferrett, 2013). The content of an OHS site induction should be subjected to constant review and regularly updated to ensure it remains relevant to the site (Hughes & Ferrett, 2013). Some instances where an OHS site induction may need to be updated include changes to legislation, changes to risk assessment findings, the introduction of new equipment or processes, or after an incident (Hughes & Ferrett, 2013). The following section explains OHS site induction training within the context of New Zealand's construction industry.

2.4 OHS Site Induction Training Within Construction

While there is limited research available on the current state and effectiveness of OHS training in New Zealand's construction industry (Gao et al., 2019; Lamm et al., 2017), there is a distinct lack of research with a focus on OHS site induction training. As discussed in Section 2.3.2, studies have indicated that proper OHS orientation and induction can reduce injury within the construction industry; however, such studies have not been conducted within a New Zealand context. This gap is problematic, as induction training is often the workers' first on-site OHS training experience, setting their familiarity and expectations regarding organisational culture and rules, particularly around health and safety (Casio, 2006; Samosamo et al., 2014).

As discussed in Section 2.2.4, New Zealand's construction industry ranks poorly in various OHS measurements, with subsequent negative outcomes impacting affected individuals, their families, their organisations, and the wider community. As identified in Section 2.3.1.2, effective training can positively influence such adverse outcomes. Chapter 3

provides an in-depth analysis of the factors that impact training outcomes that should be considered to ensure construction OHS site inductions fulfil their purpose. However, before these factors can be identified and discussed, the potential barriers must be considered. Section 2.4.1 discusses the barriers to effective training faced by New Zealand's construction industry.

2.4.1 Barriers

Several characteristics of New Zealand's construction industry pose a barrier to effective OHS site induction training. The most notable of these characteristics include the prevalence of SMEs, the highly transient workforce, and the reliance on migrant workers. Each of these barriers is discussed in the following three sections.

2.4.1.1 Small-to-Medium Enterprises. The characteristically small size of SMEs poses significant barriers to OHS management and the implementation of effective OHS training. Compared to larger companies, SMEs often cannot devote as many economic, human, and technical resources to OHS (Beaver, 2003; Micheli & Cagno, 2010). SMEs also have a lower capacity to effectively assess and control risks than larger companies (Champoux & Brun, 2003; Hasle & Limborg, 2006). SMEs lacking the necessary financial resources are less inclined to invest in effective OHS training (Dabee, 2016; Liedholm & Mead, 2013), with staffing limitations deterring SMEs from pursuing training that requires significant time away from the workplace (Barbeau et al., 2004; Champoux & Brun, 2003). This lack of investment in OHS training within SMEs is problematic, as staffing limitations can result in employees having to perform a broader range of duties than those in larger organisations. This increased role variance often requires more extensive OHS training (Koukoulaki, 2010). Limited OHS or OHS training experience within SMEs due to the number of employees can pose a barrier, with SMEs less likely to have open access to OHS expertise, particularly those lacking the financial resources to invest in external advice (Masi & Cagno, 2015). This lack of resources and OHS acumen and their subsequent impact on SMEs' ability to implement effective training interventions poses a concern for OHS site induction training largely due to the significant proportion of businesses classified as SMEs. As previously highlighted in Section 2.2.2, 99% of New Zealand's construction industry enterprises were classified as SMEs in February 2021 (StatsNZ, 2021b), and the number of SMEs continues to rise, with a 12.4% increase from 2018 to 2021 (StatsNZ, 2018; StatsNZ, 2021b).

2.4.1.2 Transient Workforce. Transient or temporary employment negatively impacts training and OHS outcomes (Koukoulaki, 2010). This is a significant factor in New Zealand's construction industry, with its complex sub-contracting chains and informal employment practices that increase the likelihood of worker exploitation and ineffective OHS practices (Lamm et al., 2017). Temporary workers have higher accident rates attributable to deficiencies in worker health and safety competencies from absent or ineffective training practices (Koukoulaki, 2010; Virtanen et al., 2005). Such training practices are more prevalent in time-sensitive industries (Arcury et al., 2010; Fabiano et al., 2008), like construction (Namian et al., 2016). The transient nature of construction discourages employers from implementing resource-intensive and innovative training programmes (Namian et al., 2016), with the exclusion of temporary workers from formal training common (Koukoulaki, 2010). OHS management is often unable to sufficiently oversee all workers within transient workplaces, especially on larger sites (Okorie & Musonda, 2020), meaning that temporary workers are more likely to be overlooked during OHS checks or neglected by firms who compromise health and safety for profit (Ng et al., 2005). Temporary or transient employment also fosters job insecurity which can negatively impact workplace safety culture and attitudes (Ervasti & Virtanen, 2019; Koukoulaki, 2010). Barling and Frone (2004) proposed that job insecurity fosters negative job attitudes, which subsequently can result in reduced adherence to safety policies.

2.4.1.3 Migrant Workforce. As identified in Section 2.2.3, the increasing demand for construction, paired with the skill shortages, has raised concerns about worker capacity and capability. Many industries in New Zealand rely on migrant workers to fill worker shortages (Lamm et al., 2017), with these shortages often concentrated within hazardous occupations, like construction (Koukoulaki, 2010; Moyce & Schenker, 2018). Migrant workers are more inclined to take more significant risks, work without proper PPE, and are less likely to receive adequate OHS training (Lamm et al., 2017; Moyce & Schenker, 2018). Reasons for this lack or inadequacy of training may include the migratory behaviour of migrant workers resulting in them missing safety training (Moyce & Schenker, 2018), disorganisation at both industry and workplace levels (Lamm et al., 2017), the unavailability of safety training in workers' native language (Liebman et al., 2013), cultural issues impacting how workers receive and interpret training (Flynn, 2014), and employers' reluctance to invest in sufficient training (Moyce & Schenker, 2018). These factors pose a significant risk for OHS outcomes and may help to explain the higher migrant occupational accident rates internationally and within New Zealand (Moyce & Schenker, 2018).

Language disparities and cultural characteristics of migrant workers can pose significant challenges to effective OHS training. In the 2018 census, the most common languages spoken in New Zealand (aside from English) were Te Reo Māori, Samoan, Northern Chinese (including Mandarin), and Hindi (StatsNZ, 2020a). Most training occurs in English, with training provided in migrants' first languages often being harder to access, especially in organisations with limited funding (Moyce & Schenker, 2018). OHS training can have little to no impact on workers' protection if they cannot understand the content (Arcury et al., 2010; New Zealand Immigration, n.d.). Even if migrant workers can understand the training provided, cultural characteristics are another influential factor as these impact how workers receive and interpret the information presented (Flynn, 2014). An unwillingness to ask questions or a larger perceived power imbalance between the workers and their higher-ups can decrease the likelihood of migrant workers clarifying areas of concern or misunderstanding, reducing the effectiveness of the training and the likelihood that they achieve the necessary OHS competencies to operate safely on site (New Zealand Immigration, n.d.; Vignoli et al., 2021). While not all migrant workers are classed as vulnerable, those that are working under precarious employment conditions are less inclined to complain about unsafe working conditions, including a lack of training, out of fear of losing their job (Moyce & Schenker, 2018) and out of loyalty to their employer (Lamm, 2014), hindering the likelihood of improvement. The following section provides a summary of this chapter.

2.5 Chapter Summary

New Zealand's construction industry has a poor OHS record; in 2021, it ranked second in fatalities (WorkSafe, 2023a) and first in injuries resulting in more than a week away from work (Worksafe, 2023b). Such outcomes heavily burden the affected individuals, their families, organisations, and the wider community (Namian et al., 2016). Multiple studies have linked effective OHS training to reduced workplace incidents and improved organisational culture, thus reducing the likelihood of adverse outcomes (Bahn & Barratt-Pugh, 2014; Dong et al., 2004; Freitas & Silva, 2017; Waehrer & Miller, 2009). Site inductions are one form of OHS training, introducing new employees, contractors, and visitors to their work environment, making it a critical component of integrating new workers within the workplace (Hughes & Ferrett, 2013; Okorie & Musonda, 2020). OHS site inductions are often workers' first organisational experience. As such, it sets their expectations and familiarity with the organisation and its underlying rules, especially around health and safety standards (Casio, 2006; Samosamo et al., 2014).

While research is available on the current state and effectiveness of OHS training in New Zealand's construction industry, there is a distinct lack of research focusing on OHS site induction training. This gap is problematic, as induction training is often the workers' first on-site OHS training experience, setting their familiarity and expectations regarding organisational culture and rules, particularly around health and safety (Casio, 2006; Samosamo et al., 2014). Information regarding the current state and effectiveness of OHS site induction practices within New Zealand's construction industry is unavailable, resulting in the need for this research project. The following chapter provides a literature review of the theories and frameworks employed within this research, linking them, where possible, to OHS site induction training within New Zealand's construction industry.

Chapter Three: Literature Review

3.1 Introduction

As identified in the previous chapter, effective training can positively impact OHS outcomes. However, ineffective training interventions do not yield tangible benefits and can result in wasted resources (Albert & Routh, 2021; Ford et al., 2018). Therefore, training interventions must be purposefully designed to enable enhanced safety performance. This research will apply learning theories to analyse the effectiveness of current OHS site induction training practices within New Zealand's construction industry. While learning approaches have been applied internationally within an OHS and construction context, their application in New Zealand is limited. There are many theories regarding effective learning and training methods; however, for this research, adult learning theory (ALT) and transfer of training (ToT) theory have been chosen due to their relevance and applicability. This Chapter will review the literature pertinent to ALT and ToT and, where possible, link this to OHS site induction training, particularly with respect to New Zealand's construction industry. Firstly, ALT is defined, and each of its assumptions is analysed, including relevance orientation, self-direction, previous experiences, problem-centred approach, and extrinsic and intrinsic motivation. Secondly, ToT is defined, and each component is discussed and broken down into four categories: organisation characteristics, trainer characteristics, trainee characteristics, and training characteristics.

3.2 Adult Learning Theory

ALT was developed from a need for a theory specific to how adults learn (Galbraith & Fouch, 2007; Noe, 2017). Most educational theories have been developed around the education of children and youths, with pedagogy; the theory behind how children learn, dominating educational theory (Albert & Hallowel, 2013; Noe, 2017). Pedagogy places the responsibility for learning content, methods, and evaluation on the trainer, with trainees seen as passive recipients with minimal experience or expertise (Fornaciari & Lund Dean, 2014; Knowles, 1996). Upon recognising the limitations of the then-current educational theories, educational psychologists developed andragogy, otherwise known as ALT (Noe, 2017). ALT highlights the importance of trainees' characteristics during learning (Galbraith & Fouch, 2007).

Despite the difference in learning needs between adults and children, construction OHS training programmes are still commonly based on pedagogical principles and built around instructor-centric methods with minimal trainee participation, negatively impacting

training effectiveness (Loosemore & Malouf, 2019). As construction OHS training is directed toward adult trainees, training programmes, such as OHS site inductions, should integrate ALT into their design and delivery to ensure effective trainee learning and retention (Albert & Hallowel, 2013). As identified by Bressiani and Roman (2017), the elements and principles of ALT are not complex concepts, nor are they difficult to apply to learning courses in a construction context.

Malcolm Knowles was the educator primarily associated with the development of ALT, with his model based on several assumptions (Knowles, 1990):

1. Adults need to know why they are learning something
2. Adults require self-direction and autonomy
3. Adults bring work and life-related experiences into the learning environment
4. Adults enter the learning environment with a problem-centred approach
5. Adults are motivated to learn through both extrinsic and intrinsic motivators.

Each assumption of ALT is discussed in further detail in the following sections.

3.2.1 Relevancy Orientation

One assumption of ALT is adults' relevancy orientation; adult learners need to know why they are learning something and the applicability of the training content to their immediate work needs (Noe, 2017), as training deemed irrelevant or time-wasting is ineffective in influencing trainee competencies (Galbraith & Fouch, 2007). This relevancy orientation can be met by ensuring that training content is relevant to the working conditions experienced by the trainees (Wilkins, 2011); this may require the trainer to spend time within the trainees' workplace or with the trainees themselves to gain a deeper understanding of their needs before developing the training content (Galbraith & Fouch, 2007). Adult learners are more motivated to learn and achieve a higher sense of accomplishment when they are included in identifying their training needs and desired outcomes (Smith, 2017). The provision of learning objectives at the beginning of a training session and the inclusion of participants in setting these objectives aid trainees' understanding of the 'bigger picture' of the training content and its applicability to their roles (Galbraith & Fouch, 2007). Trainers should make the trainees aware of gaps in their knowledge and then explain how the training will help address these gaps (Wilkins, 2011). The training content's impact on workplace outcomes should also be explained at the beginning of a training session, as trainees who perceive the content to be beneficial will have a higher degree of commitment during the learning process (Albert & Hallowel, 2013). According to Potts (2016), if an OHS programme's purpose is ambiguous or appears only to serve the company without benefit to

the trainee, many trainees will not pay attention or engage with the training, rendering it a waste of time and resources. The following section discusses the assumption of self-direction.

3.2.2 Self-Direction

Another assumption of ALT is adults' need for self-direction and autonomy (Noe, 2017). This assumption is tied to the idea that as people mature their independence increases and they become more self-directing and capable of making decisions on their own (Merriam, 2017). Generally, as people mature they dislike forced direction or imposition by others (Albert & Hallowel, 2013; Bressiani & Roman, 2017). Therefore, for effective learning to occur, adult trainees need to be free to direct themselves (Falasca, 2011) and feel they have a say in the content (Dalto, 2015; Galbraith & Fouch, 2007). Self-directed learning does not mean learning alone; it is about the learner taking control of their learning (Merriam, 2017). By avoiding a pedagogical approach, where the trainer determines the course content and delivery methods, and implementing an andragogical approach, the trainer's role is to facilitate collaborations with trainees to develop a learner-centric training environment (Albert & Hallowel, 2013). Under ALT, it is recommended that trainers collaborate with trainees during content planning and the setting of learning objectives, thereby ensuring that trainees feel they have a sense of control over the training. This increases their engagement and feeling of responsibility for learning outcomes, thereby impacting the effectiveness of the training (Albert & Hallowel, 2013). Section 3.2.3 highlights the impact of participants' previous experiences on training.

3.2.3 Previous Experiences

The principle that adults bring an accumulation of previous life experiences into the learning situation is another assumption of ALT (Noe, 2017). Adult trainees have diverse backgrounds, experiences, and learning styles which aid the mutual learning and enquiry process (Albert & Hallowel, 2013). Adults can also apply their life experiences to the learning environment, which draws upon their reflective and reasoning abilities to solve problems (Bressiani & Roman, 2017; Guirguis, 2020). A study by Bressiani and Roman (2017) on the use of ALT within civil construction courses found that the more the participants' experience was considered, discussed, and respected, the higher their satisfaction and engagement with the course.

While past experiences can aid learning situations by providing knowledge of scenarios to which the training can be applied, they can also present barriers to effective

training. Potential barriers include a lack of experience regarding workplace hazards, previously acquired knowledge being incorrect or incomplete, and negative past experiences involving training. Negative past experiences can significantly impact a trainee's receptiveness to the learning content (Galbraith & Fouch, 2007). Trainers should consider both positive and negative past experiences of trainees and, where possible, incorporate them into the training programme to ensure relevance and engagement (Galbraith & Fouch, 2007). The following section discusses adult learners' problem-centred approach to learning.

3.2.4 Problem-Centred Approach

The fourth assumption of ALT is that adults enter a learning environment with a problem-centred approach (Noe, 2017). As people mature their perspective on learning changes from one of postponed application of knowledge to a requirement for immediate implementation (Guirguis, 2020). Adult trainees are predominantly task or problem-centred, preferring practical lessons that enable them to deal with practical tasks and problems encountered in their workplace or everyday lives (Fornaciari & Lund Dean, 2014). They are also less inclined to pay attention to learning content not deemed essential to their roles and real-life problems (Albert & Hallowel, 2013). According to Knowles et al. (2014), a primary learning motivation for adults is when collaborative approaches are implemented to seek solutions to commonly encountered real-life problems. Therefore, the facilitation of mutual inquiry through mutual and inductive learning processes should be used rather than authoritative instruction (Albert & Hallowel, 2013). As with fulfilling adult learners' need for self-direction and relevancy orientation, the trainer should implement a facilitatory approach, allowing trainees to aid in the development of the content to ensure relevance and create an environment that encourages the peer-to-peer exchange of knowledge and ideas (Albert & Hallowel, 2013; Taylor & Kroth, 2009). Training should also be structured with defined elements that align with the trainees' goals while also focusing on the "what" and "why" to ensure the lessons apply to the learners' environments (Galbraith & Fouch, 2007). The following section highlights adult learners' motivation towards learning.

3.2.5 Extrinsic and Intrinsic Motivation

The final assumption of ALT is that adults are motivated to learn through both extrinsic and intrinsic motivators (Noe, 2017). While young learners are primarily motivated by extrinsic factors such as obtaining recognition from the instructor, better grades, and parental pressure, adult learners are more driven by intrinsic factors than young learners (Albert & Hallowel, 2013; Bressiani & Roman, 2017). While adult learners are motivated by extrinsic factors, such as salaries and promotions, they are also heavily influenced by

intrinsic factors, such as an enhanced quality of life and a desire for job satisfaction (Albert & Hallowel, 2013). Motivation is considered a vital tool for improving OHS outcomes on worksites. Therefore, both intrinsic and extrinsic motivators should be implemented within OHS training and the broader organisational OHS processes (Khan et al., 2022). Section 3.3 provides an analysis of the ToT theory and its impact on learning outcomes.

3.3 Transfer of Training Theory

Site induction training is a necessary component of OHS management. To be effective, the content taught during site induction training must be transferred to the work site (Freitas & Silva, 2017). ToT refers to the trainee's ability to successfully apply the skills, knowledge, and behaviours learned during training within their workplace to improve their job performance (Namian et al., 2016; Velada et al., 2007). However, Namian et al. (2016) estimate that only 10–15% of training investments translate into tangible benefits, with the remainder leading to a waste of financial resources and time. Therefore, ToT should be considered during the design and implementation of training programmes to improve learning outcomes and OHS outcomes (Namian et al., 2016; Noe, 2017). The ToT model identifies several influencing factors on training, including organisation characteristics, trainer characteristics, trainee characteristics, and training characteristics (Grossman & Salas, 2011). Each of these factors is discussed in detail in the following sections.

3.3.1 Organisation Characteristics

Organisational characteristics are an influential factor on ToT. The work environment has a recognised influence on ToT and includes the existing culture and support within the organisation (Blume et al., 2010; Chiaburu et al., 2010; Freitas & Silva, 2017). Organisational culture is a shared system of beliefs and assumptions rooted within the organisation, implicitly influencing employees' attitudes and behaviours (Lucas & Ogilvie, 2006). Knowledge transfer requires the presence of an organisational culture that encourages employees to learn, thereby enhancing organisational outcomes (Zhou et al., 2022). Research conducted in a construction context shows that establishing a learning-supportive no-blame culture enables workers to overcome challenges on-site through open communication (Gunasekera & Chong, 2018; Mainga, 2017). Such a culture can prevent the isolation of workers' knowledge and motivate them to share information while also avoiding ridiculing individuals who do not possess the desired competencies and enhance their motivation to learn (Zhou et al., 2022). Tracey et al. (1995) similarly found that employees who perceive the organisational culture as supportive are more inclined to apply the knowledge gained from training within their work environment. Organisations that lack a

positive safety culture are less inclined to experience training transfer among their workers, as trainees may perceive the training to solely benefit the employer or be a 'tick-in-the-box' exercise (Potts, 2016). The next sections discuss the impact of employer, supervisor, and peer support on training outcomes.

3.3.1.1 Employer Support. Support is essential from all levels of the organisation, including the employers, supervisors, and peers (Albert & Routh, 2021; Freitas & Silva, 2017; Namian et al., 2016; Waehrer & Miller, 2009). A unified perception of the importance of OHS is vital for promoting ToT within a safety context. Employers can provide support to ToT through the design and provision of effective training and funding of the necessary resources (Albert & Routh, 2021; Namian et al., 2016; Waehrer & Miller, 2009). Employers should support follow-up initiatives to ensure ToT, as they enhance accountability amongst trainees and trainers whilst also identifying areas that require further improvement (Freitas & Silva, 2017).

3.3.1.2 Management Support. Managers can support trainees before training commences by identifying areas for improvement amongst staff (Freitas & Silva, 2017). In a construction OHS site induction context, supervisors can ensure that the training covers the critical hazards on site and that the content will provide the competencies required to address these. Performance feedback from management has also been positively linked to training transfer (Velada et al., 2007). Performance feedback involves management's indication of how well an individual is performing in their role (Holton et al., 2000). Feedback regarding newly acquired competencies and how these relate to job performance positively impacts trainee perceptions of training content and increases the likelihood of training transfer (Velada et al., 2007). Upon completing the training, management can assist in ToT by implementing follow-up initiatives (Burke & Saks, 2009; Salas et al., 2012). Regarding OHS site inductions in construction, provided that an assessment of knowledge was completed at the end of the induction, supervisors can analyse areas where participants struggled and ensure that follow-up training is in place focusing on these areas, such as through the use of toolbox talks.

3.3.1.3 Peer Support. Work peers can help develop a positive organisational culture around OHS training through peer support and reinforcement (Albert & Routh, 2021). Peer support in a ToT context refers to the extent to which peers support learning and training (Russ-Eft, 2000). Klink et al. (2001) found that workers' perceptions and motivations are highly influenced by their peers. This has a significant implication for ToT within OHS site induction training, as workers whose peers do not display a positive attitude to OHS or

training are likely to influence the attitudes and actions of those around them. Peer support can be achieved by encouraging one another during the application of competencies acquired from training and by holding each other accountable for training outcomes (Freitas & Silva, 2017; Namian et al., 2016). The following section outlines the trainer characteristics that affect ToT.

3.3.2 Trainer Characteristics

The characteristics of trainers influence the effectiveness of training transfer (Burke & Hutchins, 2007; Khamarko et al., 2012). In-house trainers' contribution to ToT is significant due to their involvement across several stages of the training process; before, during, and after training, all of which impact effective training transfer (Freitas & Silva, 2017). These trainers are responsible for the preparation, presentation, and follow-up of training to facilitate ToT (Burke & Saks, 2009; Salas et al., 2012). This is pertinent to OHS site induction training within a construction context, as they are commonly given by members within the organisation, such as Site Managers or OHS Managers based on site. Common influencing characteristics include expertise regarding training content and trainee learning needs, communication skills, and responsibility and accountability for training outcomes (Freitas & Silva, 2017). These characteristics will be discussed in the following sections.

3.3.2.1 Expertise. Trainers with high levels of knowledge and professional expertise in the subject area are better equipped to deliver the content, which aids training transfer (Burke & Hutchins, 2007). Trainers perceived as credible are more positively regarded by trainees, increasing the likelihood that they are listened to and that the content taught is taken seriously. Previous relevant experience aids trainers' knowledge about workplace requirements (Khamarko et al., 2012). As trainers who provide OHS site induction training are often based on site, they are more aware of the associated risks and hazards, which should positively influence training relevance and transfer.

Trainers with experience in the practice of different teaching principles and learning needs are also better prepared to aid in training transfer, as training is most effective when it caters to the participants' learning requirements (Burke & Hutchins, 2007). Trainers who can effectively recognise the needs of their trainees are more inclined to employ methods suited to these needs, thereby positively impacting ToT (Khamarko et al., 2012). However, there is a lack of evidence nor is there any mandate available regarding the qualifications required to design or deliver OHS site induction training within New Zealand's construction industry. This lack is problematic, as OHS site induction training is one of the most common forms of OHS training in the construction industry. If this does not cater to the trainees' needs, it may

result in wasted resources. Section 3.3.2.2 highlights the impact of trainers' communication skills on ToT.

3.3.2.2 Communication Skills. In addition to expertise and personal responsibility, research has indicated that the communication skills of trainers influence ToT (Freitas & Silva, 2017; Ismail et al., 2010; Velada et al., 2007). Trainers provide trainees with the desired training competencies through the presentation, discussion, and feedback of training content. Clarity of speech, appropriate intonation and speed positively impact participants' ability to retain training content and, thereby, the likelihood of training transfer (Freitas & Silva, 2017; Towler, 2009; Towler & Dipboye, 2001). Using easily understood, accessible language is vital, as training content should be easy to follow by trainees with varying levels of cognitive and language ability. The extent to which trainers practice open communication, providing detailed information before, during, and after the training, enhances their ability to support trainees' training transfer (Hua et al., 2011). The following section explains the influence of trainers' responsibility and accountability for training outcomes on training transfer.

3.3.2.3 Responsibility and Accountability. Another trainer characteristic that positively impacts ToT is the personal responsibility and accountability felt for training outcomes (Freitas & Silva, 2017). Personal responsibility for the training reflects the extent to which an individual feels personally accountable and responsible for their work outputs (Behson et al., 2000). Higher levels of personal accountability and responsibility for training outcomes increase the trainer's commitment to ensuring that the learning objectives are successfully attained and transferred into the workplace (Burke & Saks, 2009). A higher sense of control or self-efficacy in trainers' ability to meet desired training outcomes influences their obligation or personal responsibility (Burke & Saks, 2009). This control or self-efficacy can be impacted by circumstantial factors, such as organisational support or access to resources (Lauermann & Karabenick, 2013). The impact of trainee characteristics on ToT is discussed in the following section.

3.3.3 Trainee Characteristics

Trainee characteristics play an essential role in ToT (Burke & Hutchins, 2007), with some researchers arguing that they account for the most variability in training outcomes (Van der Klink et al., 2001). Characteristics proven to have a consistent relationship with training transfer include cognitive ability, self-efficacy, motivation, and perceived utility of training; each of these characteristics is discussed below.

3.3.3.1 Cognitive Ability. Cognitive ability is an individual's aptitude for performing the mental activities associated with learning (Grossman & Salas, 2011). Trainees with higher cognitive abilities are more competent at processing and retaining training content which strongly predicts training transfer (Blume et al., 2010; Burke & Hutchins, 2007; Velada et al., 2007). In the meta-analysis by Blume et al. (2010), cognitive ability had the most significant relationship to the transfer of training. Kanfer and Ackerman (1989) found that trainee performance is affected by their cognitive ability, which influences their attentional resource capacity, while Velada et al. (2007) indicated that training retention, a concept related to cognitive ability, was significantly related to training transfer. It is therefore necessary that training programmes should cater to a wide range of cognitive abilities to ensure effective ToT (Grossman & Salas, 2011; Noe, 2017). Pre-training competency and aptitude testing are recommended to ensure the training content is appropriate for its target audience (Baldwin & Ford, 1988; Noe, 2017). Such tests usually measure an individual's overall intelligence, which reflects their ability to comprehend complex ideas, adapt to their environment, learn from experiences, and engage in different methods of reasoning (Neisser et al., 1996), all of which are critical to learning and the application of training content. While these tests are not always practical in a construction context due to time and resource constraints, OHS site induction training must cater to all cognitive aptitudes. Trainers should take the necessary steps to ensure the content has been understood through end-of-training questions or assessments (refer to Section 3.3.4.6). Section 3.3.3.2 discusses the impact of self-efficacy on training transfer.

3.3.3.2 Self-Efficacy. Self-efficacy within a safety context is an individual's belief in their ability to attain the competencies required to meet safety requirements (Katz-Navon et al., 2007; Wood & Bandura, 1989). Multiple studies have linked a positive relationship between self-efficacy and training transfer (Burke & Hutchins, 2007; Chiaburu & Lindsay, 2008; Velada et al., 2007). Haccoun and Saks (1998) highlighted that self-efficacy is one of the primary determinants of training outcomes, with Mathieu et al. (1993) proposing that self-efficacy plays a central role in enhancing training efficacy and the development of training transfer. Individuals with higher self-efficacy are also more confident in acquiring and implementing the knowledge and skills taught and have a higher endurance for complex tasks (Blume et al., 2010; Velada et al., 2007). In contrast to individuals with lower self-efficacy, individuals with higher self-efficacy are more inclined to undertake more challenging goals, enabling them to cope better in dynamic environments with demanding learning expectations (Robbins & Judge, 2009; Wen & Lin, 2014). This notion has significant

implications for training programmes focusing on complex work behaviours, such as OHS training, which requires trainees to obtain specific safety competencies.

Research suggests that self-efficacy contributes to training transfer through its relationship with motivation. A meta-analytic review by Colquitt et al. (2000) identified self-efficacy as a predictor of training motivation and desired outcomes. Chiaburu and Marinova (2005) found that higher levels of self-efficacy positively impact pre-training motivation, significantly predicting training transfer. Chiaburu and Lindsay (2008) also found that higher levels of self-efficacy positively relate to a higher motivation to learn. However, it is important to note that higher levels of self-efficacy may not always lead to transfer outcomes. Judge et al. (2007) found that self-efficacy predicted transfer only in low-complexity tasks. Vancouver and Kendall (2006) suggested that high self-efficacy can cause inflated feelings of competency, resulting in individuals who believe that they are adequately prepared to reduce their motivation towards learning outcomes.

As identified by Tai (2006), organisations should aim to improve trainees' self-efficacy before the training programme commences. While this is not necessarily feasible in a construction environment due to time constraints and the transient nature of the workplace, there are some steps organisations can implement. Before the training commences trainees should be provided with an overview of the training content (Tai, 2006), enabling them to understand what is expected of them. Easy-to-understand information should be used during training to assist participants' understanding of the content, thereby building their confidence in their ability to continuously retain and apply the information (Katz-Navon et al., 2007). Enactive learning experiences during training are also recommended, as they allow participants to practice applying the learning content within a controlled situation thereby increasing their confidence in their own ability (Katz-Navon et al., 2007; Lindsley et al., 1995). If trainees perceive the required training outcomes to be realistic, their self-efficacy will increase, thereby affecting the training outcomes. The following section explains the impact of participants' motivation on training transfer.

3.3.3.3 Motivation. Motivation refers to an individual's intensity, direction, and persistence towards achieving a goal (Robbins & Judge, 2009). Within a training context, trainees' motivation influences their willingness to attend, exert effort towards the programme, and transfer the learning to their workplace (Baldwin & Ford, 1988; Burke & Hutchins, 2007; Maurer & Tarulli, 1994). For training transfer to occur, participants must believe that they can learn, that their effort towards learning will improve their performance, and that this improvement will lead to beneficial outcomes (Facteau et al., 1995). Within an OHS training focus, multiple studies have linked higher motivation levels to an increased

likelihood of training transfer (Casey et al., 2021; Gegenfurtner et al., 2009; Lingappa et al., 2020).

If a trainee lacks motivation, there will be minimal impact from the training process on workplace outcomes, even if the trainee holds the necessary capabilities to master the training content (Colquitt et al., 2000; Tai, 2006). Trainees' motivation towards training outcomes is influenced by their sense of responsibility and accountability, as well as the perceived relevance of the training (Gegenfurtner et al., 2009; Grossman & Salas, 2011). To reduce motivation inhibition, trainees should be made aware of how they are responsible for training outcomes and the benefits of their participation in the training (Freitas & Silva, 2017). Trainers should also ensure that the training content's relevance and applicability are fully explained before the training session commences (Namian et al., 2016; Noe, 2017). The following section discusses the impact of trainees' perceived utility of training.

3.3.3.4 Perceived Utility of Training. Training transfer is also influenced by the participants' perceived utility of the training content (Burke & Hutchins, 2007; Gilpin-Jackson & Bushe, 2007; Velada et al., 2007). Individuals who perceive the training as relevant and valuable are more inclined to apply the training content and desired competencies within the workplace (Chiaburu & Lindsay, 2008; Gilpin-Jackson & Bushe, 2007). Factors that influence perceptions of training utility include the recognition of the need for new skills to improve their performance, the belief that acquiring these new skills will improve their performance, the credibility of the new skills, and their perception of their ability to acquire these new skills (Burke & Hutchins, 2007). As noted in the previous section, trainees' motivation is tied to the perceived relevance of the training; training content perceived as relevant and valuable is more likely to motivate trainees to apply that content within their workplace. To support effective training transfer, trainers should communicate the necessity and utility of the training outcomes (Grossman & Salas, 2011). Section 3.3.4 identifies the training characteristics that impact training outcomes.

3.3.4 Training Characteristics

Training characteristics involve the appropriateness of training content and methods (Grossman & Salas, 2011), significantly impacting trainee learning and ToT. Training characteristics include environment, content, length, materials, personalised and adaptive measures, and confirmation of learning practices. Each of these characteristics is discussed in the following sections.

3.3.4.1 Environment. The training environment impacts ToT, with realistic training environments positively influencing ToT (Noe, 2017). A realistic training environment involves relevant training content delivered within the trainee's workplace or similar environment to ensure the content is transferable to workplace demands (Noe, 2017; Velada et al., 2007; Waehrer & Miller, 2009). Much of the OHS training efforts adopted by the construction industry are passive, where the training is conducted in a classroom-style setting requiring passive attention from the trainees (Albert & Hallowell, 2013; Bhandari & Hallowell, 2017; Wilkins, 2011); however, such training approaches do not yield the desired OHS outcomes (Burke et al., 2006; Namian et al., 2016). Using hands-on and active training models within a realistic training environment enables trainees to play a central and active role (Namian et al., 2016).

Realistic training scenarios promote active learning and trainee engagement, increasing the likelihood of training transfer (Burke & Hutchins, 2007; Grossman & Salas, 2011). A meta-analysis conducted by Burke et al. (2006) on 95 studies investigating health and safety training methods found that training methods that actively engaged participants increased training transfer and reduced workplace incidents, injuries and illnesses. Recommended training methods include on-the-job training within the physical and social environment in which the learning content will subsequently be applied (Grossman & Salas, 2011). In a construction OHS training context, recommended training methods that imitate the real-world environment include low-fidelity simulations, like role-playing, work-together groups, and brainstorming (Bhandari et al., 2019; Jeschke et al., 2017). High-fidelity simulations, like virtual reality (VR), are also recommended (Jeelani et al., 2020). VR is discussed further in Section 3.3.4.4.

3.3.4.2 Content. Training transfer is significantly related to the training content (Deister, 2009; Noorizan et al., 2016). Peiro et al. (2020) explored the factors affecting training transfer within a construction industry context and found that relevant training content was a major predictor of training transfer. Brinia and Efstathiou (2012) similarly found that trainees' satisfaction regarding training content was directly related to its applicability to their workplace. Therefore, to ensure effective transfer, training content should be designed to relate to the trainees' working environment and exclude unnecessary information (Blume et al., 2010; Quesada-Pallares, 2012). As further discussed in the following section, making certain that only relevant information is included ensures that the training length does not negatively impact the trainees. To help ToT, Galbraith and Fouch (2007) recommend providing trainees with learning objectives at the beginning of training sessions, as they can give an overview of the content and how it is relevant to the trainees,

thereby supporting trainee attention and engagement. The following section highlights how the length of training impacts ToT.

3.3.4.3 Length. Training sessions must be a suitable length to aid ToT (Burke & Sarpy, 2003; Freitas & Silva, 2017). Ricci et al. (2016) found that the most effective OHS training length is no longer than one hour at a time. Sessions that are too short limit the content that can be taught; however, sessions that are too long can inhibit ToT through cognitive overload. Trainee discomfort is also increased through cognitive overload when attempting to understand too much information at once, limiting the ability to retain and subsequently apply the learning content (Blume et al., 2010). Sessions that are too long also increase trainees' time away from their workplace, impacting work requirements and increasing worker stress (Freitas & Silva, 2017). This is a significant issue within the construction industry, where workers are exposed to high time pressures. Training content should exclude unnecessary information to mitigate cognitive overload and time constraints (Blume et al., 2010). The provision of a timetable at the beginning of training can also provide trainees with an overview and direction of the session, helping them to judge the timeframe, aiding in maintaining attention and engagement (Galbraith & Fouch, 2007).

Prior assessments of trainee competencies enable training to avoid repetitive and unnecessary instruction (Jeelani et al., 2017). Within New Zealand's construction industry, one way to reduce the content required within a site induction is to complete a pre-site foundation passport. Such qualifications ensure that the workers have the required essential OHS competencies to be safe on-site, allowing OHS site inductions to instead focus solely on the OHS issues pertinent to their organisation and work environment. Most construction companies in New Zealand require some form of Site Safety Card for entry onto their sites and as a prerequisite during their tender process (Site Safe, n.d.-a). The two primary providers of foundation passports in New Zealand are ConstructSafe and Site Safe. Section 3.3.4.4 discusses the impact of training materials on training transfer.

3.3.4.4 Materials. As learning and development theories have progressed, research has shown the benefits of diversified training and teaching methods (Chen et al., 2022). Multiple methods can be implemented within the training process to support training transfer, with numerous training efforts employing multimedia sources to communicate important OHS information. Potential multimedia sources include video learning, e-learning, and VR technology. The primary benefit of implementing multimedia sources is the improved level of trainee engagement achievable (Cherrett et al., 2009), with higher levels of engagement supporting training transfer. As multimedia sources can be reused, this form of training

provides a cost-effective solution and aids in the consistency of training (Goldenhar et al., 2001; Ho & Dzeng, 2010).

Research has found that the use of videos and animations that recreate potential on-site incidents has been proven to efficiently communicate safety regulations, hazard recognition, and best practices (Cherrett et al., 2009; Evia, 2011; Gao et al., 2019; Goldenhar et al., 2001; Han et al., 2019). Within a construction context, e-learning or online-based safety training has been proven beneficial when dealing with a large number of trainees due to cost and time savings (Clevenger et al., 2015; Ho & Dzeng, 2010; Zhou et al., 2012). Such forms of training are helpful when in-person training is not feasible, particularly during the COVID-19 pandemic. Aryal et al. (2019) also found that online-based training offered through mobile devices can be particularly engaging among younger workers who have a higher aptitude for technology. Another benefit of e-learning is the ability to complete the training at the workers' preferred location and to complete the training before coming on-site, minimising the time required away from the job.

Given the risk associated with offering safety training within the work environment, particularly in a construction setting, multiple studies have advocated using virtual environments (Albert et al., 2014; Jeelani et al., 2020; Zhao & Lucas, 2015). The primary advantage of VR is the ability to simulate hazardous workplace conditions that cannot be replicated in real-life due to the safety implications (Zhou et al., 2012). As previously discussed, VR captures actual workplace conditions, allowing trainees to apply what they have learned during the training within a safe environment, effectively supporting training transfer. VR use within OHS site inductions in New Zealand's construction industry is currently under development. In 2018 the New Zealand engineering consultancy firm Beca, along with Fletcher Construction Company (FCC), began the development of a VR module for site inductions in the construction industry. This VR module is customisable for specific training objectives and varied learning styles and is advertised to increase knowledge retention and the provision of realistic and immersive inductions (Beca, n.d.). According to Beca (n.d.), there is 75-90% knowledge retention from VR, with VR being five times more engaging. This VR module also includes multiple language options, increasing knowledge transfer and user engagement (Beca, n.d.). The following section discusses the need for personalised and adaptive measures.

3.3.4.5 Personalised and Adaptive Measures. Most training interventions, be it within the classroom, on-the-job, or online, adopt a one-size-fits-all approach (Jeelani et al., 2017). Studies have advocated for the personalisation of training interventions designed to cater to trainees' specific learning needs (Jeelani et al., 2017; Tang et al., 2019). The

personalisation of training ensures that resources are effectively used to target trainee learning needs, thereby reducing their boredom, inattention, and frustration (Jeelani et al., 2017). This personalisation should consider trainees' culture, language, educational background, and learning preferences (Albert & Routh, 2021). As discussed in Chapter Two (refer to Section 2.4.1.3), language barriers pose a significant issue for the effectiveness of OHS site induction training within New Zealand's construction industry. OHS site induction training should cater, at a minimum, to the most common languages used by workers or ensure that content is displayed in a way understood across a variety of languages. The requirement for learning confirmation is highlighted in the following section.

3.3.4.6 Confirmation of Learning. Confirmation of learning through assessments or quizzes is a commonly employed method to aid and assess training transfer (Rohrer et al., 2010). Research has shown that trainees experience improved retention if the training includes one or more tests (Roediger & Karpicke, 2006). Participants who are required to recall information at the end of the session are more likely to pay attention (Pyc & Rawson, 2010; Wheeler & Roediger, 1992). The retrieval practice during end-of-training assessments can also significantly enhance training content retention, thereby assisting in ToT (Roediger et al., 2011). Such assessments, paired with feedback, have been demonstrated to support hazard recognition skills and reduce risk-taking behaviour, resulting in desirable safety-related competencies (Cameron & Duff, 2007). End-of-course assessments also enable the identification of areas that require further training (Roediger et al., 2011). As previously highlighted, this can be beneficial in an OHS site induction context, as it supports the implementation of follow-up initiatives that provide trainees with further direction (Freitas & Silva, 2017).

Another confirmation of learning method is behavioural modelling. Derived from Albert Bandura's Social Learning Theory, behavioural modelling highlights how trainees learn through observing others, witnessing the consequences of others' actions, and copying their behaviours (Noe, 2017). Training that allows trainees to observe and practice the desired behaviours increases their ability to learn and retain new information, positively influencing ToT (Grossman & Salas, 2011). Behavioural modelling has the most significant impact on ToT when trainees create and practise realistic scenarios, when the trainer and the other participants provide feedback once the scenario has taken place, and when supervisors and co-workers positively reinforce the behaviours within the workplace upon completion of the training (Taylor et al., 2005).

3.4 Chapter Summary

This chapter has provided an overview of the learning theories applied to this research. An overview of ALT was provided, and its five assumptions were explicated: relevancy orientation, self-direction, previous experiences, problem-centred approach, and extrinsic and intrinsic motivation. ToT was defined, and the contributing factors (trainee characteristics, trainer characteristics, organisation characteristics, and training characteristics) were discussed. Applying these theories to OHS site induction design and delivery can significantly contribute to training effectiveness, positively impacting OHS outcomes. As ineffective training interventions do not yield tangible benefits and can result in wasted resources, training interventions must be purposefully designed by incorporating learning theories to enable superior safety performance.

Throughout the compilation of this literature review, a stark dearth of research examining OHS site induction training practices in New Zealand was evident. As highlighted in the previous chapter, this lack of research is problematic, as site induction training is often the first on-site OHS experience for workers and, as such, it sets the tone for organisational OHS expectations and practices. Due to this research paucity, there is minimal information available on the areas for improvement or best practices, with the exception of the VR training discussed in Section 3.3.4.4. There is no available insight into construction workers' experiences nor opinions of OHS site induction training, which is challenging as they are the ones completing these trainings theoretically on a regular basis. While learning approaches, like ALT and ToT, have been applied internationally within an OHS and construction context, their application within New Zealand is lacking. These gaps have guided the research questions identified in the following chapter (refer to Section 4.2). Through the application of ALT and ToT, this research will analyse the current state and effectiveness of OHS site induction training within New Zealand's construction industry. Such appraisal is vital in developing the quality of OHS site induction training provided, with the goal that the provision of improved OHS site induction training will positively impact the current dire state of New Zealand's construction OHS outcomes.

Chapter Four: Methodology

4.1 Introduction

The previous chapters established the contextual and theoretical foundations of the research topic. Chapter Two provided background information on the current state of New Zealand's construction industry and an overview of OHS site induction training. Chapter Three reviewed the literature germane to this research, outlining relevant learning theories whilst examining their ties to the construction sector and OHS site induction training where possible. This chapter describes the methodology used in this research and justifies why particular research design choices were made. Firstly, the research's primary aim and subsequent secondary research questions are identified. The research approach and philosophical underpinnings are then explained, and the theoretical paradigm is justified. This is followed by a discussion regarding the research design, including the methodology, research stages, and participant criteria. The data collection process is then justified, followed by an explanation of the sequential data analysis process. The validity and reliability considerations of this research are then discussed, including how these are upheld by the methodological approach to ensure the robustness of the findings. Lastly, the ethical considerations are explicated.

4.2 Aims and Objectives of the Study

As discussed in Chapters Two and Three, there is limited research available on the current state and effectiveness of OHS training in New Zealand's construction industry (see Gao et al., 2019; Lamm et al., 2017), with a distinct lack of focus on OHS site induction training, particularly through a learning theory lens. Drawing on the extant literature culminating with identifying the gaps, this research primarily aims to answer the question: "What is the current state and effectiveness of OHS site induction training within New Zealand's construction industry?"

The secondary research questions are:

1. What are the OHS site induction training experiences of construction workers within New Zealand?
2. What is the perceived effectiveness of the OHS site induction training received from the construction workers' perspective?
3. What are the current OHS site induction training best practices and areas for improvement?

4. To what extent has the Transfer of Training Theory and Adult Learning Theory been applied within OHS site induction training to improve worker retention and application of knowledge?

The primary and secondary research questions are connected in the following ways: the first secondary research question seeks to understand the OHS site induction experiences of construction workers, which can provide insights into the current state of the training and highlight any issues or challenges faced by workers during the induction process. The second secondary research question aims to evaluate the effectiveness of OHS site induction training from the perspective of construction workers, helping to identify the strengths and weaknesses of the training and provide relevant insights into how it can better meet the needs of the workers. The third secondary research question seeks to identify current OHS site induction best practices and areas for improvement to enhance the quality of inductions delivered. The fourth secondary research question explores the extent to which ALT and ToT have been applied within OHS site induction training to improve worker retention and application of knowledge. This question can provide insights into how the training can be designed and delivered to maximise its impact and effectiveness.

These research questions will guide the research design, the data collection, and the targeted participants required to capture the necessary information in sufficient depth and detail. A multidisciplinary perspective will be used to answer these questions, employing various data collection methods. The following section discusses the investigative approach that best addresses the research questions.

4.3 Research Approach

A paradigm can be defined as the philosophical models or frameworks that guide researchers as they observe, interpret, and analyse information (Kankam, 2019; Mackenzie & Knipe, 2006) or as the beliefs that underpin a researcher's actions and worldview (Kaushik & Walsh, 2019). A pragmatic paradigm was applied to this research; this is focused on practical solutions, operating under the belief that researchers should adopt the philosophical and methodological approach best suited to the research question under investigation (Kaushik & Walsh, 2019). If paradigms were situated along a continuum, with positivism at one end and interpretivism at the other, pragmatism would be fluid along this continuum, under the belief that knowledge acquisition should be flexible between objectivity and subjectivity (Goles & Hirschheim, 2000).

A pragmatic approach allows the researcher to adapt the underpinning philosophy and methodology of the research to best suit the question under investigation. Because of

this adaptability, researchers have argued that ontology and epistemology are irrelevant (Kankam, 2019). Others have contended that as ontology drives our perception of reality and epistemology guides what it means to know, they underpin a researcher's actions and worldview, thereby influencing all paradigms (Kaushik & Walsh, 2019). This underlying belief has been applied to this research; the appropriate ontology and epistemology are identified in the following paragraphs.

Ontology is the study of reality; ontological assumptions concern what constitutes reality (Scotland, 2012; Gray, 2018). The ontology applied to this thesis is relativism. Relativism operates under the belief that there are multiple non-permanent realities, with reality constructed by individuals' perceptions of social situations (Andrews, 2016). Relativism has been linked to pragmatism due to the pragmatic belief that reality is not static (Kaushik & Walsh, 2019) and that no two individuals hold identical experiences, affecting the construction of their reality (Morgan, 2014). A relativist ontology is applied to this research as it investigates the experiences of construction workers, operating under the assumption that while a group of individuals may have undergone identical training, their interpretations of their experience may differ.

This relativist ontology will be interpreted through an objectivist epistemology. While ontology is concerned with the process of knowing, epistemology is concerned with what it means to know (Slevitch, 2011). Epistemological assumptions concern knowledge creation, acquisition, and communication (Scotland, 2012), with epistemology providing the philosophical basis for deciding which forms of knowledge are deemed adequate and legitimate (Barbour, 2014; Guba & Lincoln, 1994). An objectivist epistemology believes that reality exists externally to the individual and that research aims to discover these truths and facts (Gray, 2018). This epistemology holds that the researcher is independent from their investigation (Bahari, 2010). Under an objectivist epistemology, while individuals can hold subjective views or experiences, these should be investigated through objective methods (Gray, 2018; Rossman & Rallis, 2017). This form of epistemology has been chosen for this thesis, as the capture and analysis of these experiences must be objective in order to provide a coherent analysis and subsequent recommendations. However, it is acknowledged that the researcher and the research participants hold differing realities and experiences. The following section outlines the research design, including the methodology, research stages, and participant criteria.

4.4 Research Design

4.4.1 Methodology

As previously stated, there is a lack of research focusing on OHS site induction training within New Zealand, particularly through a learning theory lens. It was therefore critical to choose a methodology that best collected the required information to address this gap and answer the resulting research questions. The methodology of this research was directly influenced by its pragmatic approach. Positivism traditionally gravitates towards quantitative methods and deductive reasoning, whilst interpretivism employs a qualitative approach and inductive reasoning (Kaushik & Walsh, 2019). Pragmatism, in contrast, operates under a combination of the two viewpoints (Feilzer, 2010), allowing the researcher to choose the design and methodology most appropriate to the research questions (Kaushik & Walsh, 2019). This methodological freedom enables researchers to employ a mixed-methods approach, allowing them to gain insights from both quantitative and qualitative data (Kankam, 2019). Backed by a pragmatic paradigm, a mixed-methods methodology was utilised for this research, combining quantitative and qualitative data (Tashakkori & Creswell, 2007). A mixed-methods methodology was appropriate for this project as it allowed increased interaction with participants, providing a more comprehensive and complete analysis (Doyle et al., 2009).

The collection of quantitative data is beneficial when requiring objective, standardised, and statistical data (McEvoy & Richards, 2006). Quantitative data also allows for information to be presented in a way that is easily interpreted and understood. Nonetheless, quantitative data alone provides minimal investigation tools or contextual background (Easterby-Smith et al., 1991). Qualitative data aids in the in-depth investigation of opinions or experiences, thereby providing the contextual background that quantitative data lacks (Boodoo & Purmessur, 2009; McEvoy & Richards, 2006). As this research aimed to investigate the OHS site induction training experiences of construction workers, qualitative data collection was a vital component of this study as it enabled the collection of in-depth, rich data to support the quantitative statistical data.

An explanatory approach was used where stage one comprised a mixed-methods approach, combining qualitative and qualitative data collection through a survey. Stage two comprised qualitative data collection in the form of semi-structured interviews to further enhance and expand the quantitative findings (Creswell et al., 2003; Edmonds & Kennedy, 2017). This methodological approach was appropriate as the qualitative and quantitative data collected from the survey provided context and guided the qualitative interviews,

enabling a deeper understanding of the emergent ideas and themes (Doyle et al., 2009). Section 4.4.2 discusses the use of triangulation within this research.

4.4.2 Triangulation

Collecting quantitative and qualitative data through a mixed-methods methodology is beneficial when conducting an in-depth investigation of the topic (Sechrest & Sidani, 1995). This combination of evidence sources is known as triangulation (Gray, 2018). Triangulation aids in addressing multiple research questions simultaneously by employing multiple data collection methods (Doyle et al., 2009), which was appropriate to address the four secondary research questions. By regulating the collected data and minimising bias within the findings, alongside mitigating the limitations associated with the weaknesses of individual data collection methods, triangulation plays a vital role in establishing the reliability and validity of the outcomes (see Section 4.7) (Cook & Reichart, 1979; Gray, 2018; Kwok, 2012). Triangulation also aids in attaining an increased understanding of findings, allowing the researcher to compare and combine data sets to form a holistic explanation of the research focus (Casey, 2009). Triangulation is beneficial within 'imperfect' studies, such as when small sample sizes may limit the richness of applicability of findings to other contexts (Jean Lee, 1992). Due to the sampling limitations of this research (see Section 4.4.4.1), triangulation aids in supporting the credibility of the chosen methods and strengthens the overall analysis and conclusions.

Triangulation may pose difficulties for researchers as it requires more resources, time, and control than singular methods, with the potential for minor setbacks to significantly impact the study's timeframe (Salkind, 2010). To address this difficulty, it was essential to have a research plan that allowed for unexpected delays and clearly defined each research stage (Kwok, 2012). These research stages are discussed in the following section.

4.4.3 Research Stages

Before the data collection process, an in-depth literature review was required to identify the research gaps (see Chapter 3). Following this, the data collection process began; this was split into two stages. Stage one consisted of a survey, followed by interviews conducted in stage two. The two stages were purposely designed to ensure the sequential collection of relevant data, as detailed below.

1. Stage One was an online, anonymous, cross-sectional survey exploring the experiences of workers employed within New Zealand's construction industry who had completed OHS site induction training within the last year. The survey

aimed to collect information regarding the OHS site induction training experiences of construction workers within New Zealand and identify areas that required further discussion.

2. Stage Two consisted of semi-structured, in-depth interviews with key stakeholders exploring their insights and opinions on current OHS site training practices and their effectiveness. This second stage also involved a discussion of the findings from the Stage One survey.

The following section identifies the participant criteria employed within this research.

4.4.4 Participant Criteria

4.4.4.1 Stage One: Survey. The targeted participants for the survey were construction workers within New Zealand, aged 18 years or over, who had completed an OHS site induction training within the past year. The one-year timeframe was applied to ensure the accuracy of their contributions, and the age restriction ensured that participants were adults in line with AUTEC's ethics requirements. The first question of the online survey outlined the participant criteria and required the survey participants to confirm that they met them. A goal of 100 completed survey responses was set for this research. While this is a relatively small sampling size compared to the number of construction workers employed within New Zealand, this number was considered achievable in the timeframe and appropriate for Master's-level research (Smith, 2015).

4.4.4.2 Stage Two: Interviews. The targeted stakeholders for the interviews were domiciled in New Zealand, aged 18 years or over, with expertise, experience, or unique insights into the construction industry, adult learning and development, or OHS site induction practices. Examples of targeted stakeholders included site induction trainers, OHS managers or specialists, and OHS training specialists. This diversity of interview participants aided in gathering rich data and obtaining multiple and potentially conflicting perspectives. Reaching data saturation is recommended when determining the appropriate study sample size (Marshall, 1996; Malterud et al., 2016). Therefore, a total of 12 interviews with key stakeholders was deemed an acceptable number as it met data saturation for this study. This sample size was also appropriate to the time and resource constraints. To ensure stakeholder relevance and multiple perspectives, stakeholders were asked to clarify their role or expertise when invited to be interviewed. The following section discusses the data collection processes involved in this research.

4.5 Data Collection

4.5.1 Stage One: Survey

Stage one quantitative and qualitative data were collected using an anonymous electronic survey created through the online tool Qualtrics (Version 6/2022). An electronic survey was suitable for this project as it was inexpensive, easily accessible, and time-efficient (Dominelli, 2003). The online survey was also advantageous as it allowed for prompt distribution and response, where participants could choose when and where to participate (Saleh & Bista, 2017). The online survey method allowed for data collection with minimum researcher bias, and promoting impartial outcomes (Oliver, 2010). The Qualtrics platform was chosen for this research as AUT provides a free premium membership to researchers. This premium membership also enabled data analysis (see Section 4.6). The survey was designed to take approximately 20-30 minutes to complete.

The survey aimed to collect the participants' demographic profiles and identify the level of OHS site induction training received by construction workers by focusing on the characteristics of the training received and potential training issues. The questions in the survey were influenced by the Transfer of Training Theory and Adult Learning Theory, with the questions centred around the following factors (see Appendix B):

1. General information (demographic details)
2. Trainee characteristics
3. Training characteristics
4. Trainer characteristics
5. Organisation characteristics

The Qualtrics survey options were adjusted to ensure no identifying information, such as IP addresses, was collected and that responses were anonymous.

Following ethics approval from AUTEC (see Appendix A), survey distribution began on June 30, 2022. The survey was distributed nationwide across New Zealand through different channels. An advertisement containing the Survey Participant Information Sheet (see Appendix D) and the survey link was posted on the primary researcher's Facebook page, and another was posted on their LinkedIn page. Information regarding the survey and the link was also posted on the Safeguard online forum. The primary researcher also contacted various New Zealand construction sector organisations and requested that they distribute the survey information and link amongst their workers or emailing lists.

Organisations contacted included Construction Health and Safety New Zealand (CHASNZ), Site Safe, BeSafe Training Ltd., and individual construction firms from different sectors.

All completed responses were included in the data analysis. 113 survey responses were collected, resulting in 100 usable finished responses which met the initial goal. Survey data collection ceased once the desired number of finished survey responses was achieved. One change from the initial research design was the access to the survey. As the survey distribution began, it was found that some potential participants did not have access to internet data and therefore could not access the survey online. Some participants also struggled with technological abilities. To combat this, the survey was distributed in printed form, filled in by the participants, and collected and entered into Qualtrics by the primary researcher. The research team kept the physical printed copies of the survey to ensure the validity of responses. A total of five physical copies were collected. Survey collection concluded on August 30, 2022.

4.5.2 Stage Two: Interviews

For the second stage, qualitative data was collected through semi-structured interviews with various stakeholders. Semi-structured interviews aid in conducting in-depth examinations and analysis (Maarouf, 2019), with in-depth interviews being a vital tool for gaining human understanding and exploring key themes in detail (Fontana & Frey, 2000). Open-ended questions used within semi-structured interviews allow for more leeway in dialogue, enabling follow-up questions and deeper discussion (Brinkmann, 2014). The format was suitable for this research as it provided the flexibility to probe key themes of interest further and enable discussion on emerging issues, allowing the data collected from the surveys to be explained and elaborated upon.

The interview questions were influenced by the survey results and prior identified areas of interest (see Appendix C). In particular, the following areas were explored:

1. Understanding the stakeholder's role
2. Current OHS site induction training practices in New Zealand's construction industry, organised under:
    a. Organisation characteristics
    b. Trainer characteristics
    c. Trainee characteristics
    d. Training characteristics
3. Identifying best and worst current practices in New Zealand's construction industry

4. Recommendations for improvement.

The initial plan was to advertise for participants on the same platforms as the survey whilst also implementing purposive sampling which aids in obtaining crucial and rich insights from stakeholders known to have expertise or experience in the research area (Onwuegbuzie & Leech, 2007). However, once the interview recruitment commenced by contacting individuals or organisations directly, the number of desired interviews was reached, and the advertisements were not needed. The participants or organisations selected through purposive sampling were from various stakeholder groups, including industry guidance organisations, training organisations, and construction companies. The primary researcher contacted these potential participants through email or telephone using their publicly available contact information.

Interview participants were notified prior to the interview that it was preferable for their position and expertise in their field to be identified in the published research to provide context to their comments and opinions. They were also notified that it was desirable for their name and full role to be identified in this research; however, in cases where they preferred to remain confidential, they were assigned a generic identifier relating to their position. Four interview participants chose to keep their identities confidential as they felt they could speak more freely without their comments being tied to their organisation. Interview participants who elected to have their names and positions published were required to have their employer complete an Organisation Consent Form (see Appendix H) before participating, as their comments could be tied back to their organisations.

Contact with the interview participants began in mid-September 2022. Participants were emailed the Interview Participant Information Sheet (see Appendix E), and the participant criteria were confirmed. Once the participant criteria were confirmed, interview times and locations were scheduled. A total of 12 stakeholders were interviewed, reaching the desired goal for this research. One participant was interviewed in person, and 11 participants were interviewed online. Interviews began on September 22nd, 2022, and concluded on October 28th, 2022.

Table 1 outlines the stakeholders interviewed.

Table 1

Stakeholders Interviewed

Stakeholder Name	Stakeholder Role	Stakeholder Organisation	Sector	Stakeholder Relevance
Aaron Kennaway	Health and Safety Advisor	Site Safe	All	Provides training, auditing, and consultancy
Celeste Slaughter	National EHS Manager	Fletcher Living	Residential	Involved with updating Fletcher Living's induction package
Drew Thoresen	Senior Training and Development Manager	Link Alliance	Civil	Their role covers all training provided within the company
Gary Hyndman	Health and Safety Advisor	Site Safe	All	Provides training, auditing, and consultancy
Jason Braithwaite	General Manager	BeSafe Training Ltd.	All	Provides industry OHS training
Jon Harper-Slade	GM Health and Safety Innovation	Construction Health and Safety New Zealand (CHASNZ)	All	Provides industry guidance
Tony Greeve	Health and Safety Advisor	Site Safe	All	Provides training, auditing, and consultancy
Warren McLuckie	Digital Consultant	Beca	Engineering	Involved with a virtual reality programme regarding site inductions in construction
CONFIDENTIAL	Health and Safety Advisor	CONFIDENTIAL	Commercial and Residential	Involved with updating their site induction, has also given site inductions
CONFIDENTIAL	HSE Manager	CONFIDENTIAL	Commercial	Oversees company training and inductions

Stakeholder Name	Stakeholder Role	Stakeholder Organisation	Sector	Stakeholder Relevance
CONFIDENTIAL	Senior Health and Safety Officer	CONFIDENTIAL	Commercial	Oversees health and safety on-site
CONFIDENTIAL	Training and Development Manager	CONFIDENTIAL	Civil	Oversees training and leadership development within the company

After collecting interview data, the primary researcher transcribed the interview transcripts verbatim. The credibility of findings can be increased through member checks, where data or results are presented to participants enabling them to check them for accuracy (Lincoln & Guba, 1985). A member check was completed by allowing interview participants to view and amend their transcripts before the analysis commenced. Two interview participants made minor alterations, and ten approved their interview transcripts without changes. Upon completion of data collection, each data set required analysis, as detailed in the following section.

4.6 Data Analysis

4.6.1 Quantitative Data

The quantitative data collected from the survey were automatically analysed through the Qualtrics platform. This included:

1. The number of responses for each question
2. The percentage distribution of answers for each question
3. Conversions from raw data into graph formats, like pie charts or bar graphs
4. The minimum, maximum, mean, standard deviation, and variance calculations for each question (however, these numbers are not utilised in the findings of this research as the other data provide better insight into the areas discussed).

The quantitative findings from the survey are presented in Chapter 5.

4.6.2 Qualitative Data

Qualitative data analyses were performed separately for the two different stages. The first analysis occurred upon completing stage one with the survey data. Qualitative data was collected from the survey in the form of written responses. The second qualitative data analysis occurred upon completion of the interviews in stage two, using the interview transcripts.

Both qualitative data sets were analysed using reflexive thematic analysis. Thematic analysis is defined as “a method for identifying, analysing, and reporting patterns (themes) within data” (Braun & Clarke, 2012, p. 79). Thematic analysis provides a flexible approach, adjustable to the research needs, enabling an in-depth, detailed account of the collected data. This approach was suitable for this research as it involved multiple participant perspectives and the collection of a significant amount of rich data (Braun & Clarke, 2012).

This method involves the identification of common keywords and ideas within the data sets, which are then shaped into themes. Thematic analysis was also suitable for this research as it did not require in-depth technical or theoretical knowledge, making it accessible and intuitive for inexperienced researchers (Braun & Clarke, 2006; Nowell et al., 2017).

NVivo software was used due to its ability to analyse qualitative data gathered through open-ended questions (Jackson & Bazeley, 2019). NVivo software allows users to sort, organise, and reorganise data to achieve a comprehensive analysis (Alasuutari, 2010). The standardised NVivo format was used to analyse all the qualitative data, which allowed the researcher to achieve a replicable and verifiable analytical procedure (Campbell, 2020).

Braun and Clark's (2006) six-step data coding method was then used to analyse the collected qualitative data. The thematic analysis began with familiarisation of the data collected and identifying emerging patterns and potential items of interest. The second step involved the generation of initial codes that identified and labelled data features that corresponded to the research aim and questions (Braun & Clark, 2006). These codes were then reviewed and categorised into potential themes that reflected meaningful patterns in the data. The next step involved reviewing these potential themes. Once these steps were complete, stage five involved the confirmation and definition of themes to create an overall story of the data (Braun & Clarke, 2006). The final step was compiling the data within the themes to produce the research findings. The findings from the thematic analysis were then examined in conjunction with the findings from the survey responses, providing further context and expansion on the key ideas and themes already identified. This study employed an interwoven approach, where the analyses and writing of findings were done concurrently in order to create a logical and coherent story about the data to answer the research questions.

The qualitative findings from the survey and interviews are presented in Chapter 5 alongside the aforementioned quantitative findings. The following section discusses the validity and reliability considerations of the study.

4.7 Validity and Reliability

To ensure that this research provided meaningful and practical findings that could be used within New Zealand's construction industry, the process had to be conducted to a high level of reliability and validity. Reliability and validity show the rigour of research processes and the credibility of research findings (Roberts & Priest, 2006). Reliability and validity are significant areas of concern for both qualitative and quantitative research.

Reliability refers to a test, procedure, or tool's ability to produce similar results in different circumstances, assuming that all other factors remain unchanged (Roberts & Priest, 2006). Reliability also concerns the researchers' ability to collect and record data accurately (Selltiz et al., 1976). Reliability operates under the assumption that if the data collection were repeated or conducted by someone else, the results should be comparable (Roberts & Ramanujam, 2018). Triangulation positively impacts the reliability of data collection (Gray, 2004). To achieve consistency and replicability of this study, a detailed mixed-methods methodology was selected, and pre-determined steps for data collection were followed.

Reliability within the survey was achieved by ensuring that the questions were straightforward and that all survey participants were given identical questions. All quantitative data was analysed using the same Qualtrics software, ensuring replicability. In qualitative research, however, reliability can be challenging to achieve, as many variables can impact the research findings. Alongside triangulation, this issue was addressed by using a consistent method of data collection throughout the study, recording and note-taking during the interviews, conducting member checks of interview transcripts, and transferring the qualitative data to the NVivo software to ensure consistency of analysis.

Validity refers to the accuracy of claims made from research; where the results have been analysed and displayed to convey their original intended meaning (Cizek, 2020; Zumbo & Chan, 2014). It is acknowledged that since the data collection within this research relied on one researcher, there was an increased risk of perceptual bias. One critical issue regarding the interviews was the researcher's inevitable influence on the interviewee. The use of triangulation within this research also addressed these concerns, as it improves the validity of research findings by reducing the effects of bias attributed to individual methods (Gilad, 2021). By collecting data from a variety of sources, the errors associated with surveying and individual interviews should be reduced (Bryman & Bell, 2003), with information being re-checked at multiple stages to ensure consistency of data collection and analysis (Patton, 1990).

Validity also concerns the participant sample selection (Kelley et al., 2003). Self-selection was implemented for the survey stage of this research to ensure that each participant could determine their own involvement (Sharma, 2017; Sills & Song, 2002). A limitation of using self-selection sampling is a potential increase in self-selection bias, with the likelihood of increased participation from individuals with specific characteristics, like those with stronger opinions, being more inclined to participate (Sharma, 2017). Despite this limitation, this sampling method was still employed within this research as it was considered the most appropriate due to time and resource constraints. Interview participant selection

was conducted through purposive sampling to ensure that the sample of interview participants represented a range of opinions and experiences (Willig & Rogers, 2017).

The reliability of data collected during a study is not always guaranteed and often depends on the data collection tools used or the accuracy or truthfulness of participants' answers (Queirós et al., 2017). To mitigate this concern, the questions used in the survey and interviews were designed to be easy to understand. The survey data was collected using an anonymous, automated survey, reducing systematic bias and ensuring the data was collected through a standardised tool (Willig & Rogers, 2017). All participants were also given the primary researcher's contact details in the Participant Information Sheets to allow them to clarify any areas of concern. No contact was made regarding the questions themselves. Interview participants were also able to clarify any questions asked during the interviews. The accuracy and truthfulness of participant answers depended on the participants themselves; despite there being no evidence that any participants were untruthful in their responses, it is worth noting the potential for mistruth. Section 4.8 discusses the ethical considerations of this research.

4.8 Ethical Considerations

Ethical approval for this study was sought and gained from AUTEC on 12 May 2022, AUTEC Reference Number 22/104. The ethics approval process involved an application in which the research project, methods, and ethical considerations were addressed. In line with the AUTEC Ethics Guidelines, the following sections were addressed.

4.8.1 Informed and Voluntary Consent

All participants were fully informed of the study's purpose and process and their role as research participants. They were also provided with contact details if they had questions or concerns. For the survey, this information was provided to participants through the Survey Participant Information Sheet (see Appendix D). Participants were required to confirm that they understood the research and confidentiality information before the survey commenced. Survey participants were informed that their consent to participate was given by completing the survey.

In addition to the Interview Participant Information Sheet (see Appendix E), the primary researcher verbally explained the research and confidentiality information to each interviewee before the interview began. All interviews were recorded, with participants informed at the beginning of each interview that they could cease the recording at any stage and could refuse to answer any interview questions. Consent forms were completed before

the interviews began (see Appendix F and G). None of the survey or interview participants had difficulty giving informed consent on their behalf.

4.8.2 Respect for Rights of Privacy and Confidentiality

Survey participants were anonymous. The only identifiable information they provided was an email address which was used to send the summary of findings. Participants entered their email addresses in a survey that was separate from the primary survey to ensure that their answers in the primary survey remained completely anonymous. Interview participants were not anonymous but had the option of having their names, positions, and organisations identified in the published research to support their opinions and contributions. Interview participants who wished to have their identity remain confidential in the published research are identified through a generic role identifier to give context to their input. For these participants, no personal information is disclosed that could reveal their identity to the reader. Interview participants were made aware of these confidentiality arrangements before the interview. As this research involved collecting information about organisational practices, interview participants who chose not to keep their identities confidential were given an additional consent form, ensuring that their employer understood the research and authorised them to participate.

Access to the data during the data collection and analysis stages and upon completion of the research is only available to the primary researcher and her supervisors. All data collected is stored in a secure location for six years, after which it will be destroyed.

4.8.3 Minimisation of Risk

Minimal risks were anticipated for survey and interview participants. No questions of a discomforting or embarrassing nature were asked during the interviews or in the survey. Participants were informed that they could skip questions or terminate the survey or interview at any time if they experienced discomfort or embarrassment. Although unlikely, in extreme circumstances, participants could access counselling support from the AUT Health, Counselling and Wellbeing service. This was included in both the Interview Participant Information Sheet and the Survey Participant Information Sheet. All participants were provided with the researcher’s and supervisors' email addresses before the data collection occurred in the case of a complaint before, during, or after the research. The contact for the Business School Postgraduate Office was also provided in case the participant became unhappy with how such an incident was handled. No complaints were made.

4.8.4 Partnership, Participation and Protection

The Treaty of Waitangi's three main principles of partnership, participation, and protection were prioritised within this study, with all participants' values, practices, and beliefs held in high regard. The principle of partnership was honoured by acknowledging that each participant was an equal and a partner in the process of information gathering. The participants played a vital role in this study; without them, the research would not have been possible. Respectful communication and the treatment of each participant as a knowledgeable, autonomous individual were ensured throughout the research process.

The principle of participation was implemented during the design of the survey and interview questions and when planning the recruitment of participants. The participants' principal involvement was sharing information, such as their opinions and experiences on the current state and effectiveness of OHS induction training within New Zealand's construction industry. Participants were able to raise concerns or ask questions before, during, and after the data collection stage of this research. No concerns were raised.

The principle of protection was shown by ensuring that no harm, deceit, or coercion was involved in the design and practice of this research. As discussed in Section 4.8.1, participants were fully informed of this research's purpose, aims, process, and their role as research participants. They were able to ask questions or withdraw from the research. All activities involved with data collection and analysis were conducted honestly and respectfully.

4.9 Chapter Summary

This chapter has discussed and justified the methodological approach for this research. This research aims to address the question: "What is the current state and effectiveness of OHS site induction training within New Zealand's construction industry?" Several secondary research questions are also examined to address this question:

1. What are the OHS site induction training experiences of construction workers within New Zealand?
2. What is the perceived effectiveness of the OHS site induction training received from the construction workers' perspective?
3. What are the current OHS site induction training best practices and areas for improvement?

4. To what extent has the Transfer of Training Theory and Adult Learning Theory been applied within OHS site induction training to improve worker retention and application of knowledge?

The capture and analysis of in-depth and detailed information were necessary to answer these questions. A multidisciplinary perspective was employed, using a robust research methodology to answer the primary and secondary research questions sufficiently. Backed by a pragmatic paradigm, an explanatory mixed-methods methodology was chosen, with the collection of quantitative and qualitative data to ensure the robustness of findings. Using a combination of quantitative and qualitative data enhanced the strengths of each collection stage whilst also balancing some weaknesses attributed to individual data collection methods. One hundred finished survey responses were achieved, with 12 semi-structured interviews completed. Two stages of data collection allowed for a more extensive range of data and for themes identified in the stage one survey to be further elaborated and expanded upon.

Necessary measures, such as triangulation and member checks, were conducted to ensure the reliability and validity of the research. The Qualtrics platform was used to analyse the quantitative data collected from the survey, while thematic analysis was conducted through the NVIVO platform for the qualitative data collected from the survey and interviews. Ethical considerations were explicated, outlining the standards to which this research was held per the AUT Code of Conduct (2019). The following chapter provides the quantitative and qualitative results of the survey and interviews, with Chapter Six discussing the findings of this research.

Chapter Five: Research Findings

5.1 Introduction

This chapter presents the findings from the survey and interview data. Using thematic analysis, the quantitative and qualitative data are presented concurrently under the emerging themes to provide insight into the current state and effectiveness of OHS site induction training within New Zealand's construction industry. Firstly, the data collection process will be briefly outlined, followed by the participants' profiles to give context to their experiences and opinions. The data will then be presented within the overarching themes of organisation characteristics, trainer characteristics, trainee characteristics, and training characteristics. These four themes will be further analysed in line with ALT and ToT in the discussion presented in Chapter 6. Ultimately, it is hoped that these key themes can provide a better understanding of the current state and effectiveness of OHS site induction training within New Zealand's construction industry.

5.2 Data Collection

As explained in the previous chapter, quantitative and qualitative data were collected using a nationwide survey, and supplementary qualitative data were collected through semi-structured stakeholder interviews. This section provides a brief overview of the collection process.

5.2.1 Stage One: Survey

Following ethics approval from AUTEC, survey distribution began on June 30th, 2022. The targeted participants for the survey were construction workers within New Zealand, aged 18 years or over, who had completed an OHS site induction training within the past year. The survey was distributed nationwide through different channels, including advertisements on social media and the Safeguard online forum. Various New Zealand construction sector organisations were contacted directly and asked to distribute the survey information and link amongst their workers or emailing lists. 113 survey responses were collected, with 100 completed responses meeting the initial goal. All completed responses were included in the data analysis. Survey collection concluded on August 30, 2022.

5.2.2 Stage Two: Interviews

Following ethics approval from AUTEC, contact with the interview participants began in mid-September 2022, and the interviews commenced on September 22nd, 2022. Targeted

stakeholders for the interviews were domiciled in New Zealand, aged 18 years or over, with expertise, experience, or unique insights into the construction industry, adult learning and development, or OHS site induction practices. Interview participants were recruited through direct email contact. A total of 12 stakeholders were interviewed, reaching the desired goal for this research. Interviews concluded on October 28th, 2022.

5.3 Participant Characteristics

To understand and support the views and opinions held by the survey and interview participants, questions were asked to determine their backgrounds. This section explores these further to provide context on the data collected.

5.3.1 Survey Participants

Tables 2 to 9 identify the characteristics of the 100 survey participants. This information was gathered in survey questions A.1, A.2, and A.4 through to A.9 (See Appendix B).

Table 2 shows that the two largest participant age groups were 26-30 and 50+, each making up 18% of the total participants.

Table 2

Age of Survey Participants

Age of participants	Number of participants (n=100)	Percentage of participants
18-20	5	5%
21-25	10	10%
26-30	18	18%
31-35	17	17%
36-40	9	9%
41-45	13	13%
46-50	10	10%
50+	18	18%

As shown in Table 3**,** most survey participants identified as NZ European (59%), with the next most prevalent groups identifying as Māori (9%) or Indian (6%).

Table 3

Ethnicity of Survey Participants

Ethnicity	Number of participants (n=100)	Percentage of participants
NZ European	59	59%
NZ Māori	9	9%
Samoan	1	1%
Tongan	4	4%
Niuean	1	1%
Indian	6	6%
Chinese	1	1%
Southeast Asian	1	1%
Middle Eastern	1	1%
Latin American	1	1%
African	5	5%
Other *	11	11%

* The responses listed for “Other” included European, European mixed, Filipino, NZ Filipino, Italian, South African, Romanian, Irish, British, Dutch, and Kiwi. It was not possible to tell whether the participant who identified as ‘Kiwi’ could have fit into one of the other categories, like “NZ European”.

Table 4 highlights the participants’ length of employment in the construction industry, with participants most commonly employed within the industry for only 1-5 years.

Table 4

Survey Participants’ Length of Employment in the Construction Industry

Length	Number of participants (n=100)	Percentage of participants
1-5 years	31	31%
6-10 years	18	18%
11-15 years	16	16%
16-20 years	12	12%
20+ years	23	23%

Table 5 shows the participants' area of most recent employment, with a significant majority of participants most recently employed in Auckland (73%), followed by Wellington (10%).

Table 5

Survey Participants' Area of Most Recent Employment

Location	Number of participants (n=100)	Percentage of participants
Northland	1	1%
Auckland	73	73%
Waikato	2	2%
Bay of Plenty	1	1%
Taranaki	5	5%
Wellington	10	10%
Canterbury	3	3%
Otago	5	5%

Table 6 displays the sector in which the participants were employed. The sector with the highest number of participants was commercial construction (34.87%), with 26.09% employed in residential construction and 20.29% employed in heavy and civil engineering.

Table 6

Survey Participants' Sector of Employment

Sector	Number of participants (n=138*)	Percentage of participants
Residential	36	26.09%
Commercial	48	34.87%
Heavy and Civil Engineering	28	20.29%
Construction Services**	17	12.32%
Other***	9	6.52%

* As construction workers are often contracted across various sectors, participants were able to select more than one option.

** Includes the trades, e.g., plumbers, electricians, and concreters.

*** The responses listed for "Other" included demolition, infrastructure, industrial electrical construction, project management, and underground confined spaces.

Table 7 shows that most survey participants identified as employees (80%), with 20% identifying as contractors/subcontractors.

Table 7

Survey Participants' Type of Employment

Type	Number of participants (n=100)	Percentage of participants
Employee	80	80%
Contractor/Subcontractor	20	20%

The majority (63%) of survey participants worked for a large company (100+ personnel), with the remaining participants relatively evenly spread across the other company sizes (as shown in Table 8).

Table 8

Survey Participants' Company Size

Size	Number of participants (n=100)	Percentage of participants
Micro (1-5 personnel)	11	11%
Small (6-19 personnel)	10	10%
Small-to-medium (20-49 personnel)	9	9%
Medium (50-99 personnel)	7	7%
Large (100+ personnel)	63	63%

Table 9 shows the time since the participants' last OHS site induction training; 62% of participants had completed a OHS site induction training within the last six months.

Table 9

Survey Participants' Time Since Their Most Recent OHS Site Induction

Time	Number of participants (n=100)	Percentage of participants
0-2 months	31	31%
3-4 months	22	22%
5-6 months	9	9%
7-8 months	7	7%
9-10 months	7	7%
11-12 months	24	24%

5.3.1 Interview Participants

Table 10 displays the backgrounds of the 12 interview participants. The range of stakeholders' roles allowed for a variety of opinions and insights.

Table 10

Stakeholder Backgrounds

Stakeholder ID	Name	Role	Company	Sector	Role Details/Experience with Inductions
S1	Aaron Kennaway	Safety Advisor	Site Safe	All	I do health and safety audits on other people's businesses. So, either a construction site that's underway or an existing business … The other third of my job is consultancy, so I go into businesses, help them sort out their systems, and find solutions to the problems that they have. And the other third is training … When I was with [REMOVED]… I was managing and making sure that the site inductions were being done as well. As well as going to sites now, and I get inducted when I go on-site.
S2	Celeste Slaughter	National EHS Manager for Residential	Fletcher Living	Residential	I manage and oversee environmental health and safety for Fletcher Living across the whole of New Zealand, managing four different teams. So, one at each branch. [Involved with updating Fletcher Living's inductions].
S3	Drew Thoresen	Senior Training and Development Manager	Link Alliance	Civil	The role covers all training that takes place across our construction for Link Alliance, and it also governs the inductions. So that's our main induction, project induction, rail induction and underground or tunnels induction. I have a team that also looks after the Māori and Pacifica youth and communities to ensure that there are pathways for any of our people/workers that come on board. I liaise with suppliers … subcontractors, and training providers and ensure that we have a competency

Stakeholder ID	Name	Role	Company	Sector	Role Details/Experience with Inductions
S3 (cont.)					framework and a system to capture the competency that sits internally and is maintained.
S4	Gary Hyndman	Health and Safety Advisor, Trainer, and Auditor	Site Safe	All	I go from theory in the classroom to giving advice to PCBUs or organisations in regard to health and safety. And then, as an auditor, I go out onto sites and review their health and safety systems practises and actually go through their induction to see what sort of quality and what sort of presentation it is.
S5	Jason Braithwaite	General Manager	BeSafe Training Ltd.	All	I oversee and implement the strategy of the business. Ensuring that our company's objectives are being met. So that's our training objectives, financial objectives and managing the teams here and ensuring our people are successful within the business and that we're being effective with the programmes and the training that we deliver … So, we deliver health and safety training, as broad as that may be. Our core market or core client base is in the construction sector.
S6	Jon Harper-Slade	General Manager for Health and Safety Innovation	Construction Health and Safety New Zealand (CHASNZ)	All	I'm a health and safety professional, and my role is to oversee and deliver different projects and programmes that improve health and the subject matter specialist … I've been working in health and safety for a wee while now, certainly more than ten years. I've worked around transport and construction for health and safety. I've delivered and sat in numerous inductions … I've been both a participant in that activity and then also designed and delivered various inductions for different

Stakeholder ID	Name	Role	Company	Sector	Role Details/Experience with Inductions
S6 (cont.)					projects and pieces of work both in a construction and in a research setting … I've had the privilege and pleasure of speaking and visiting a number of construction projects across New Zealand where I've sat in or observed different approaches to induction.
S7	Tony Greeve	Health and safety advisor	Site Safe	All	I'm a generalist based here in Palmerston North because I do a little bit of everything, face-to-face training, internet/web-based training, also site reviews, some consultancy ... member support … As far as inductions go, I've been inducted onto a number of sites … So, I've sort of done a range of different inductions in the years that I've been in the industry.
S8	Warren McLuckie	Manager Digital Products	Beca	Engineering	My role has been in and around helping client organisations deliver better outcomes through digital solutions … Given the fact that Beca is a very multi-disciplined engineering organisation, a lot of what we do aligns with some of the other engineering disciplines. And so, for example, in this case, we worked with the buildings team to support delivering a digital solution to the construction industry. So, we're a bit of an enabling business line for digital solutions.
S9	CONFIDENTIAL	Health and Safety Advisor	CONFIDENTIAL	Commercial and Residential	My role basically is to just cover a few sites in Auckland, giving them advice as far as what they need to know about health and safety … As far as that [inductions] goes, most of my involvement

Stakeholder ID	Name	Role	Company	Sector	Role Details/Experience with Inductions
S9 (cont.)					probably is just making sure I get one set up or reviewing that they've got one. The first stage, I think, would be when I'm involved in the site commencing, then just telling them what they need, what they can use for getting them set up … And then just checking that they've still got it in place as part of my audits.
S10	CONFIDENTIAL	HSE Manager	CONFIDENTIAL	Commercial	I work with the senior management from the company and governance to make sure that risks are understood and managed … Inductions are definitely part of my role. I don't perform inductions typically … So, we've got a whole bunch of site-based people. And they report to me, and the Auckland-based people report to our Auckland regional manager. And so, things like inductions … They are the ones doing the doing. And I'm doing the … management, establishment, oversight, systems kinds of things.
S11	CONFIDENTIAL	Senior Health and Safety Officer	CONFIDENTIAL	Commercial	I oversee health and safety on multiple sites … I guess my role in the company is making sure that the activity on site is safe, especially the major high-risk activities that we do … And some of that will be me actually reviewing it, and some of it will be the other health and safety officers reviewing it … I used to do the site induction from start to finish.
S12	CONFIDENTIAL	Training and Development Manager	CONFIDENTIAL	Civil	All induction training, so people joining the project who spend more than five days on this project are required to go through a two-day induction. That's a

Stakeholder ID	Name	Role	Company	Sector	Role Details/Experience with Inductions
S12 (cont.)					general project induction. Everybody who goes underground also does a further two-day underground induction. Which is a unit standard type induction, and we are also responsible for any other technical training that may need to be coordinated or performed on the project. Training needs analysis and increasingly leadership development.

5.4 Organisation Characteristics

Organisation characteristics were examined using survey questions E.1 to E.15. The statistical survey data and the qualitative comments provided by survey participants and stakeholders are presented in the following sub-themes: employer, management, and peer support.

5.4.1 Employer Support

Figure 1 shows survey participants' responses when asked if their company values their input, if they feel comfortable raising health and safety concerns, and if they are confident that these concerns will be addressed. Most participants selected "Agree" (44%), followed closely by "Strongly agree" (40%).

Figure 1

Survey Participants' Perceptions of Whether Their Company Values Their Input

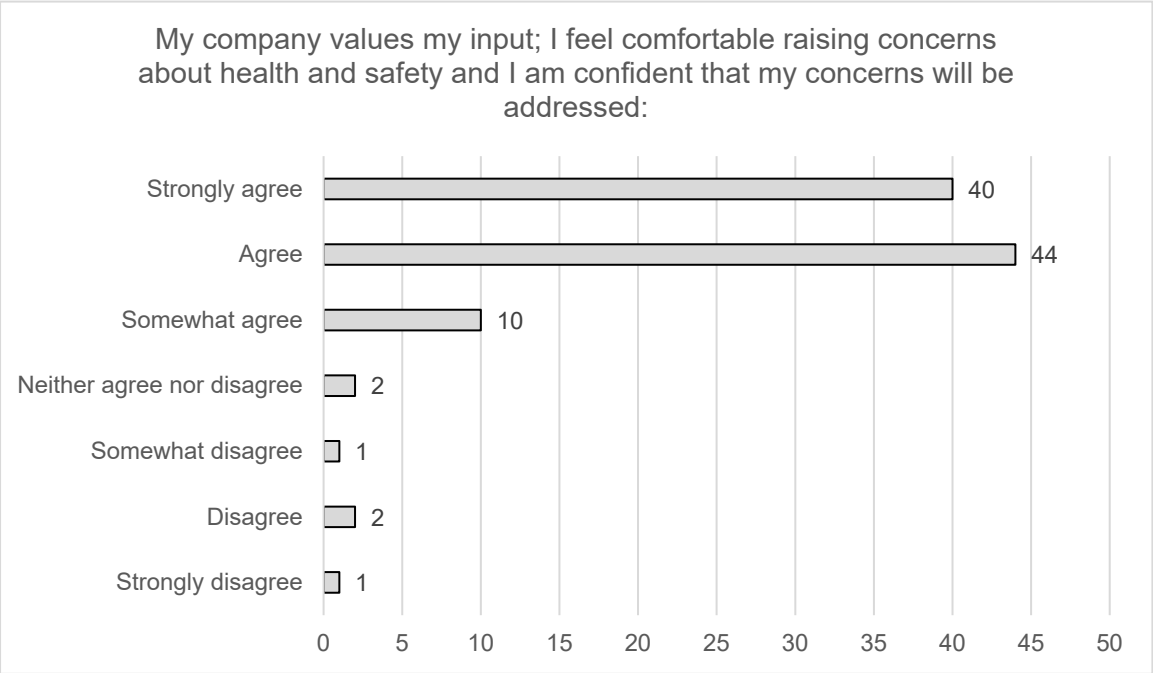


Figure 2 shows survey participants' responses when asked if their company had a proactive approach to health and safety. Most participants selected "Strongly agree" (45%), followed closely by "Agree" (40%).

Figure 2

Survey Participants' Perceptions of Their Company's Approach to Health and Safety

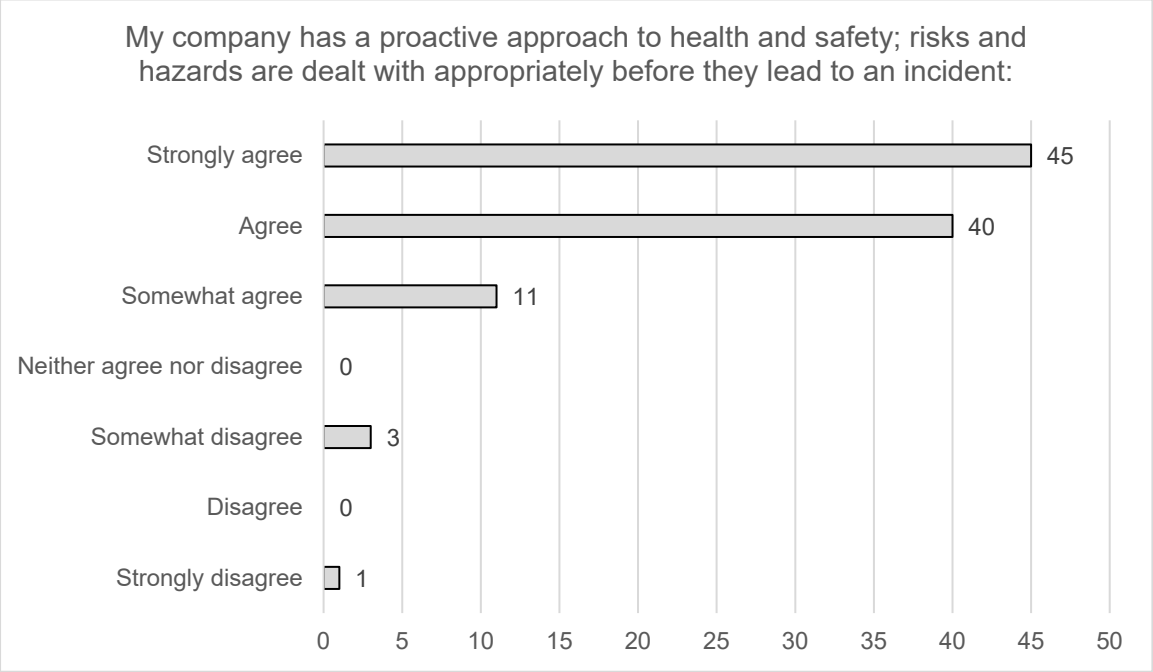
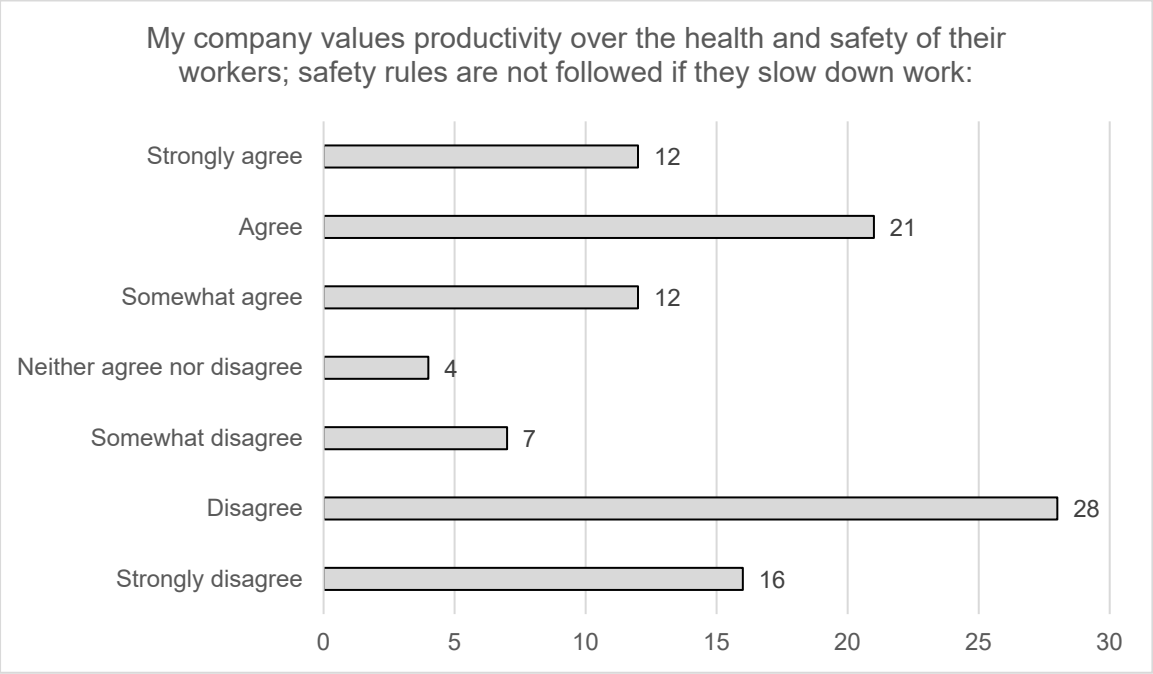


Figure 3 shows survey participants' responses when asked if their company prioritised productivity over the health and safety of their workers. This question had a greater variation of results; while slightly more participants disagreed with the statement to varying levels (51%), 45% agreed to varying levels. One participant commented on the value their company places on productivity over health and safety: "Some sites value productivity over safety, it completely depends on the site leaderships competence and proactivity."

Figure 3

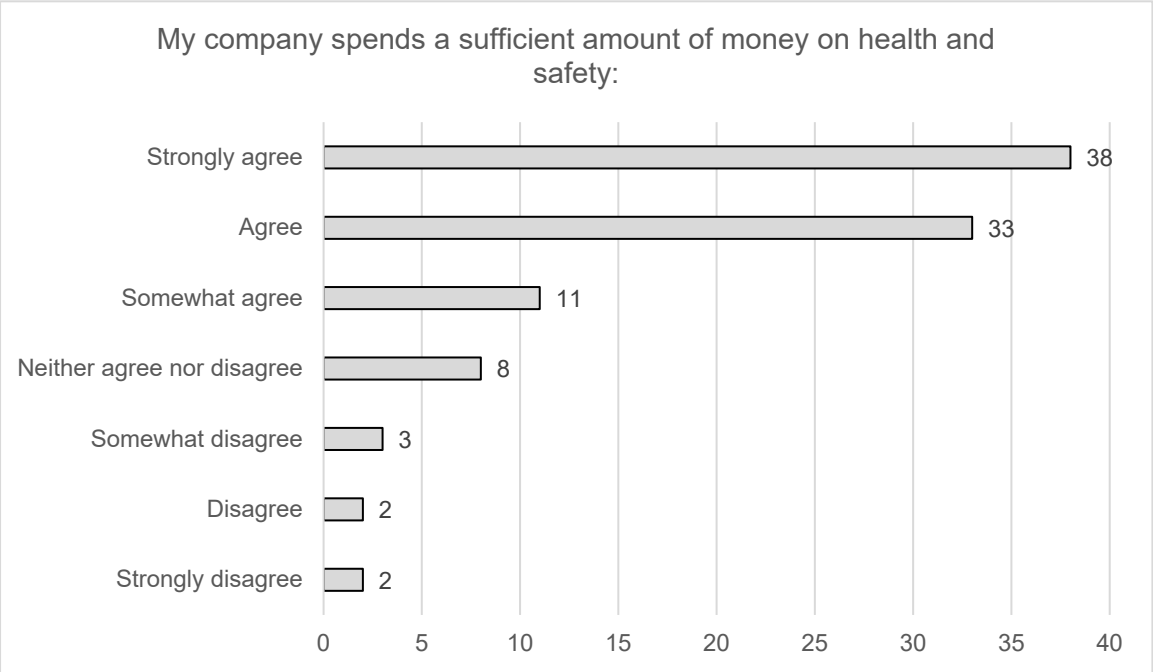
Survey Participants' Perceptions of the Value Their Company Places on Productivity vs Health and Safety



Figures 4 through 7 show survey participants' perceptions of the resources allocated to health and safety and OHS site induction training by their company. As shown in Figure 16, when asked if their company spends sufficient money on health and safety, most participants selected "Strongly agree" (39.18%), followed by "Agree" (34.02%). Only 7.22% disagreed to varying levels. Those that selected "Disagree" and "Strongly disagree" all indicated that they worked for a micro-sized company (one to five employees).

Figure 4

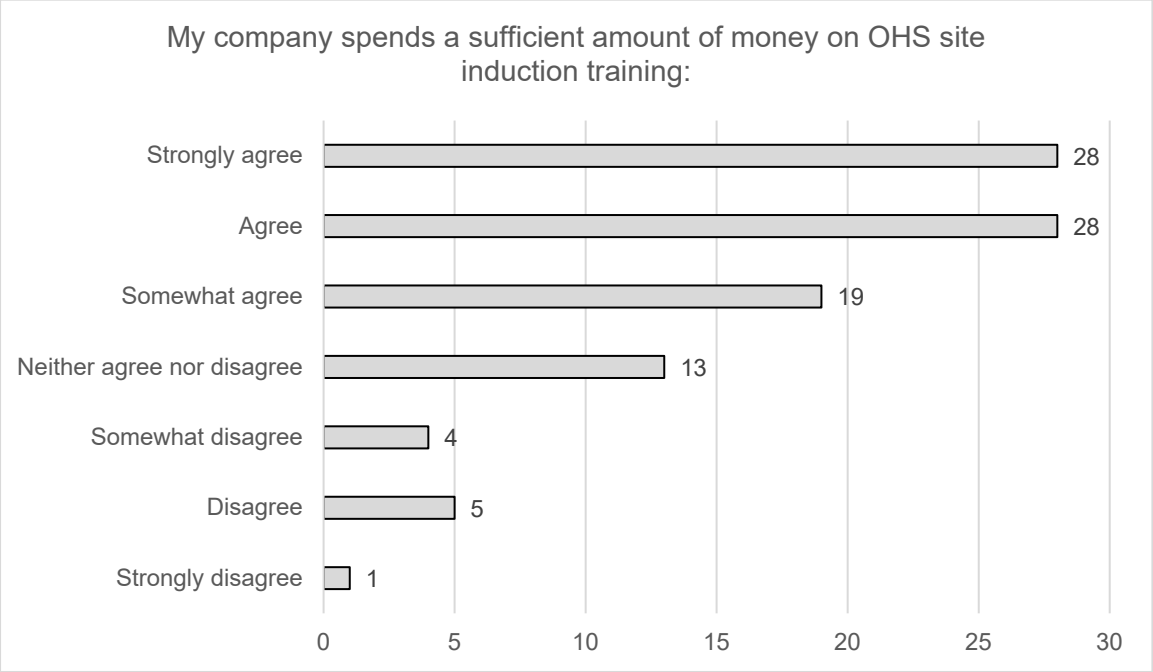
Survey Participants' Perceptions of Company Money Spent on Health and Safety



As shown in Figure 5, when asked if their company spends sufficient money on OHS site induction training, most survey participants selected “Strongly agree” (28.57%) or “Agree” (28.57%). 10.2% disagreed to varying levels. Out of the four questions regarding the spending of company time and money, this showed the highest level of disagreement by the participants.

Figure 5

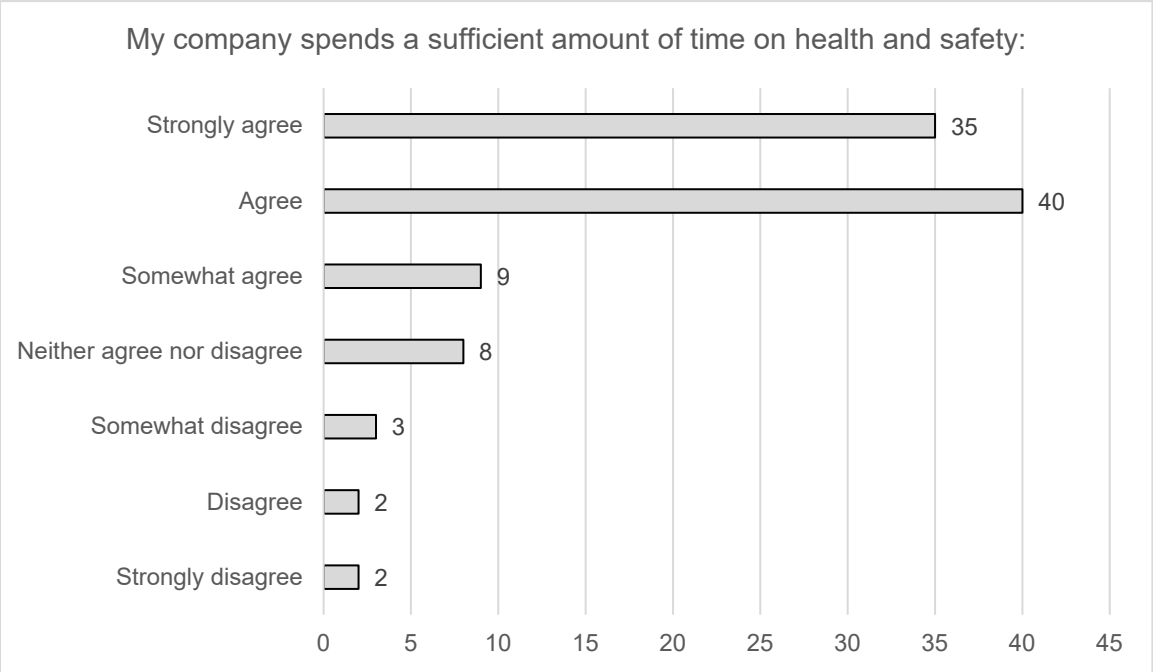
Survey Participants’ Perceptions of Company Money Spent on OHS Site Induction Training



As shown in Figure 6, when asked if their company spends sufficient time on health and safety, most survey participants selected “Agree” (40.4%), followed closely by “Strongly agree” (35.35%). 7.07% disagreed to varying levels; the participants that selected “Disagree” and “Strongly disagree” all indicated that they worked for a micro-sized company.

Figure 6

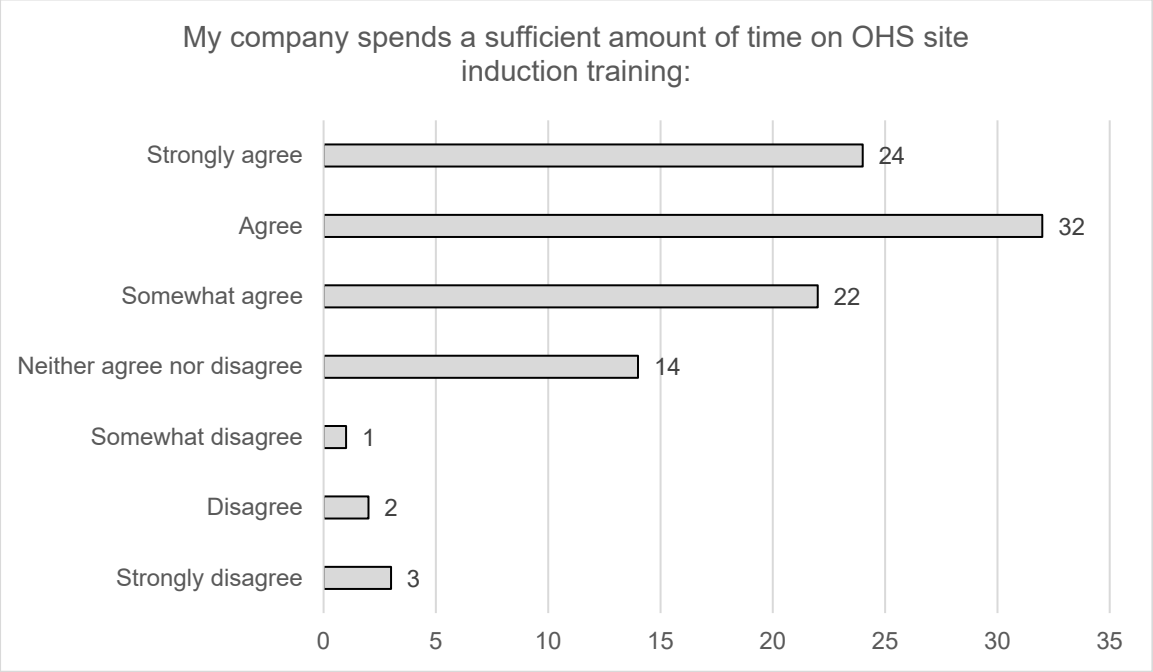
Survey Participants’ Perceptions of Company Time Spent on Health and Safety



As shown in Figure 7, when asked if their company spends sufficient time on OHS site induction training, most survey participants selected “Agree” (32.65%), followed by “Strongly agree” (24.49%).

Figure 7

Survey Participants’ Perceptions of Company Time Spent on OHS Site Induction Training



5.4.2 Management Support

Figure 8 shows the survey participants' perceptions of their site managers' approachability regarding health and safety. The results show a positive perception from participants, with the majority of participants selecting "Agree" (48.48%), followed by "Strongly agree" (28.28%).

Figure 8

Survey Participants' Perceptions of Site Managers' Approachability

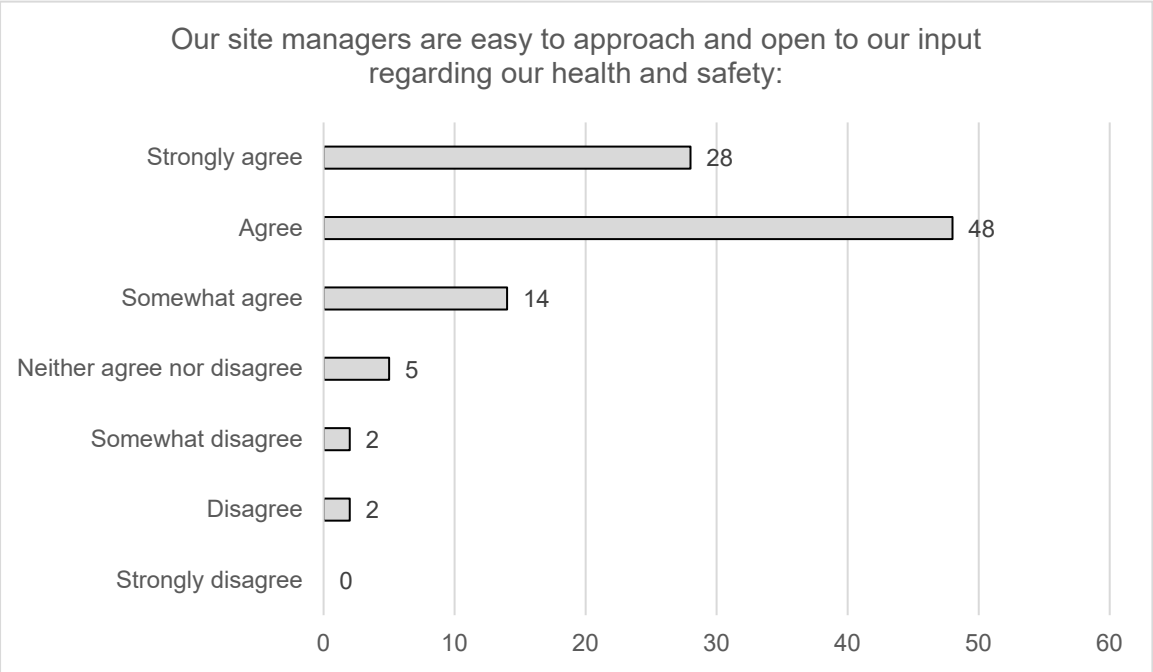
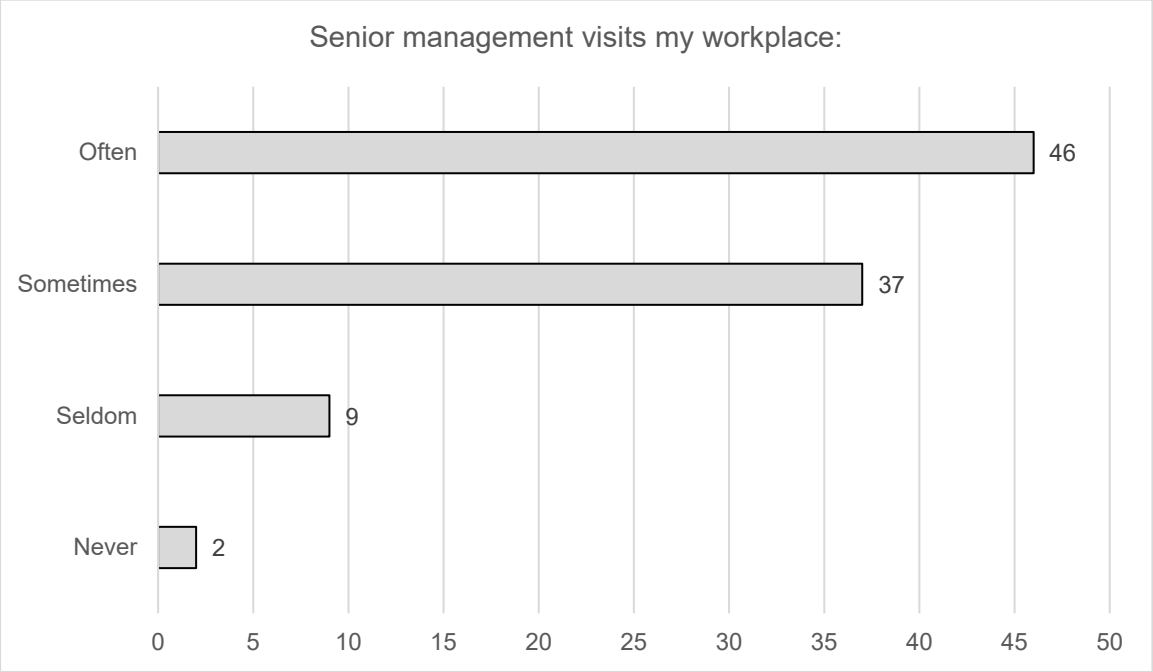


Figure 9 shows survey participants' perceptions of management visitation frequency. Most participants indicated that management visited their site often (48.94%), followed by sometimes (36.36%), seldom (9.57%), and never (2.13%). One participant commented on the frequency of management's visitations: "Some project leaders don't leave the office and get out on site enough. The good ones always do."

Figure 9

Survey Participants' Perceptions of Management Visitation Frequency



Survey participants were asked if their management abided by safety rules and regulations and set a good example when visiting their site (see Figure 10). Most participants agreed (43.3%), followed closely by strongly agreed (42.27%).

Figure 10

Survey Participants' Perceptions of Management Following Safety Rules and Regulations

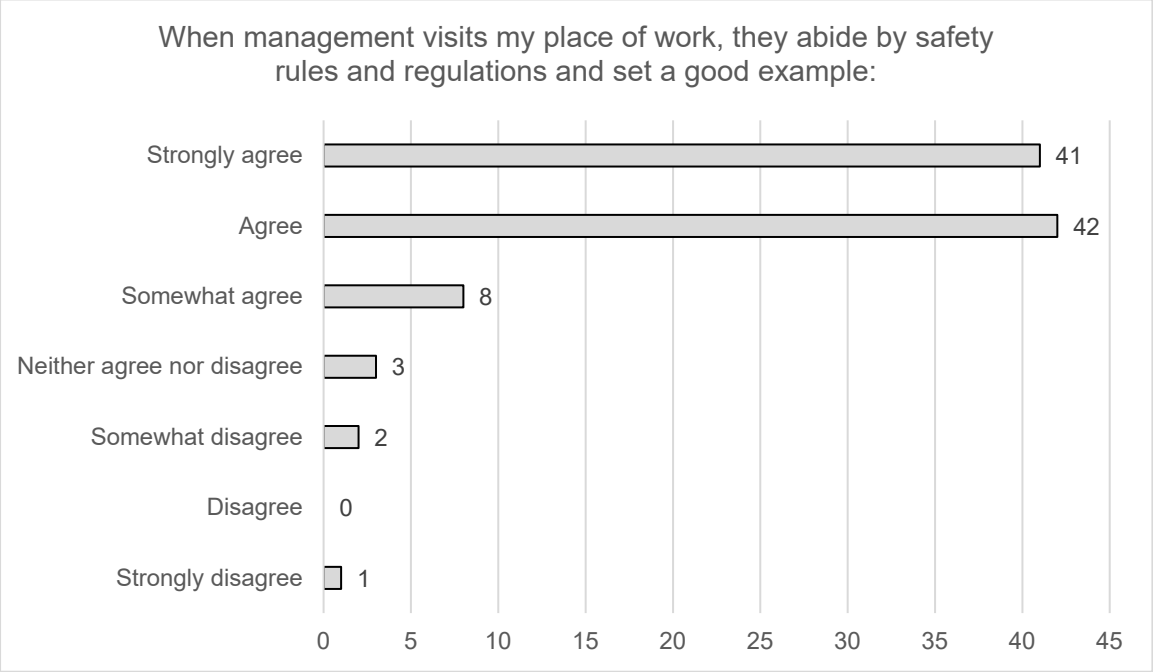


Figure 11 shows survey participants' perceptions of safety representatives' approachability. Most participants agreed that their safety representatives were approachable and open to their input, with 43.75% selecting "Agree" and 35.42% selecting "Strongly agree." Two participants commented on their health and safety team within the free text boxes provided throughout the survey; their comments are shown in Table 11.

Figure 11

Survey Participants' Perceptions of Safety Representatives' Approachability

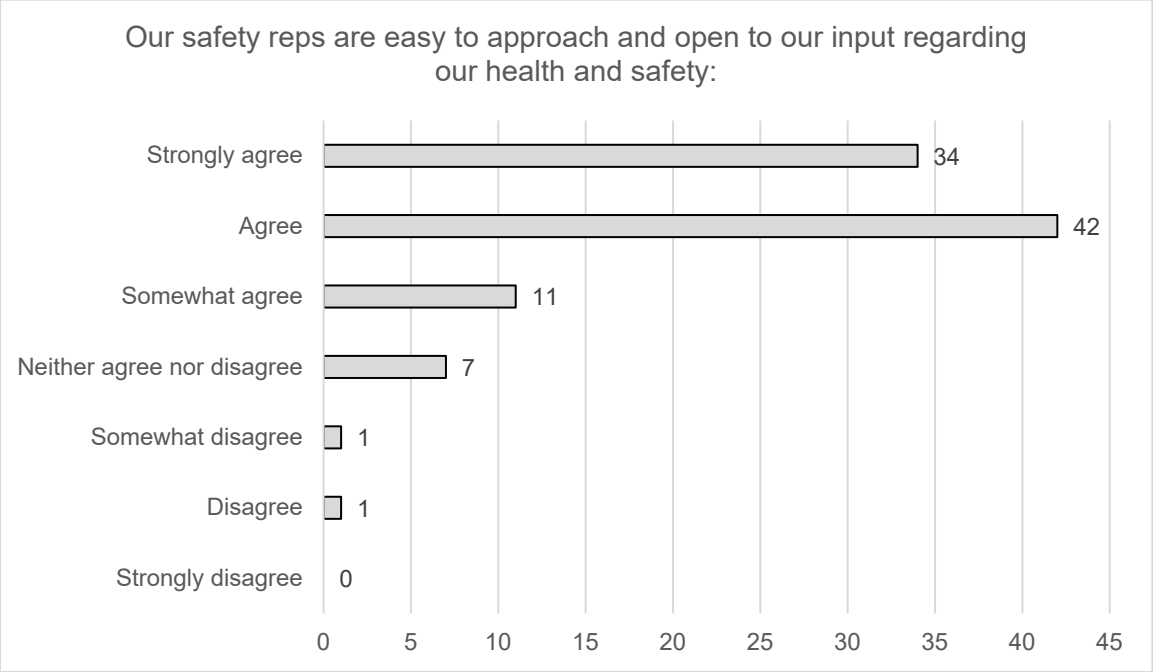


Table 11

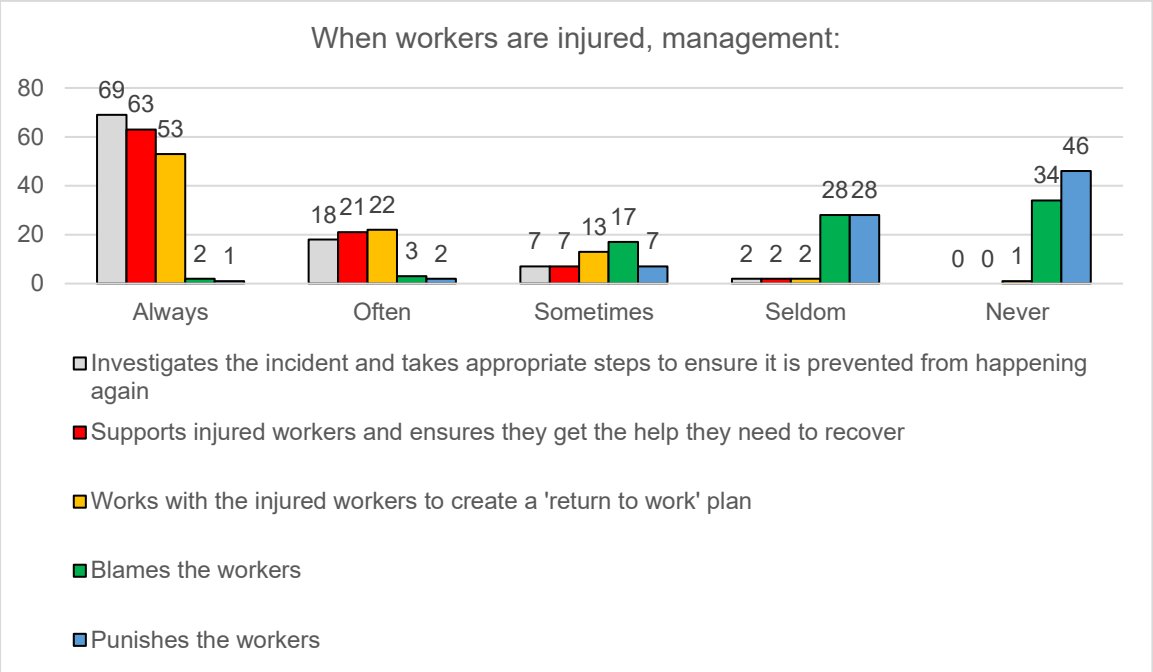
Participants' Perceptions of Their H&S team, as Identified by Survey Participants in Their Written Responses

Quote
Our H+S team is very approachable but sometimes when you get them involved it blows out of proportion.
People that [are] doing health and safety should be approachable. A lot of times people use health and safety as a beating stick to punish rather than teach

Figure 12 shows survey participants' perceptions of their company's response to worker injuries, focusing on investigation, support, return-to-work planning, blame, and punishment. When asked if management investigates and takes appropriate action when workers are injured, most participants selected "Always" (71.88%), followed by "Often" (18.75%), "Sometimes" (7.29%), and "Seldom" (2.08%). When asked if management supports injured workers and ensures they get the help they need to recover, most survey participants selected "Always" (67.74%), followed by "Often" (22.58%), "Sometimes" (7.53%), and "Seldom" (2.15%). When asked if management works with injured workers to create a return-to-work plan, most survey participants selected "Always" (58.24%), followed by "Often" (24.18%), "Sometimes" (14.29%), "Seldom" (2.2%), and "Never" (1.10%). When asked if management blames the workers when they are injured, most survey participants selected "Never" (40.48%), followed by "Seldom" (33.33%), "Sometimes" (20.24%), "Often" (3.57%), and "Always" (2.38%). When asked if management punishes the workers when they are injured, most survey participants selected "Never" (54.76%), followed by "Seldom" (33.33%), "Sometimes" (8.33%), "Often" (2.38%), and "Always" (1.19%).

Figure 12

Managements' Response to Worker Injuries



5.4.3 Peer Support

Survey participants were asked about their co-workers' attitudes towards health and safety (see Figure 13) and OHS site induction training (see Figure 14). Distributions for both questions were similar, with most participants agreeing to varying levels that their co-workers display a positive attitude.

Figure 13

Survey Participants' Perceptions of Co-workers' Attitudes Towards Health and Safety

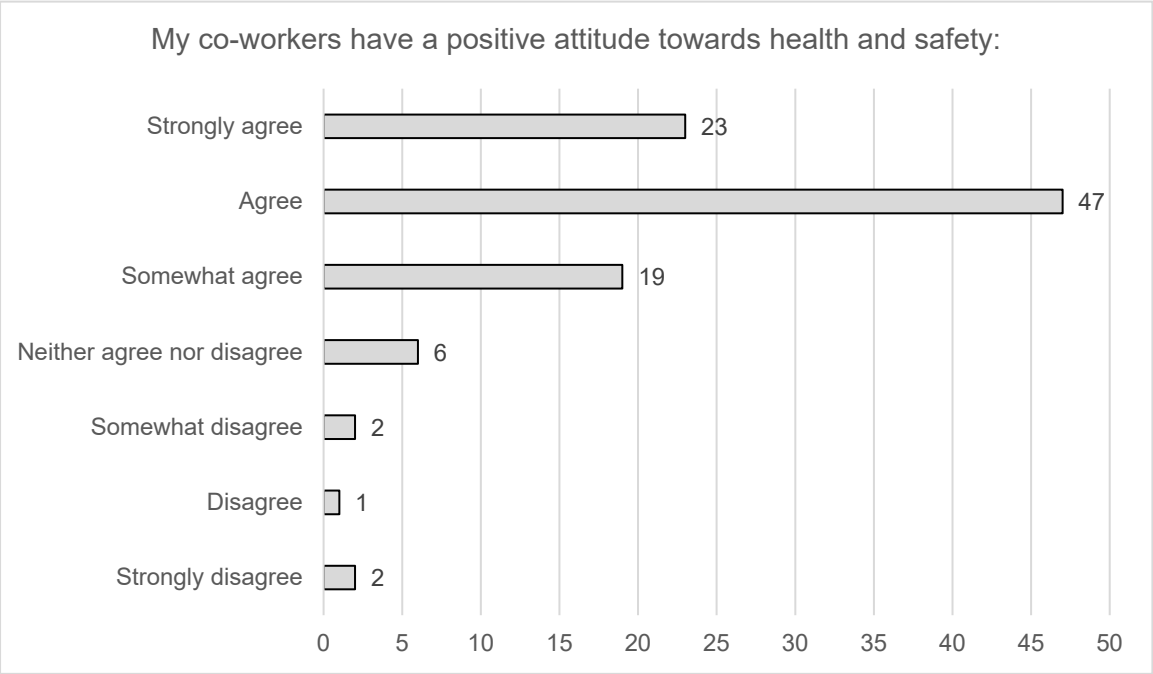
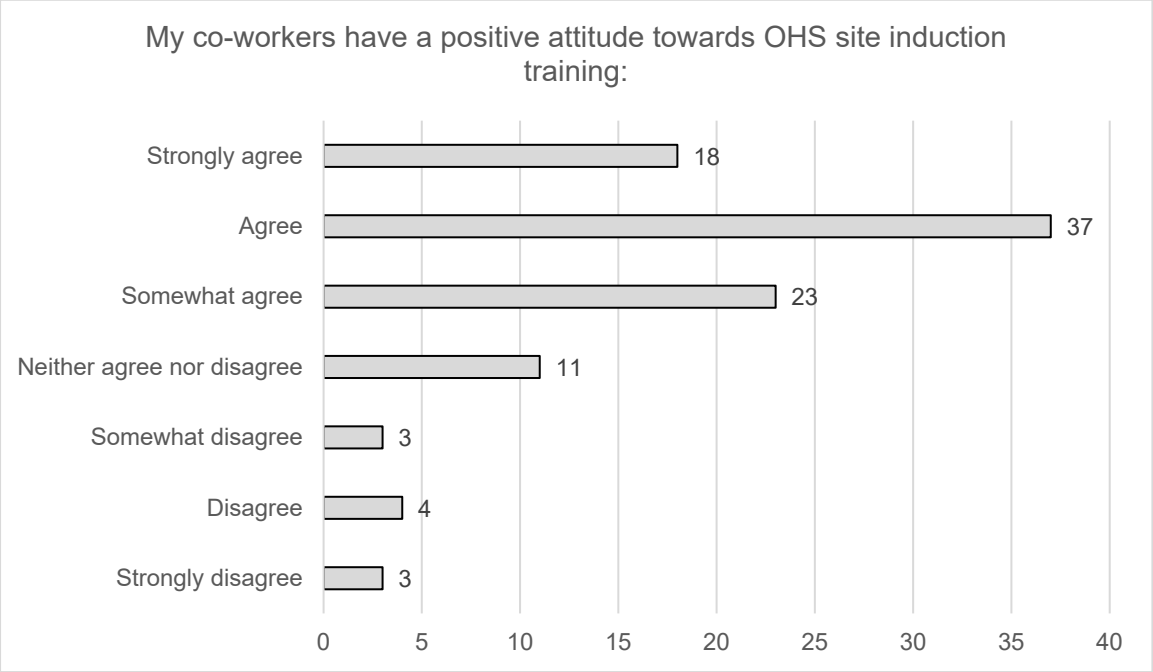


Figure 14

Survey Participants' Perceptions of Co-workers' Attitudes Towards OHS Site Induction Training



5.4.4 Other

Nine participants commented on organisation characteristics that did not fall into the above categories (see Table 12).

Table 12

Participants' Input on Organisation Characteristics, as Identified by Survey Participants in Their Written Responses

Quote
Our Company doesn't do site induction training we only get inducted on site if the site manager wants to do so but us workers all know the how to be safe at work and our health and safety is usually left to us.
People just get the paperwork done. Then carry on as usual.
Just seen as a tick box as opposed to seeing the reason for it. When the site gets busy subcontractor supervisors always try get people to work before doing the induction.
The standard training is good but the job specific induction is not as controlled and can have varying quality.

Quote
Sometimes the health and safety practices employed are overzealous and not practically applicable.
Some sites it is just a tick box exercise.
Its a tick box.
There needs to be a balance between genuinely caring about employees H&S and merely making the induction a tick box exercise to avoid any litigation.
Coming from a small building firm into a larger one, the H&S focus is a lot better from the larger firm.

5.5 Trainer Characteristics

Trainer characteristics were examined using survey questions D.1 to D.5. The statistical survey data and the qualitative comments provided by survey participants and stakeholders have been categorised in the following sub-themes: design and delivery, expertise, communication skills, and responsibility and accountability.

5.5.1 Design and Delivery

Figure 15 shows who delivered the survey participants' most recent OHS site induction training. As some OHS site induction trainings were delivered by more than one person, participants could select more than one option. Most participants received their most recent OHS site induction training from their site manager (32.23%), closely followed by their supervisor/manager (28.93%). "Other" responses are shown in Table 13. Table 14 shows stakeholders' input on those who design or deliver OHS site induction training.

Figure 15

Who Delivered Survey Participants' Most Recent OHS Site Induction Training

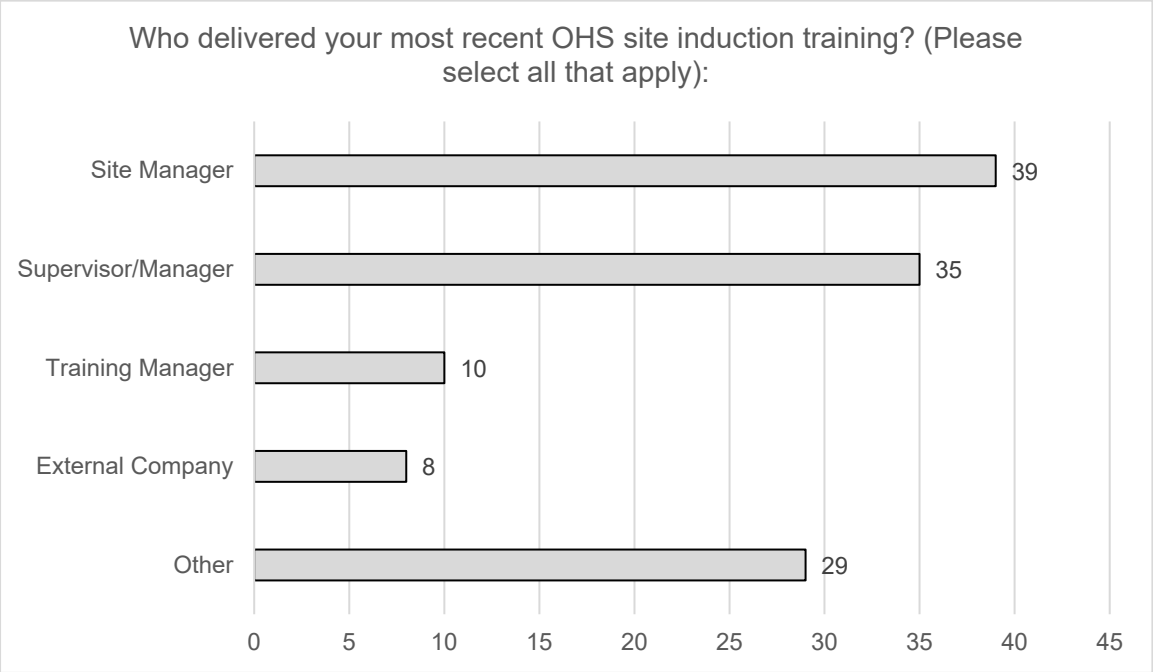


Table 13

"Other" Responses from Survey Participants

Response	Number of participants
H&S Manager/Advisor/ Co-ordinator/Facilitator	12
Online/Video	7
Site Engineer	3
Foreman	2
Project Owner/Client	2
Site HSE Rep	1
Cadet	1

Table 14

Stakeholder Input on the Design and Delivery of OHS Site Inductions

Stakeholder ID	Quote
S6	The people involved should be a diverse range of people with different perspectives on work at the project … Not just in terms of organisation … but people who do different work to provide their own perspective … You can really couple what that project's critical risks are around health and safety and have the right sort of person with the right sort of operational expertise talking about that. What you're also likely to get is that in the audience, that will … strike much more of a chord having information delivered from peer to peer; it doesn't tend to feel too patronising. You're probably increasing the likelihood that that person is using the language which the audience uses, so there's probably that parity of communication, and they'll probably be even a cultural match as well.
S11	Normally it would be one of the health and safety officers on site … Where I am now … we've got dedicated health and safety people on site all the time, so we can do it. Some of the other sites are a little bit smaller, and … health and safety might be there three or four times a week for like one full day and then a couple of hours on maybe two or three different days. On those smaller sites, the site managers have got to do it. So, there's varying degrees of how good the inductions are. The thing that works really well is when the people that do the inductions know what they're doing … Even though you can do a check sheet for when you're not here and if someone else needs to do it, what lets down the inductions is the site managers not knowing and just rushing through to get people onto site.
S12	At the moment, it's a pro-forma PowerPoint. And that's populated by the site engineer who's got access to site plans and local content … We're going through a process where we want to normalise or standardise that as well, and for the site induction it could be an opportunity for us to use some online stuff.

5.5.2 Expertise

Survey participants were asked if they were confident in the abilities of the person who delivered their most recent OHS site induction training (see Figure 9); most participants agreed at 48.94%. Only a collective 5.32% disagreed to varying levels. Eight participants commented on the trainers' ability within the free text boxes provided throughout the survey; their responses can be seen in Table 15. Stakeholders were asked about the competencies held by OHS site induction trainers; their responses are shown in Table 16.

Figure 16

Survey Participants' Confidence in the Trainer's Ability

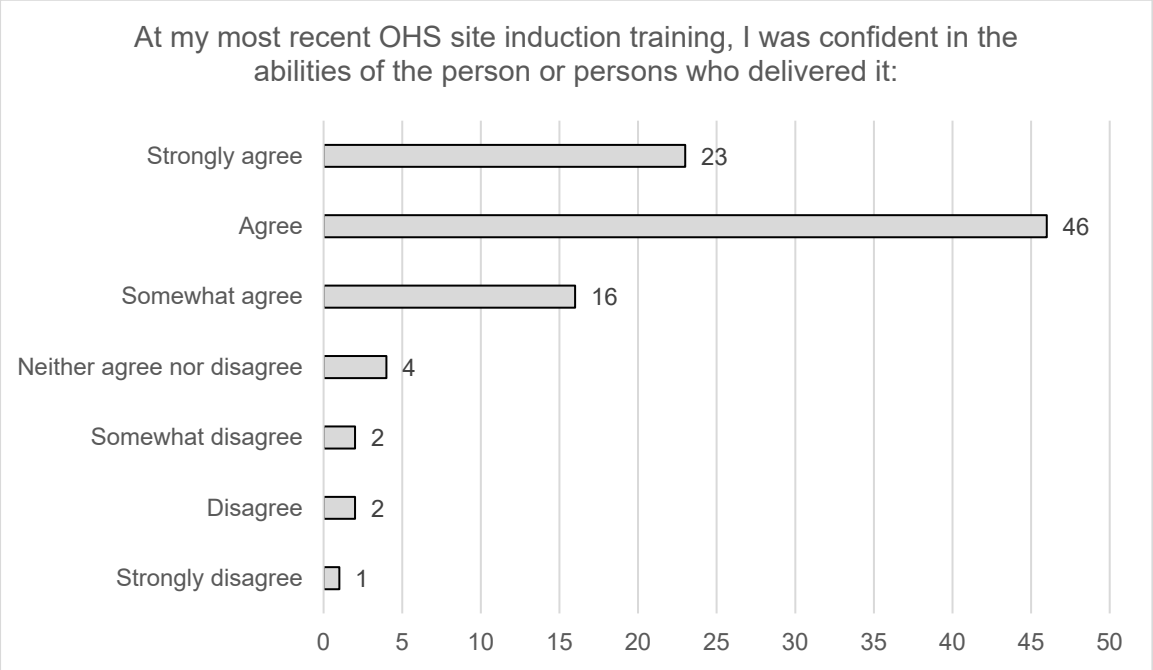


Table 15

Confidence in the Trainer's Ability, as Identified by Survey Participants in Their Written Responses

Quote
Not given by people with HSE in mind.
The guy that gives the training should be knowledgeable about it.
The people giving seminar are not qualified.
The person was not really knowledgeable about the subject.

Quote
More often than not in Construction it tends to be the lowest common denominator that competes the induction process for new workers coming to Site. This really needs to be done by someone who understands the content they are delivering and recognizes the importance of a successful and thorough induction.
The training should be delivered by someone with practical ‘hands-on’ knowledge of the construction industry.
Typically they are just reading off of a presentation/check sheet. They don’t really “teach” you anything. Are just there to read something “at” you.
Competent and very knowledgeable.

Table 16

Stakeholder Input on OHS Site Induction Trainer Competencies

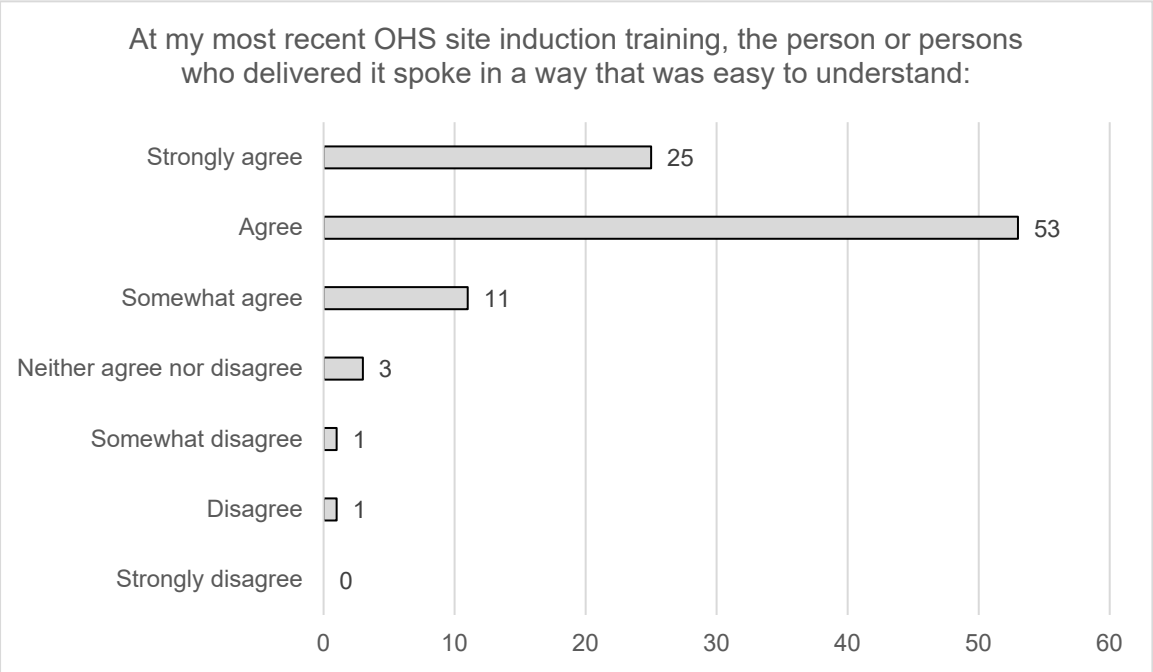
Stakeholder ID	Quote
S3	I've got 20 odd years within learning, development, training, facilitation leadership, so I ensure the team have got the skills to be able to do it, whether that’s train the trainer or whether I send them to an NZQA adult learning to give them that sort of formalised approach … [On-site] It depends on the management team and the person. From my team's perspective, we go there, and we're there to support and give constructive feedback and review the content and help those health and safety advisors … There's not like a formalised onboarding for a facilitator or a site induction… It's more from a coaching perspective and support.
S9	We do have some training where we have to do speeches, but that’s more for toolboxes.
S10	We send our people through the Learning Wave’s Lead Safe course. There’s Lead Safe Leader and Lead Safe Supervisor, and we use a combination of those. So having positive health and safety conversations and really scrutinising what safety is … But it's general soft skills that people have … Lead Safe talks about a whole bunch of things, talks about communication.
S11	They've revised sort of what each role what training they receive, and part of that is communication, so yes, we've got that now, but I've been with the company almost four years, and we didn't have it four years ago when I was doing the inductions.
S12	They are technical trainers, so they themselves have been subject matter experts in certain areas … And so that's part of what I would like to bring is building their expertise and awareness around what does it actually mean for me to educate others. How do I do that in the best way? How do I recognise what language I need to use to reach what person in the room at the time? So that's a development area for us.

5.5.3 Communication Skills

56.38% of survey participants agreed that the person who delivered their most recent OHS site induction training spoke in a way that was easy to understand (see Figure 17).

Figure 17

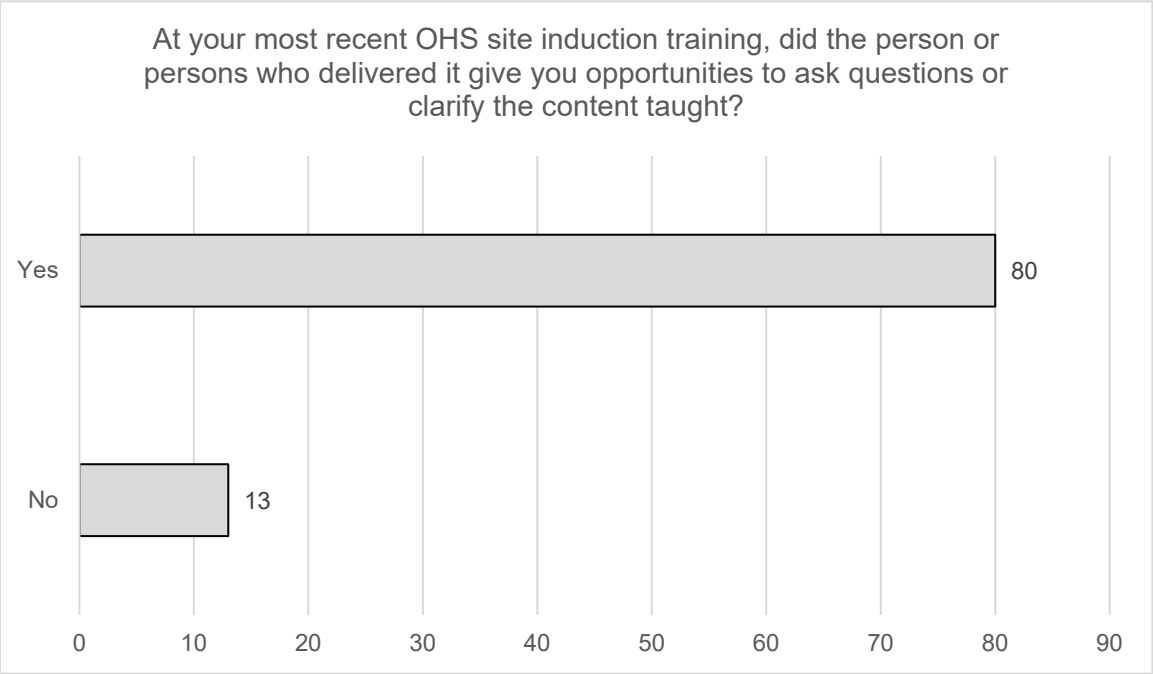
Survey Participants' Perceptions of Trainers' Speech



Survey participants were asked if their trainer allowed them to ask questions or clarify the content taught during their most recent OHS site induction training (see Figure 18). While most participants selected “Yes” (86.02%), it is still concerning that 13.98% of participants selected “No.” Of those participants, only three out of the 13 had completed their most recent OHS site induction training online, which may explain their lack of content clarification opportunities.

Figure 18

Trainer’s Communication Skills Regarding Clarification of Content



5.5.4 Responsibility and Accountability

77.89% of survey participants agreed to varying levels that the people providing OHS site inductions within their workplace are held accountable for ensuring the training is effective (see Figure 19). 12.63% of participants disagreed to varying levels. Three stakeholders discussed the accountability of OHS site induction trainers; their comments can be seen in Table 17.

Figure 19

Survey Participants' Perceptions of Trainer's Accountability

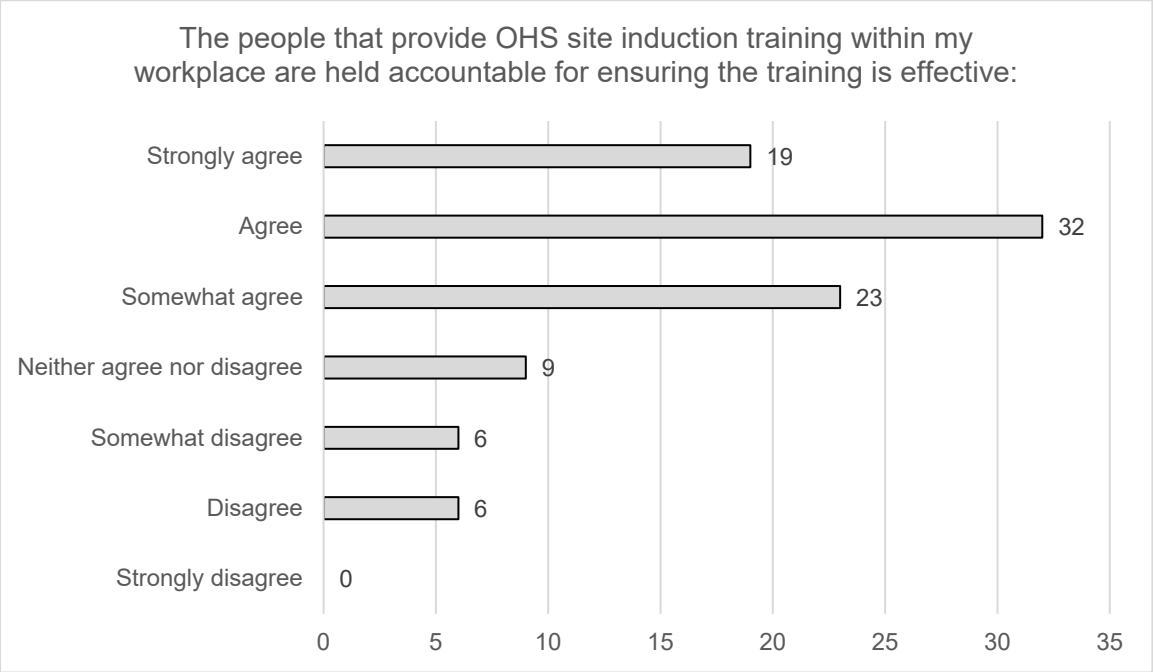


Table 17

Stakeholder Input on OHS Site Induction Trainer Accountability

Stakeholder ID	Quote
S3	From a delivery perspective, we go down to ensure the quality is there and make sure the content is right by working with our health and safety because they own the content, but we provide governance … And we want to make sure training is fit for purpose … We have a standard; we have quality and expectations that link back to the objectives of the project.
S6	I think that fear and anxiety around backwards-looking accountability causes people to game the work so that they can then meet the objective of covering their own backside …

Stakeholder ID	Quote
S6 (cont.)	Accountability can be applied, but it can be applied in a forward-looking way … You can actually apply accountability for the people who design and deliver induction processes to take first responsibility for doing their best to produce an experience that meets the objectives that we've agreed upon … But the forward-looking accountability piece is about how do we participate in assuring ourselves that we've met these objectives which is through learning. And you do learning by going out talking to people using humble inquiry methodologies or others to ask people about their experiences.
S9	The main thing is that they're doing it and that it's up to date, and it's part of the audit.

5.6 Trainee Characteristics

Trainee characteristics were examined using survey questions A.3 and B.1 to B.6. The statistical survey data and the qualitative comments provided by survey participants and stakeholders have been presented in the following sub-themes: education level and self-efficacy, responsibility and motivation, and attitudes.

5.6.1 Education Level and Self-Efficacy

As shown in Figure 20, secondary school was the highest level of education held by most survey participants (37%). “Other” responses included UE, apprenticeship, Polytechnic, Trade Qualifications, School Certificate, Master Builder Qualification, Post Graduate Diploma, Carpentry level 4 and 5, Qualified Electrical Engineer level 4, and L4 Certificate in Construction.

Figure 20

Level of Education Held by Survey Participants

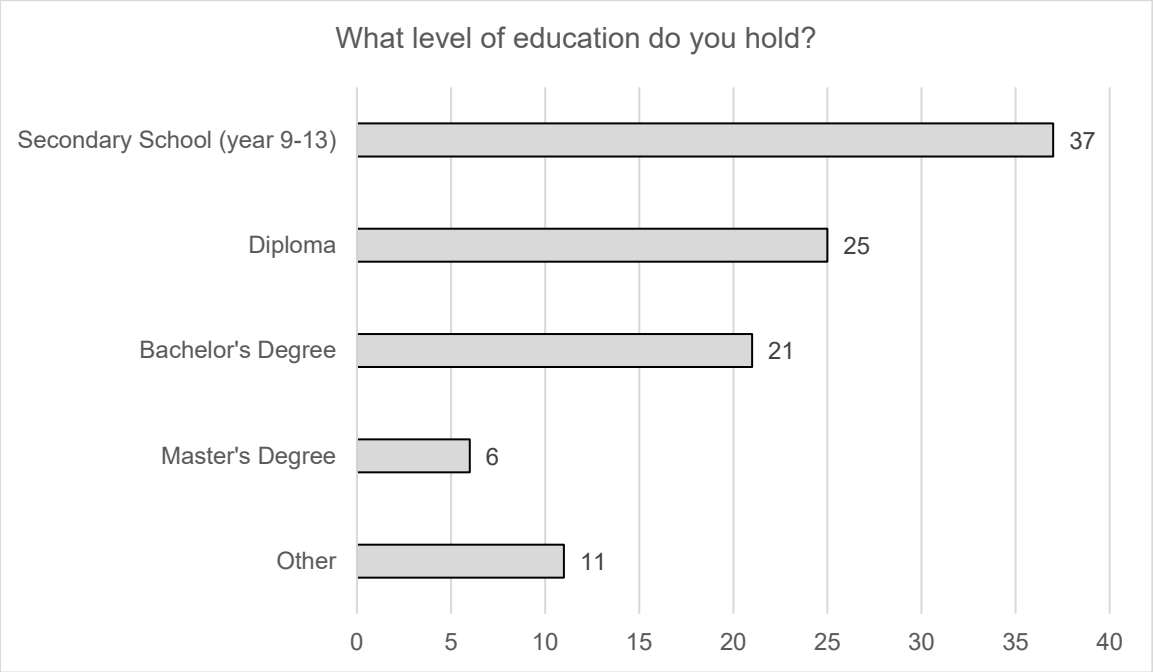
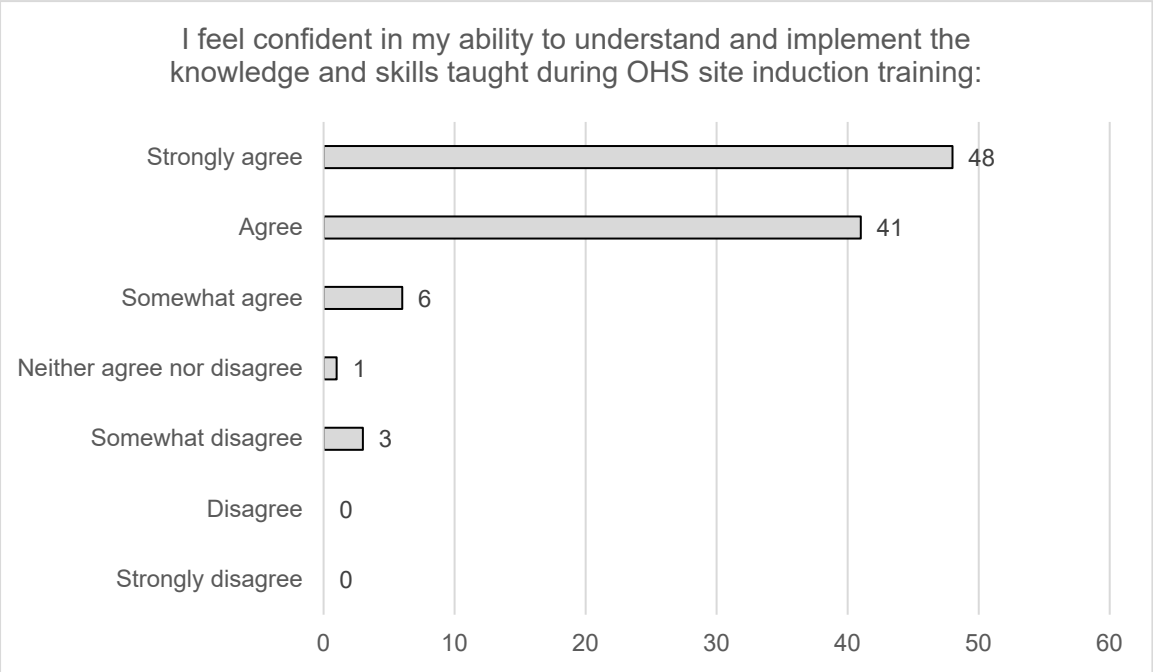


Figure 21 shows the levels of self-efficacy felt by survey participants for OHS site induction outcomes. Most participants felt confident in their ability to understand and implement the knowledge and skills taught during OHS site inductions, with 48.48% strongly agreeing and 41.41% agreeing.

Figure 21

Survey Participants' Self-Efficacy for OHS Site Induction Outcomes

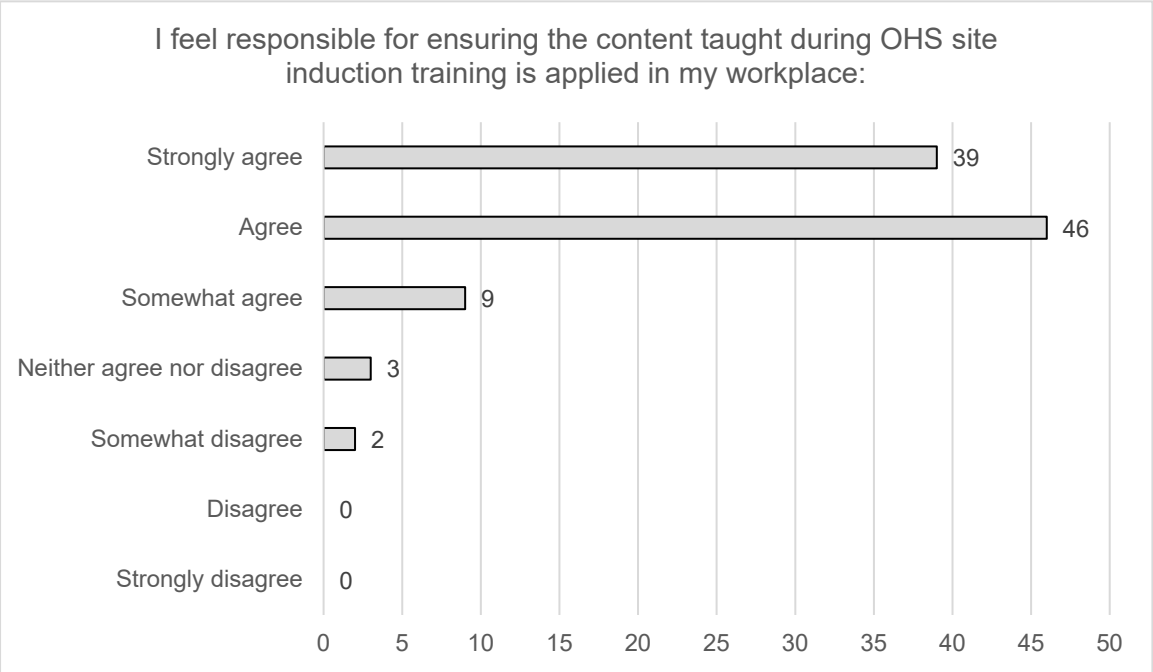


5.6.2 Responsibility and Motivation

Most survey participants felt responsible for OHS site induction outcomes, with 39.39% strongly agreeing and 46.46% agreeing (see Figure 22).

Figure 22

Survey Participants' Felt Responsibility for OHS Site Induction Outcomes



Survey participants were asked who they believed should be responsible for ensuring the effectiveness of OHS site induction training using an open text entry. This allowed participants to respond without being prompted by pre-set options. As the text responses were varied, some answers have been grouped. “Management” included managers, supervisors, foremen, and the company. Most participants believed that everyone on site should be held responsible (31%), followed by management (23%) (see Figure 23). Two stakeholders discussed how trainees could be made to feel responsible for OHS site induction outcomes; their responses can be seen in Table 18.

Figure 23

Who Survey Participants Believed Should be Responsible for Ensuring the Effectiveness of OHS Site Inductions

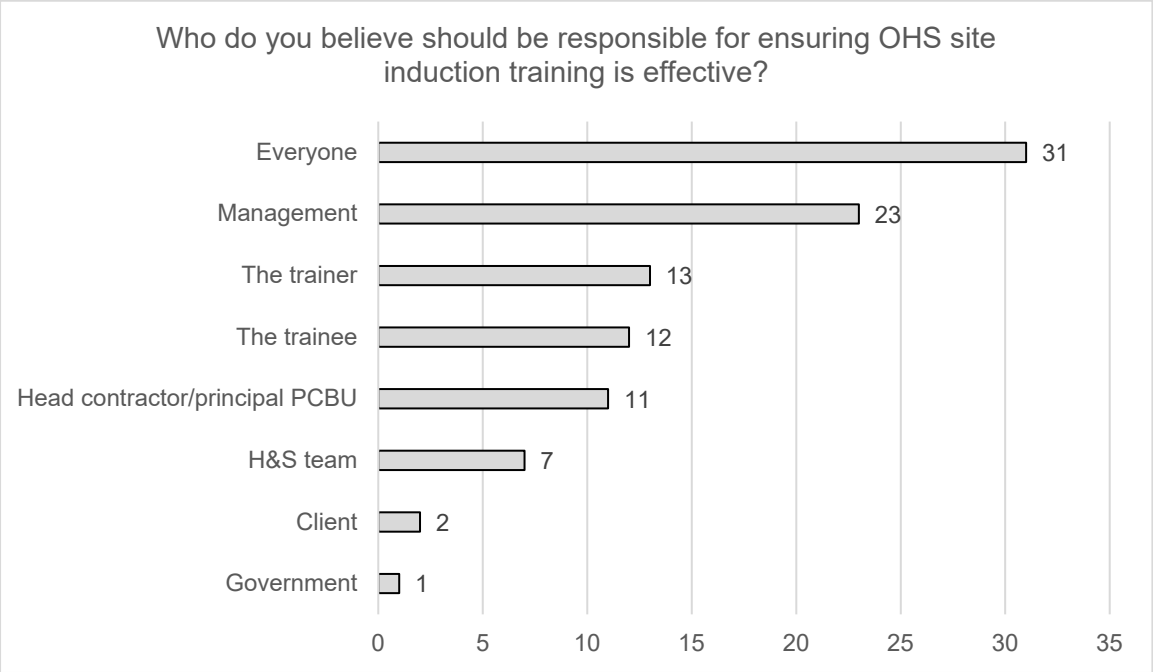


Table 18

Stakeholder Input on Trainee Responsibility for OHS Site Induction Outcomes

Stakeholder ID	Quote
S5	That's the critical part to ensuring the trainings effective, that each individual understands … what they're here for … That's where you come back to the trainer having that capability to actually draw out of the learners the why are you here, what's that bigger picture … This continues to try and flip that back onto the learners is that hey it's not just sit down attend the course for the day and get ticked off … Let's try to make sure that they're actually responsible for the learning.

Stakeholder ID	Quote
S6	We can't make people feel responsible, so people have got to kind of want to … If you give people a good sense of place in a work environment, then that creates a sense of connection to that place and a sense of obligation to participate in the culture and do their best for that project … So that for me is why inductions can be really important because if the controlling organisation for that site … in most cases is collaborating and working with a client in an effective way that what they would be doing is providing a real identity for that project or contract that may be quite different to other projects and contracts people have worked in. And it then provides this ability to have this sense of place which we know removes workplace stressors and creates a working environment where people can thrive.

Again, using an open text entry, survey participants were asked what motivates them to ensure the content learnt during OHS site induction training is applied within their workplace; some answers were grouped. The most significant motivator was keeping themselves and others safe at 68.09% (see Figure 24). Key quotes from survey participants are provided in Table 19.

Figure 24

Participants' Motivation to Ensure the Content Learnt During OHS Site Inductions is Applied Within Their Workplace

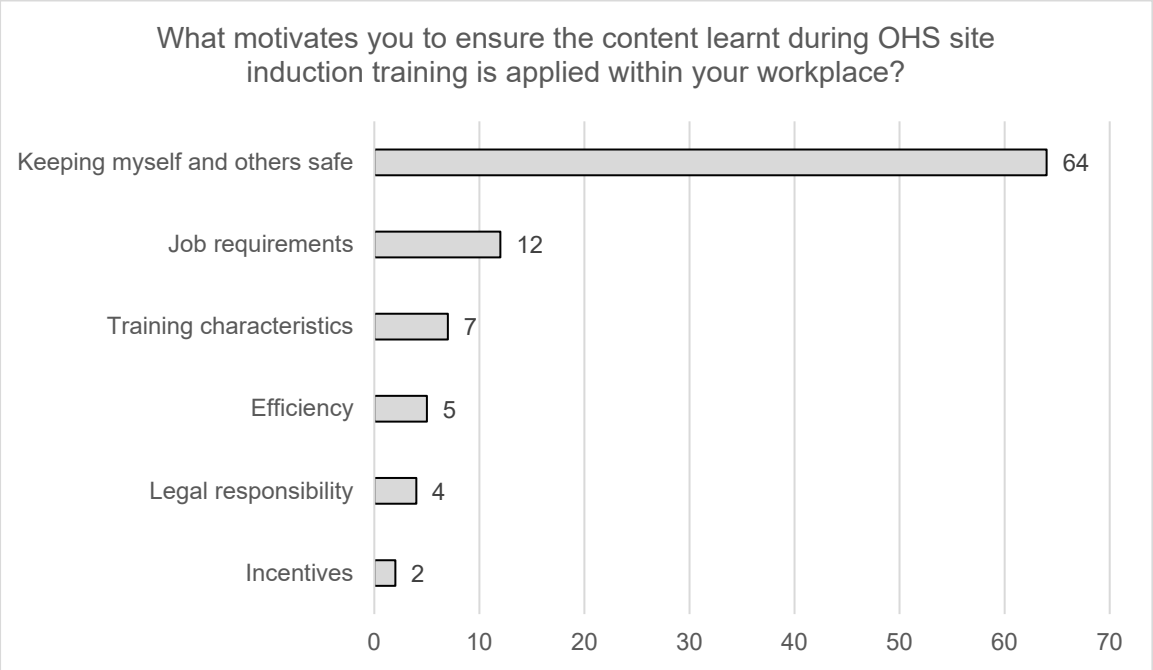


Table 19

Motivation to Ensure the Content Learnt During OHS Site Induction Training is Applied Within Their Workplace, as Identified by Survey Participants in Their Written Responses

Theme	Quote
Keeping myself and others safe	Anything that makes sure people make it home to their families in one piece helps in NZ's construction sector.
	Keeping people safe so they can return to their families - no one wants to get hurt at work.
	The thought of someone being hurt under my instruction.
	To make sure everyone on site is as safe as possible as soon as they get on site.
	I believe everyone should be able to go home safely at the end of each day.
Job requirements	It's part of my job to ensure health and safety rules are followed on site.
	It's following the rules and regulations of workplace at times.
Training characteristics	What is discussed in the induction is actually what happens on site and all the steps are followed.
	The professionalism and consistency given by this kind of training.
Efficiency	Getting the job done efficiently.
	Continuous improvement as a business.
	So all subcontractors can work effectively together.
Legal Responsibility	Compliance.
	Legal responsibilities.
Incentives	Kai.
	Good remuneration.

5.6.3 Attitudes

As shown in figures 25 and 26, most survey participants felt they had a positive attitude towards health and safety and OHS site inductions. 50.51% of participants strongly agreed that they had a positive attitude towards health and safety, while slightly fewer (39.39%) strongly agreed that they had a positive attitude towards OHS site inductions. One participant commented on trainee attitudes in the open text boxes provided: “It’s getting better. Most workers are keen to be involved and understand their role.”

Figure 25

Survey Participants' Attitudes Towards Health and Safety

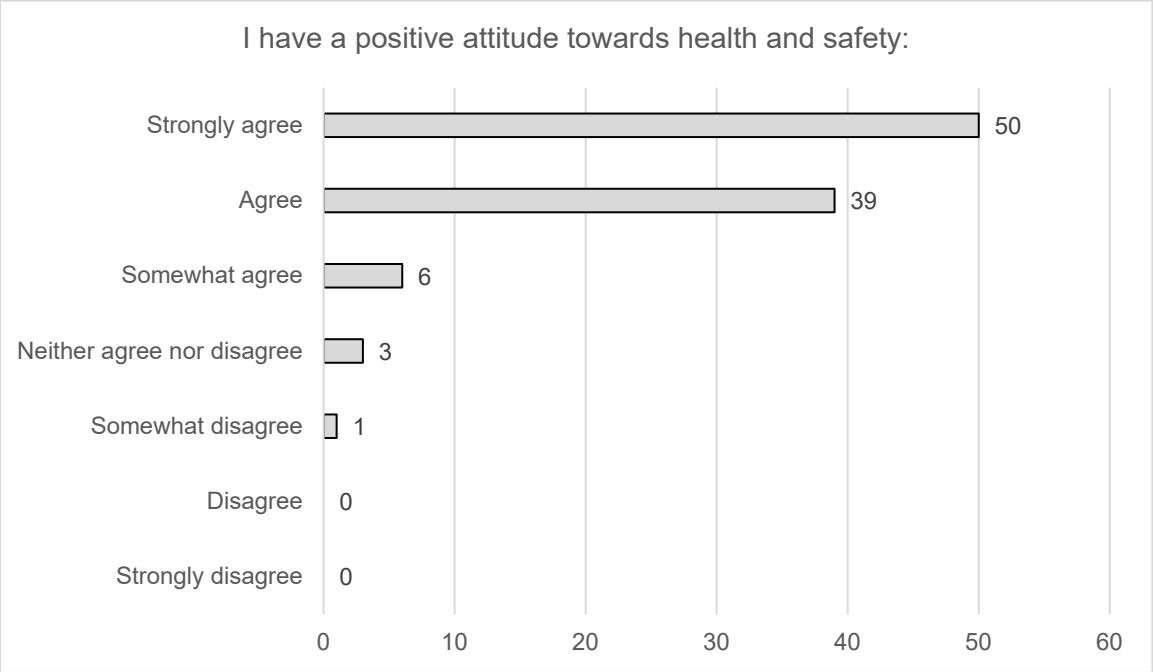
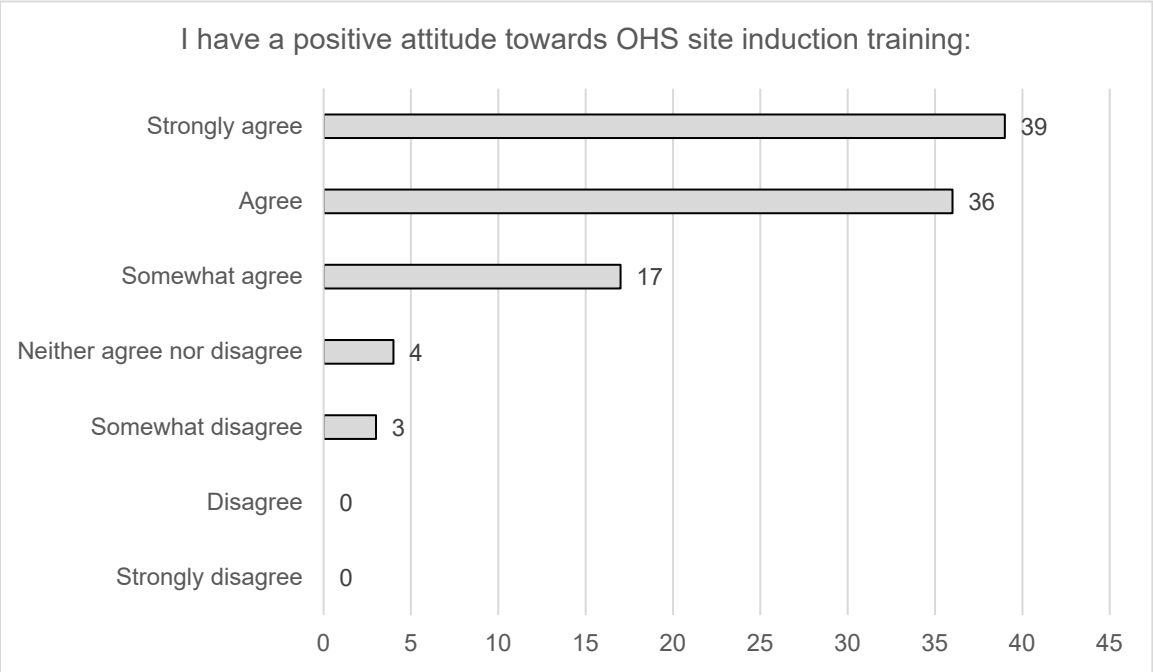


Figure 26

Survey Participants' Attitudes Towards OHS Site Inductions



5.7 Training Characteristics

Training characteristics were examined using survey questions C.1 to C.16. The statistical survey data and the qualitative comments provided by survey participants and stakeholders are presented in the following sub-themes: OHS site induction purpose, environment, content, length, materials, personalised and adaptive measures, trainee engagement, and confirmation of learning.

5.7.1 OHS Site Induction Purpose

Eight stakeholders provided insight into the purpose of OHS site inductions (see Table 20).

Table 20

Stakeholder Input on the Purpose of OHS Site Inductions

Stakeholder ID	Quote
S2	To make a worker aware of the risks on site and how they should be controlled … It's just to familiarise them with everything that's happening on-site and what they can expect from us.
S3	Site inductions should onboard people around health and safety practices for site-specific environments because each site is different.
S4	If we can make workers aware of the known hazards and risks on that site, then hopefully they've got an opportunity to maybe look after themselves and their work colleagues … I look at it as an awareness of the hazards that are happening on that site.
S6	To clearly communicate the specifics of a particular project or contract that people work on … Within the construction context, the purpose of the induction is to communicate the specific aspects of a project or a contract also … to enable synchronicity of information and learning of the participants so they can understand how to effectively work on the project and how to keep themselves safe.
S7	It's an opportunity to share relevant information with people that are coming and going; if I'm going onto someone's site as a worker, what am I taking onto the site? … But more importantly, it's about what I'm going to be exposed to on the site; what are the facilities, the processes, who's going to be there, and what are the activities that I need to be aware of to keep myself safe … Sometimes I feel it's just a matter of lip service that the industry pays to it. You know, they come and sign here, tick the boxes, and off you go.
S9	To get to an understanding of what the hazards are on site, what we're actually building, who the site foreman are … Covers things they need to know as far as what they need to have in place … Just

Stakeholder ID	Quote
S9 (cont.)	basic rules, which they should be aware of, but we tell them every time anyway … Sometimes it will be client specific.
S10	It's about having a consistency of expectations for what both parties will provide … From a company perspective, I have tried recently to make sure that we're letting people know it's not just what they give to us … but actually saying we will do this, we will provide you with a safe place to work, we will provide you with safe plant and equipment, we will provide you with fit for purpose PPE, and you will wear your PPE in the manner prescribed, you will use plant and equipment safely, and if there are defects or damage, you report it to us.
S12	The site induction is around health and safety awareness. Communicating risks and making sure that people understand what our standards are. And to ensure that people comply or at least have the opportunity to comply.

5.7.2 Environment

Survey participants were asked where their most recent OHS site induction took place; as site inductions can take place over multiple locations, participants could select more than one option. Most participants completed their most recent OHS site induction on-site, where their work takes place (44.25%), followed by on-site in a classroom/office space (38.94%), online (13.27%), and other (3.54%). Two participants highlighted their preferences regarding the location of OHS site induction training within the free text boxes provided throughout the survey (see Table 21). Five stakeholders provided input into the environment in which OHS site inductions are conducted; their comments can be seen in Table 22.

Table 21

OHS Site Induction Training Location, as Discussed by Survey Participants in Their Written Responses

Quote
Relax the environment setting.
Most workers in the construction industry are not academics therefore class room training is not as effective as visual and hands on training which is the way most of the workers learn the best.

Table 22

Stakeholder Input on OHS Site Induction Environment

Stakeholder ID	Quote
S3	There is some really good stuff with virtual reality at the moment … There are organisations that have started building more of a practical playground for training … They realise that theory is good, but the practicality and the practical simulated experiential is better … And it's working; it's just a big cost to set up. And it's the people effort and time pressure to do it. In this organisation, this partnership that I'm working in this project, we've been enabled to do it. And it's paid off. But we've still got a little way to go to ensure our people are competent.
S6	The best site inductions I've done or seen are the ones that are actually practically applied, and so therefore, they become a site tour … You take groups of people around site, you can actually point out the work areas, and people can learn from an experiential point of view rather than from a theoretical point of view which they normally would … Knowledge is more likely to be maintained and reinforced because people are practically experiencing the site for themselves in a safe way, but also seeing the things that you're trying to explain to them that are unique to that site … I think that most inductions then become a hybrid, … then actually they deliver something else, which is normally classroom based. It normally involves somebody speaking and a bunch of people listening, and it's not the perfect environment to engage our people or to maximise their ability to learn the important things that they need to learn.
S9	I think that inductions can … make guys switch off, [the idea] was to get them more involved in the induction as far as actually taking them around the site, rather than just sitting there staring at you for half an hour.
S10	Typically, they would take them through that [a site walk] ... Typically, I expect that to be boots on the ground, actually getting out with people to show them what's what. On a big site, they probably wouldn't go everywhere on site, but they'd go to some key areas.
S11	It's inside and on the bigger sites in the meeting room, normally … We do a video, but not every site has a video … We need somewhere that's kind of dry and quiet so people can watch that. It depends; for some of the smaller sites, we do the site walk. For this one … because it's quite big, it's more directions and handing them over to somebody that knows. Generally, we'd only do it if somebody was starting with [us], and then we take them around, but if it was a subcontractor, you just get handed over to whoever it is that they're going to report to.

Survey participants were asked to select their delivery preference for OHS site inductions from in-person, online, or a combination of the two (see Figure 27). Most participants preferred in-person delivery at 59.6%, followed by a combination of the two at 34.34%. Only 6.06% preferred the training to be delivered exclusively online. Two survey participants commented on the use of in-person versus online training (see Table 23). Stakeholders were asked for their input on online OHS site inductions; their responses can be seen in Table 24.

Figure 27

Survey Participants' Delivery Preference for OHS Site Inductions

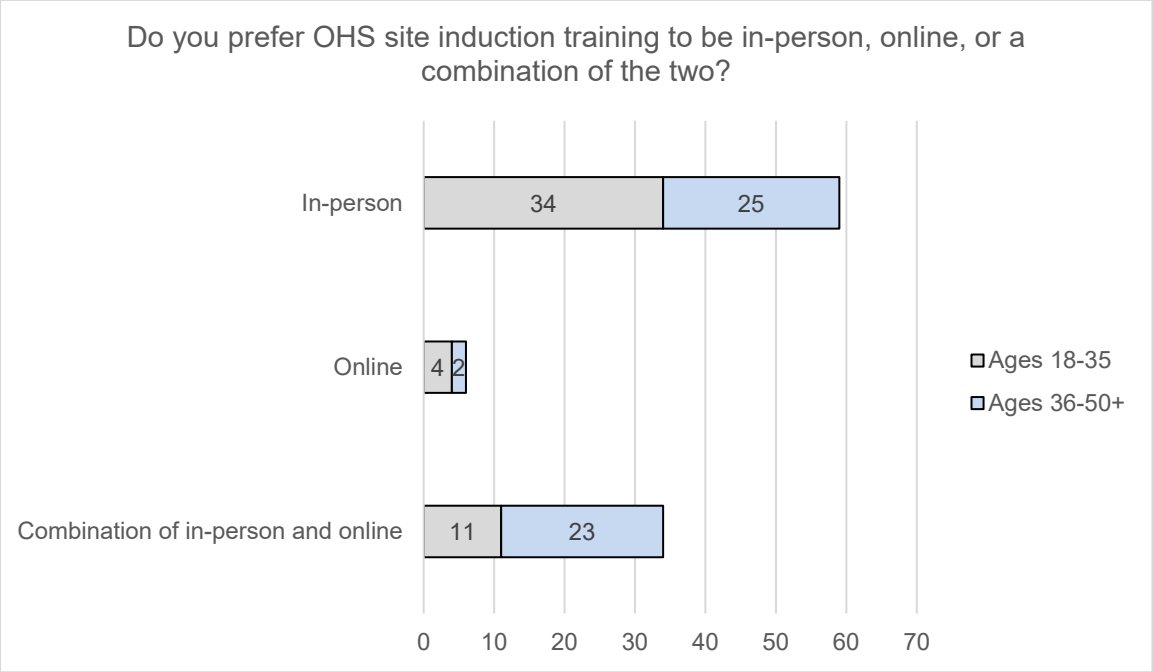


Table 23

OHS Site Induction Online Training, as Discussed by Survey Participants in Their Written Responses

Quote
I do find a in person training is way better gives people opportunity to have their say, also as a person who is running the induction give him a understanding where everybody stand from the way they behave and body language.
Online courses are mind numbing for experienced construction professionals.

Table 24

Stakeholder Input on Online OHS Site Inductions

Stakeholder ID	Quote
S1	It's sort of a bit of a mixed bag. The first one I did online was just awful; it was just watching a video. The video was quite good, but … they don't know if I was watching it or staring out the window … It's extremely easy to use, possibly a little bit too easy … But you can just flick through it so quickly without really reading it, … without really understanding it … If you're delivering that induction, you can get a sense of is this person listening to me and do they understand what I'm saying or are they just staring at their phone or just staring at the window? Or are they looking at you dumbfounded?
S2	For me, there still has to be human interaction … That's why we have the tablets in the office as well, so that they can have that interaction … Then you can clarify because they can ask questions ... And it starts a relationship.
S3	The evaluation, the tests, the assessments through that they're not always that robust, and really doesn't check competency and doesn't really check even … knowledge retention or capability. It's just giving knowledge. And people are just doing it to tick the box. So, I don't think they're that effective. I think they're just a way to do a mass amount of learning very quickly, but you're also able to report on it … But for people on site, no, I don't think that it's an effective learning model.
S4	If you're not an English speaker, forget it, where you've got to go through and read and agree virtually, but you don't have somebody reading out ... You've got to have literacy, and you've got to be able to read in English as well … There is a number of good ones in the large construction companies … They are becoming more common, and I think it's a great idea because it's in real-time. And the other thing is too that it helps the site; when I go back another time, and I've already been inducted, they don't have to ask the question have I been inducted?
S5	We definitely get hesitation from learners of what's the bloody hells in front of me? They just want a good old pen and paper and get on with it, but often there's just a barrier because they're not familiar and comfortable with the technology.
S6	I'm a big fan of using a range of different solutions. I think where the concern would be is if the induction was solely delivered within an online format. And the reason why is I think that that's likely to move towards the induction being more of a compliance obligation rather than an ethical obligation to ensure people really have the information they need to enable them to work efficiently and safely … We don't know is how well that information that's being passed through that online tool, how well that's been understood and absorbed by the person … It's very difficult in an online environment to understand the real context of the place … I think the online tools could probably augment or maybe shorten the onsite experience, I

Stakeholder ID	Quote
S6 (cont.)	think that the better methodology would be a mixed methods approach where they would still need to be some form of practical engagement and communication with people in the place where they're going to work.
S7	I need to be a little bit careful here because of my age … I struggle with the electronic stuff as well because it's all very well to do it on your phone, but then where's anything to refer to … The better setup ones have an electronic one. And it is very easy to just next, next, next, and then submit ... There's no checking to see any sort of retention of knowledge and that sort of thing. Other than two examples from the same company up in Taranaki. And it was great. I thought … you've actually gone through the right information now, you've checked that I've understood it. But mostly, it's tick the box.
S9	I just think they're a bit of a waste of time to a degree because I think that probably it's like an hour top, but by the time they get to it, they've probably forgotten it all anyway … I think it's better to probably do it in person if they want the guys to actually pay attention anyway … A lot of the guys on our sites wouldn't be able to do an online one; it's more of a pain in the ass trying to get them in front of a laptop. Because they don't have one at home or don't have data … For some sites, I don't even look at the training; I just go click click click.
S10	It was really just when we got this [online induction], and we got the ability to have consistent online inductions that we kind of realised that what it did is it unlocked the ability to have those face-to-face inductions be exactly what they are at the moment … If we can take the I'm going to read 10 minutes of just blah to you ... and then any questions, no, off you go. Actually, being able to say I don't need to do that. Instead, I can say, hey, what are you up to today? Where are you going? … Actually being able to understand a bit more about the person and what they're up to.
S11	There's different types of people, right? Like there's people that don't have data on their phones, are technology illiterate or technology challenged … it's frustrating and people turn up and they can't use their phone because they haven't got data. We put in a visitor Wi-Fi, but they're incapable of logging into that. Some of it becomes really frustrating. We've tried to get away from paper-based inductions, but you just bang your head against the wall with some of the people that come through.
S12	Because our induction includes cultural values, behaviour kind of elements, and also meeting and greeting certain important people, those elements I think will always be in person … Not everything is appropriate for everyone in the room all of the time, but we can tailor that a little bit more and have just the core elements in person and then break people up into different categories to say, okay, well, this is your package and you can do that online in your own time, and we'll have some compliance elements and some testing around that then … I think going fully online … I don't think it's appropriate.

5.7.3 Content

Stakeholders were asked what they believed should be included in OHS site inductions. Their comments are shown in Table 25.

Table 25

Stakeholder Input on OHS Site Induction Content

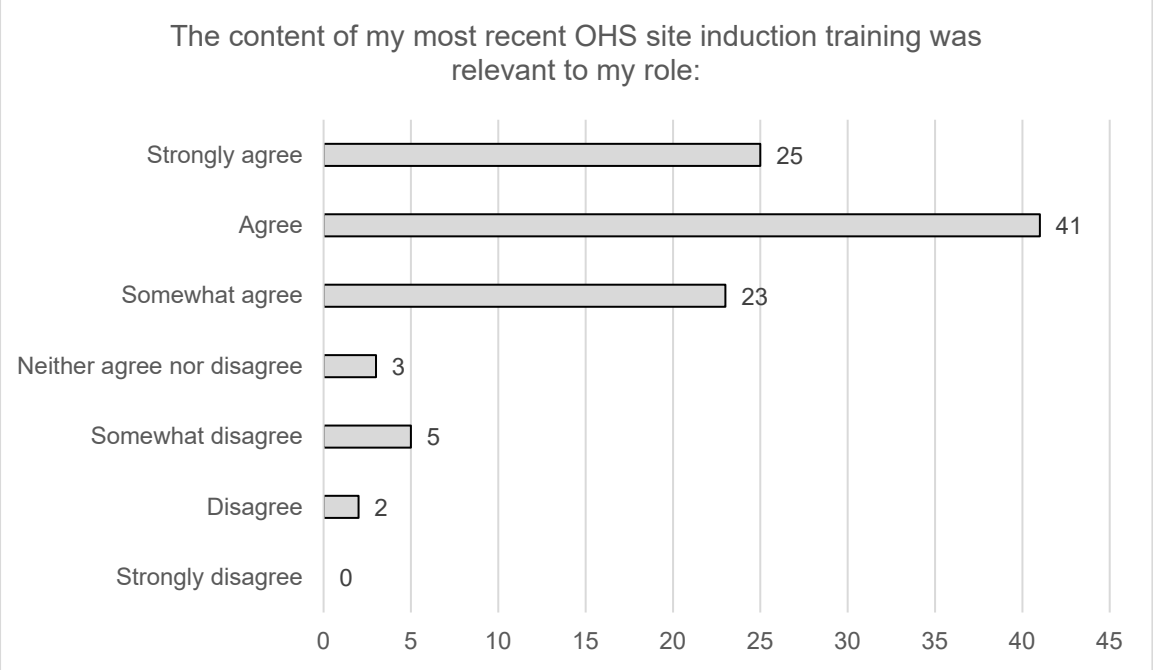
Stakeholder ID	Quote
S1	It definitely seems to be site dependent but there's some basic things that I want to know when I go there. What are the PPE requirements? What are the emergency response drills like? Where's the assembly point? Where's the first aid kit? Where's the toilet? What's happening right now? Are there any major risks that I need to stay away from?
S2	Absolute minimum, you'd have your critical risks on site, how they are controlled and what they may and may not do on-site around that … And then also emergency response procedures … Also for them to know if they've got any questions, who their contact people are.
S3	It should take people through the key equipment required as in PPE gear, protocols, governance regulations, and practices and ensure that people are fully aware and knowledgeable on who is the go-to person for first aid or any emergency output. Any vehicle management plans, and site management plans should all be taken through then.
S4	What I see as an auditor often is that we find workers who have been left alone without adequate supervision and they're not competent to carry out their tasks … Making sure that the workers have a clear understanding from that induction that they do have the right to say no … In a lot of ways that's where a lot of organisations are probably all falling over because most of those inductions are pretty generic, whereas the sites are evolving.
S6	A barebones minimum would be some description of the site itself, its boundaries, its different work areas and its different work activities and that that could be through a physical walk around of a site or a place, or it could be through images, maps, photographs, to give people a good feel of the place that they'll be operating in during that period of work there.
S10	Our site induction is something that we leave to the site … Some of our team members lean into that, and they love it. And others have to create structure where there isn't any. And so one of my team members created this face-to-face induction checklist … It's something I'm working on, but I'm sharing this with my team … I've generalised to sort of what are the critical risks on their sites, the major things that people might need to be aware of, and then closing it off with some questions saying, you're really just focusing on what the work is doing, and whether they're set up to start work

Stakeholder ID	Quote
S10 (cont.)	successfully … I think safety clutter is something that we need to be very mindful of. Really the most important thing is people's attention span that we've got, we've got an amazing opportunity to get information out there. But the volume and complexity of information that we can actually put out is quite limited … You're not diving down and presenting information which isn't relevant, which kind of really compounds issues of not paying attention, can count any issues that may exist for people to pay attention to something that people will disengage if it's perceived as not being relevant to them.

Figure 28 shows how relevant survey participants deemed the content of their most recent OHS site induction training. Most participants (66.7%) strongly agreed or agreed that the content was relevant to their role. 5.05% of participants somewhat disagreed, and only 2.02% disagreed.

Figure 28

Survey Participants' Perceptions of Content Relevancy for Their Most Recent OHS Site Induction



When asked if the information provided during their most recent OHS site induction training was sufficient to enable them to work safely, 91.92% of survey participants agreed to varying levels (see Figure 29).

Figure 29

Survey Participants' Perceptions of Content Applicability Regarding Safe Work Practices for Their Most Recent OHS Site Induction

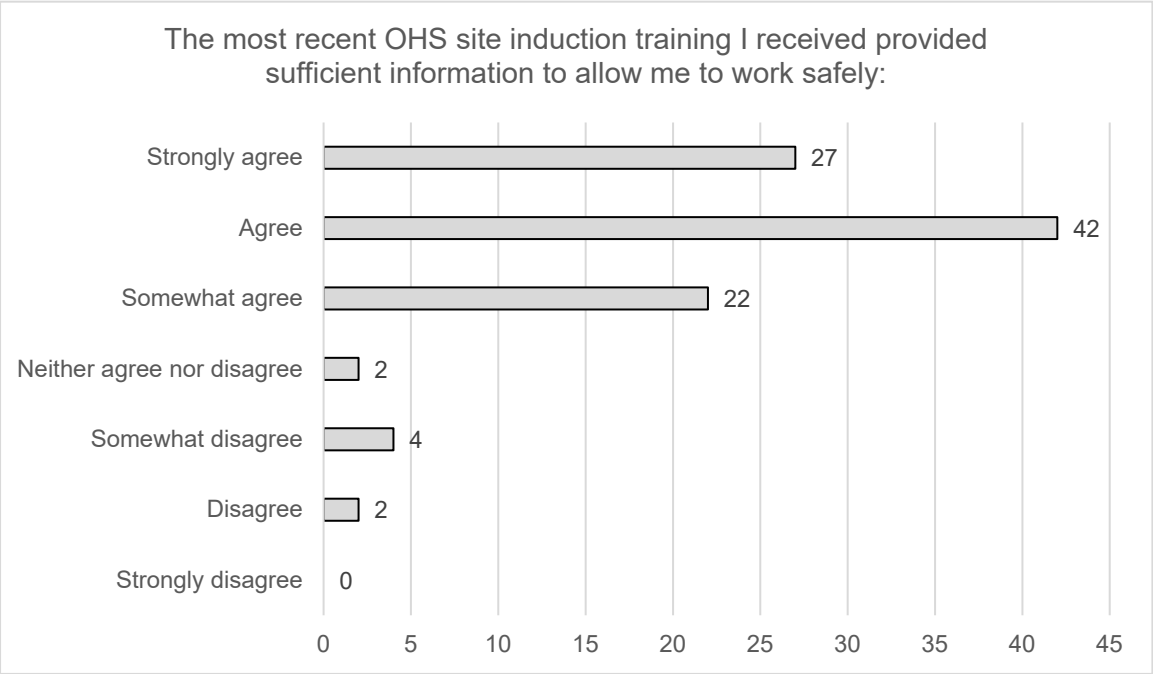
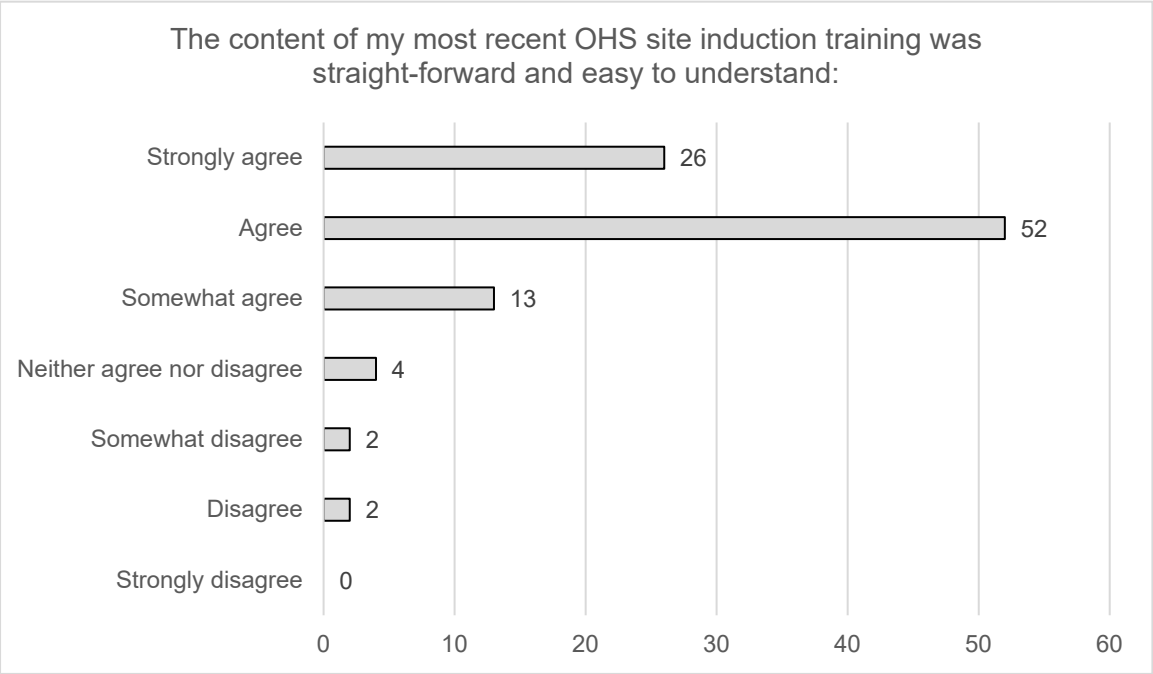


Figure 30 shows survey participants' perceptions of how straightforward the training content was to understand. Most participants selected "Agree" (52.53%), followed by "Strongly agree" (26.26%).

Figure 30

Survey Participants' Perceptions of Content Understandability for Their Most Recent OHS Site Induction



Multiple survey participants commented on the content of OHS site inductions within the free text boxes provided throughout the survey (see Table 26).

Table 26

OHS Site Induction Content, as Discussed by Survey Participants in Their Written Responses

Quote
The inductions need to be kept relevant to the worksite.
There is usually far too much information to fully take in fully, so typically people will focus on the items most relevant to their activities and may disregard something that they don't need to rely on for months or years.
Most of it is very generic.
It always appears to be generic.

Quote
Tends to be relevant for say the operators of the site (plant operators) never really is tailored towards Trade related contractors coming to do maintenance/construction onsite.
Content should be relevant to your role. Seems to all be generic and done only because it is a requirement. Seems that there is not a lot of effort put into it.
Becomes difficult to focus when the content is the same as before.
Content must be site specific.
It is not always task specific.
There is a lot of generic information that gets repeated, focus needs to be on very specific site risks and procedures/rules.
Nearly every time it is just telling us the basic of how to do our jobs, and hardly ever cover the actual risks unique to the site.
Sometimes they go hard on the small stuff i.e not wearing gloves and glasses. On the other hand, high risk stuff i.e working at heights/needing better access to work at height could be overlooked due to expense/practicability.
H&S inductions need to focus on just the key info that keeps workers safe on site, often other messages are included which do not make the person safer.
When developing H&S induction for large projects we often sway from just delivering H&S content and also end up delivering cultural and environmental inductions (I think they should be separate).
Material covered in the daily prestart meeting should also be left out of the induction, except for high risk hazards.
I think it needs to have standard content along with the job specific training. It often requires 2 different people to deliver this properly.
They need to attend to general overarching principles e.g. never enter exclusion zones, with context e.g. the only exclusion zones currently on this site are A, B, C which are located at X, Y, Z.
Inductions are generally very boring, site familiarity should be focused on, same with site specific hazards.

5.7.4 Length

Most participants' most recent OHS site induction training lasted 10-30 minutes (37.37%), closely followed by 30-60 minutes (33.33%) (see Figure 31). Those that selected '60+ minutes' were prompted to enter how long their OHS site induction training was (see Table 27). Seven survey participants commented on the length of OHS site inductions, as displayed in Table 28.

Figure 31

Survey Participants' Most Recent OHS Site Induction Length

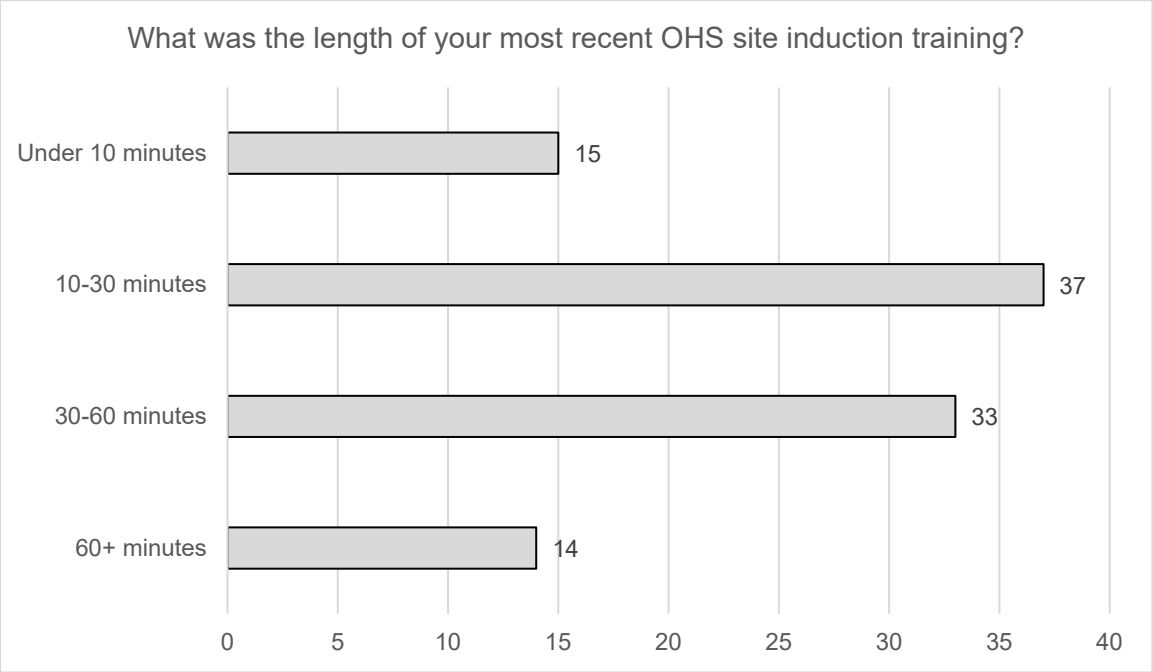


Table 27

"60+ Minutes" Responses from Survey Participants

Length	Number of participants
2 days	2
8 hours	1
5 hours	2
3 hours	3
2 hours	1
1½ hours	2

Table 28

OHS Site Induction Length, as Discussed by Survey Participants in Their Written Responses

Quote
Adequate breaks if upwards of an hour.
Be more direct and to the point, people tend to get bored very fast.
I have found in the past if the inductions are too long workers will zone out and not take in the information required.
Inductions that are too long don't tend to hold people's attention.
Keep the inductions short.
Long winded inductions are a sure way to have people switch off, especially if English is not their first language.
In general OHS site inductions can become rushed at times. Understandably so considering the manager has a site to run. This could change by simply having a dedicated safety officer on site who could spend as much time as necessary on the safety content.

As highlighted in Chapter 3, pre-site competency assessments can aid in reducing OHS site induction length. 60.61% of survey participants were required to complete a pre-site assessment in the past year (see Figure 32). Survey participants were then asked if there was an overlap between the pre-site competency assessment completed and the OHS site inductions they had completed over the past year (see Figure 33). 77.77% of participants agreed to varying levels. Three survey participants commented on pre-site competency assessments; their comments can be seen in Table 29. Stakeholders were asked for their input on whether pre-site competency assessments could be used to reduce the content included in OHS site inductions (see Table 30).

Figure 32

Survey Participants' Requirement of Pre-Site Competency Assessments in the Past Year

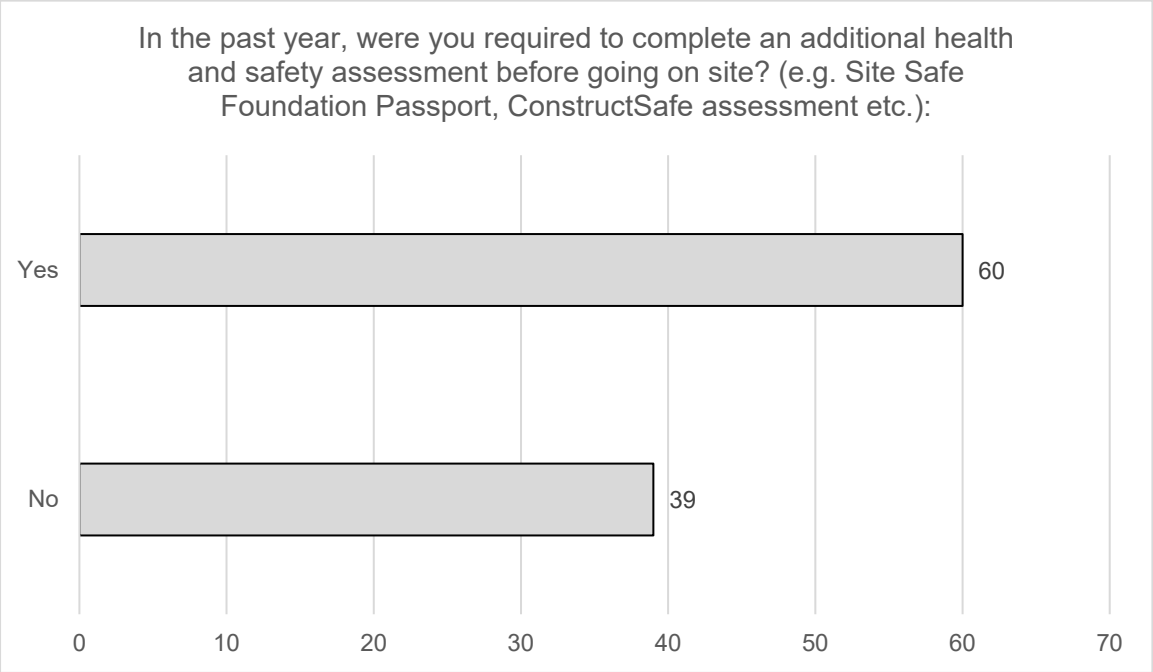


Figure 33

Survey Participants' Perceptions of Similarity Between Pre-site Assessments and OHS Site Inductions Over the Past Year

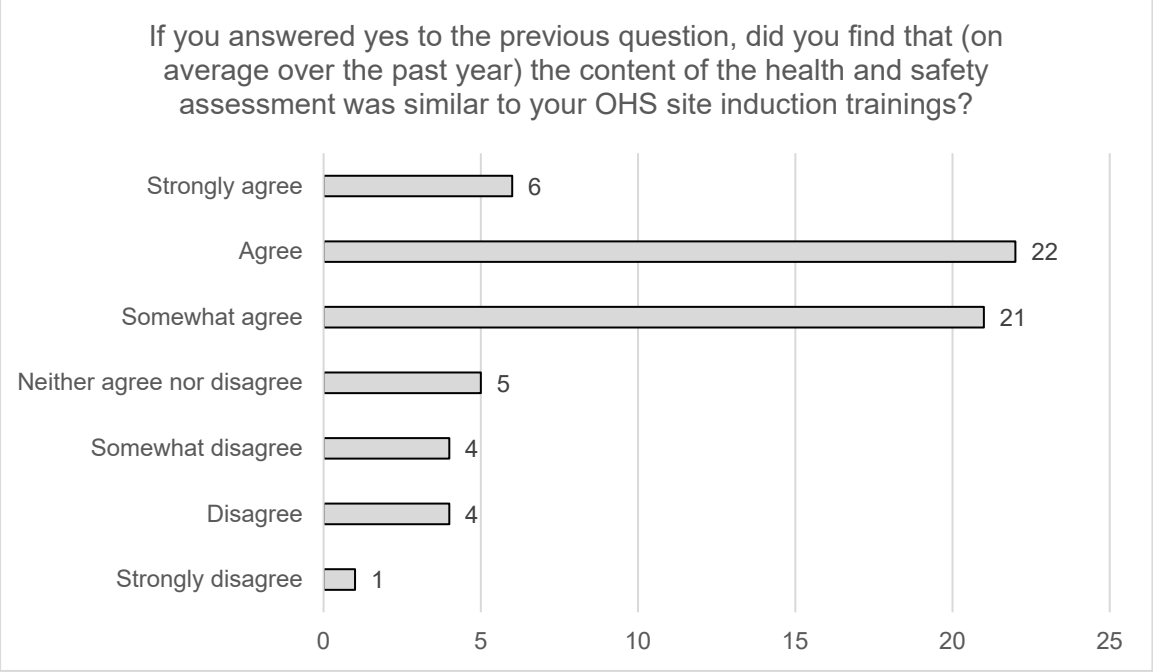


Table 29

Pre-Site Competency Assessments, as Discussed by Survey Participants in Their Written Responses

Quote
All generic stuff is covered by site safe, construct safe or equivalent so doesn't need repeating.
Site safe passport is a joke. Just a box ticking exercise at this point.
ConstructSafe is a requirement for many sites that does not benefit anyone except for the companies that get the money for it.

Table 30

Stakeholder Input on Using Pre-site Competency Assessments to Reduce the Content Covered in an OHS Site Induction

Stakeholder ID	Quote
S2	I'm not too happy about the content of a lot of it and the way that they don't check that people actually understood; they give them the answers ... And now that we've got a learning and development lady on board, there's an opportunity for us to develop a hazard identification and risk assessment little course, which could also be a VR-type thing in our cornerstone module that we can make accessible to our contractors by our contractor portal.
S6	Because of the inconsistent way in which training induction, competency and supervision are applied across the construction industry ... there's real variability around the people that are going to do that work and their level of capability and knowledge … Some inductions have been broadened to cope with that gap of knowledge and understanding and experience … First of all, I'd have some really clear requirements of what people need before they come … To set an expectation that all workers are trained to a foundation level, particularly around health and safety, and that all workers have some form of confirmation of their competence … Now I think if that's done quite well, we can get some assurance of when people turn up is that they are trained and they are competent to do their work and therefore it means that the induction doesn't need to replace that prerequisite learning or training that people need.
S7	I think probably one of the failings in that situation is a lot of them don't do the pre-training, they don't do the learning before you come. And so, if it's a prerequisite, it's a requirement before you can move on to the next stage that becomes an issue … What are we going to do if they haven't done it, are we going to send them away?
S9	That could be an idea, but then they might be able to say, "we don't remember that". And then also with the Site Safe passport, there are

Stakeholder ID	Quote
S9 (cont.)	different topics so they might not necessarily cover what we covered in the induction. Like, because you can refresh your site so fast, you can refresh your Site Safe passport by doing an EWP course, and that won't cover anything in our induction.

5.7.5 Materials

Survey participants were asked to select which materials have been used during the OHS site inductions they attended over the past year; their answers are shown in Figure 34. The most used materials were visual presentations, like PowerPoint (27.09%), printed handouts (23.11%), and videos (19.12%). Four participants highlighted their preferences regarding the materials used within OHS site induction training within the free text boxes provided throughout the survey (see Table 31). Six stakeholders commented on materials used during OHS site inductions; their comments are in Table 32.

Figure 34

Materials Used within Survey Participants' OHS Site Inductions During the Last Year

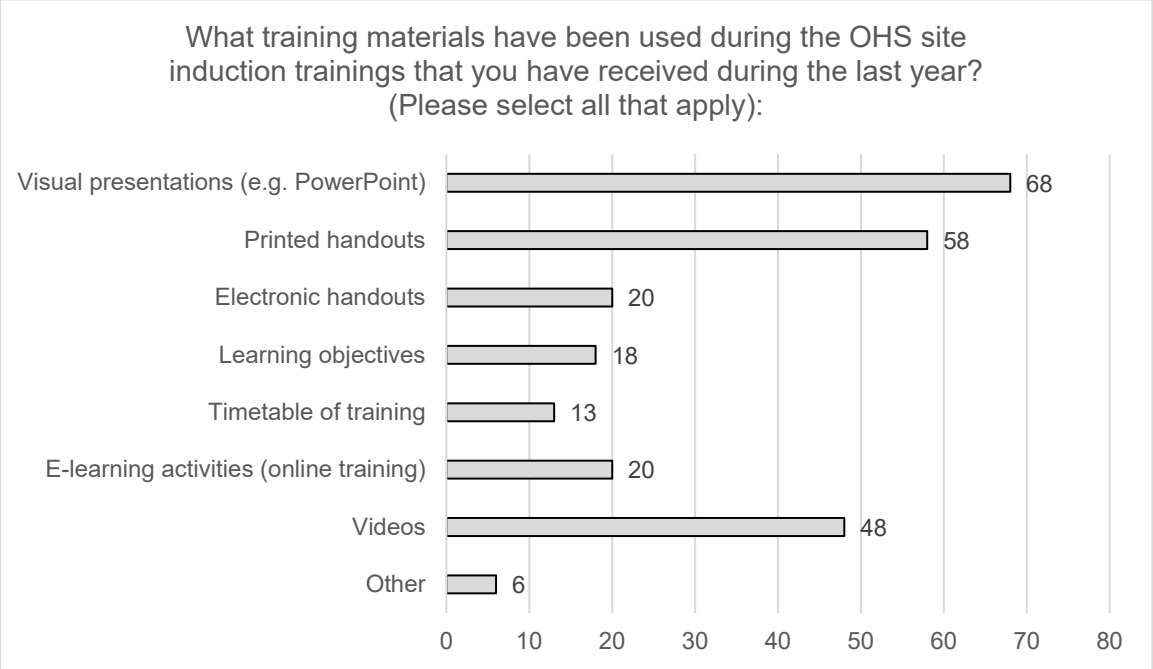


Table 31

OHS Site Induction Training Materials Used, as Discussed by Survey Participants in Their Written Responses

Quote
Most workers don't pay much attention to the PPT.
This induction they need to be clear. We should illustrate a lot of photos and videos in inductions.
Onsite physical tours accompanied with the theory.
It must be accompanied with competency checks on equipment. Discuss with supervisor and understand the job specific safe work method statements. Also a worksite orientation.

Table 32

Stakeholder Input on Materials Used Within OHS Site Inductions

Stakeholder ID	Quote
S6	Mixed methods are always good … That group briefing method where you might need to show people drawings or pictures or kind of other information mixed in with practical walk arounds of the workplace itself ... You can give people practical examples and actually show you what you were talking about, which would confirm that learning.
S7	One company, in particular, I remember doing it was probably about a 15–20-minute video that I watched … It was a generic one for the company but relevant to the site, and then it was probably a five or ten-question questionnaire after the video that I had to actually point out that I absorbed some of the stuff. Some of them are really too detailed where people don't absorb what they need to absorb, and some of them are just a tick in the box.
S9	There’s a person and a presentation. But in saying that, on one of my last sites we made a video of it … But most of the sites I’ve suggested that if they want to, we can do this but, to be honest, most of them have said no we’re not going to do that … We would actually bring in a laptop and sit with them, so even though it was on a video we would be making sure they weren’t just sitting there staring at their phones because I think some of the times the guys won’t actually be paying attention.
S10	I didn't want it to be a death by PowerPoint. You can have death by PowerPoint at home on the couch looking through it. It's the digital induction. And then when you come to the site, I want that to be a genuine human interaction.
S11	We do a video. Not every site has a video, but we've got a video on [REMOVED] … I guess that's trying to get the engagement up like the

Stakeholder ID	Quote
S11 (cont.)	video is a little bit more sort of humorous … and tries to engage more than just listing off a whole set of rules.

As discussed in Chapter 3, the use of VR within OHS site inductions in New Zealand's construction industry is currently under development. One stakeholder (S8) was interviewed about the development of Beca's VR site induction; his comments are shown in Appendix I.

5.7.6 Personalised and Adaptive Measures

Survey participants whose first language was not English were asked if training materials were available for them in their first language during their most recent OHS site induction training. Of those participants, 55.56% were provided with materials in their first language, while 44.44% were not. Survey participants that were provided with materials in their first language identified as NZ Māori, Samoan, Tongan, Chinese, Southeast Asian, African, and Filipino. Those not provided with materials in their first language identified as Indian, African, Romanian, and Dutch. Stakeholders were asked about the support given to non-native English speakers or workers that require literacy support during OHS site inductions; their comments can be seen in Table 33.

Table 33

Stakeholder Input on Support for Non-Native English Speakers or Workers That Require Literacy Support During OHS Site Inductions

Stakeholder ID	Quote
S2	We've got a lot of people on our sites where English is not their first language. Some of them can't even read, even if English is their first language … We started working on making it more user-friendly … The recent update [for the VR induction] had been around languages; we've added Te Reo, Filipino and Mandarin to the suite of languages in there; that's what we're planning on doing going forward as well [with the site inductions].
S3	This is something that … we've had to shift fairly quickly to accommodate this year with … the skills and labour out there being reduced quite heavily because of COVID and a high level of migrants now coming in … So we find somebody on site that we know, for example, can speak Filipino, and then we'll upskill them on how to deliver the content, how to engage and facilitate. We've got people in the team that can speak for example fluent Samoan, Tongan,

Stakeholder ID	Quote
S3 (cont.)	Te Reo, Chinese, Mandarin, and Taiwanese, so have the ability where possible to adapt and upskill people to be able to then interpret or deliver training in their own preferred language.
S4	Tends to be the bigger construction sites that have definitely taken on board the different languages. Numeracy, literacy, not so much. But there again saying that I have seen some that use whiteboards to do drawings rather than using words … It's on the maturity of the organisations; the bigger ones have probably got more awareness of it and more experience with it.
S9	I guess literacy-wise, it's audio so they don't have to read it. The language barrier side of things, if someone doesn't speak English, they have to have their supervisor there or someone to translate for them.
S12	We're just looking at that to be fair, I know that's an increasing issue for the whole industry. We're also involved in bringing people in directly from the Philippines for instance. So, there's a certain minimal literacy requirement to that, but conversational English and colloquial English and technical English are always a little bit different … People have chosen to come to New Zealand. Come a long way. And that should be supported, and we do that. We were lucky that we have a Filipino person within the training team so we can provide assistance there. And we also have lots of Italians within the wider team … we provide that support too. We are funding and providing some online English courses which helps. But we're seriously thinking about how we can take some additional English language lessons and cohorts that are tailored specifically toward cultural groups.

5.7.7 Trainee Engagement

Figures 35 and 36 show the inclusion of survey participants in the planning and delivery of their most recent OHS site induction training. In both questions, more participants selected within the disagree continuum compared to the agree continuum; "Disagree" scored highest for both questions, at 23.23% and 21.43%, respectively. One participant commented on trainee engagement: "In my opinion it's all about engagement. Get the lads engaged in the induction training. Some guys have good relevant information to add to the inductions."

Stakeholders were asked for their input on trainee engagement during the development and delivery of OHS site inductions (see Tables 34 and 35). Stakeholders who were involved in OHS training (excluding site inductions) were asked how they targeted engagement from trainees. Even though this is a different form of training, their comments can still be applied within a site induction context. Their comments can be seen in Table 36.

Figure 35

Survey Participants' Participation in Training Planning During Their Most Recent OHS Site Induction

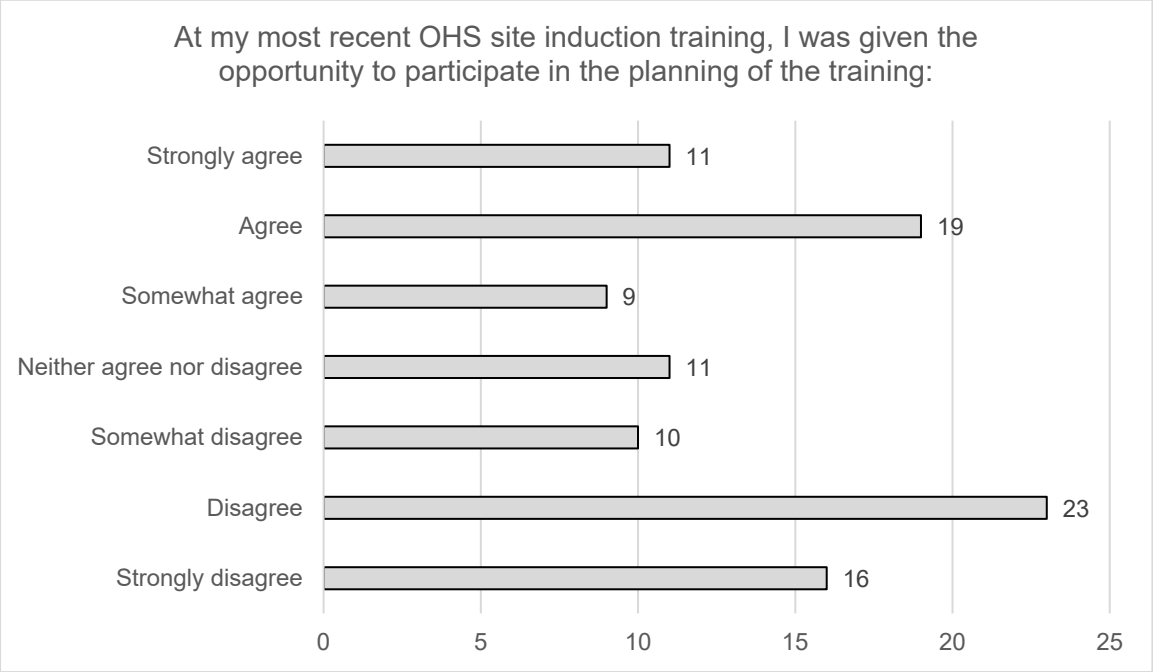


Figure 36

Survey Participants' Participation in Training Delivery During Their Most Recent OHS Site Induction

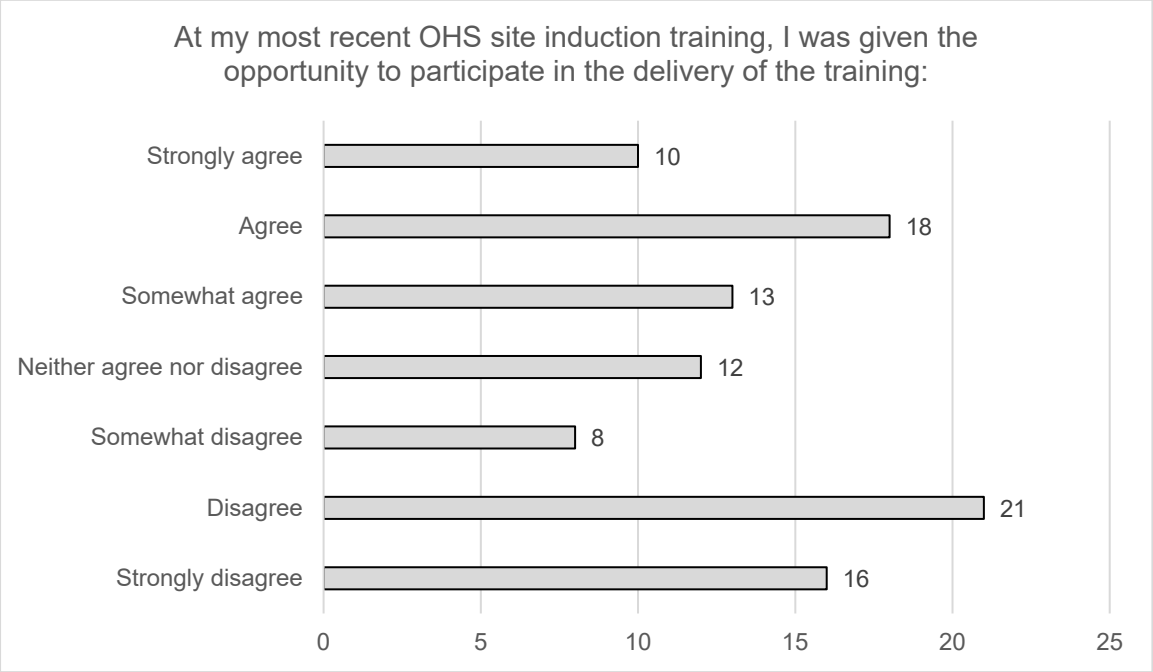


Table 34

Stakeholder Input on Trainee Engagement During the Development of OHS Site Inductions

Stakeholder ID	Quote
S2	We started decided to go simple … We went to site, and we said, hey, guys, how do you feel about this? … So, we had a session, coffee and muffin … the site management team and the EHS person will then run them through it and say, what do you think about this? … We've been really bad at telling people, well, great at telling people but very bad in listening and engaging when they do make comments … Because that's a critical point for me. It doesn't help us here. We can have the best induction in the world. If people don't understand what we're trying to say, we've done nothing. You've wasted your time.
S3	We use a human-centred design approach. So, we go out to them directly to see how they want to learn or prefer to learn … Anything that we do within my team from a training perspective, we go out, and we talk to the workers on site … and then we come back and go, okay, this is working, this is not, this is what they want. And it's come back to a lot of the things like ConstructSafe or NZQA, is that for everything online is that we don't really understand a lot of that. So that's why we've changed our model of delivery, changed our inductions … And then we get them to come and evaluate it.
S6	Try and get a diversity of opinion from people that do different jobs or maybe different specialist trade contractors, all of these different diverse people that would be expected to come and sit in and experience this, get their feedback on what is that they might want from the process, what's important for them and how that might be done because that might, certainly at the beginning of a capital project before you open a site or certainly an iterative process.

Table 35

Stakeholder Input on Trainee Engagement During OHS Site Inductions

Stakeholder ID	Quote
S4	The key thing for me is that the workers are empowered … They are given the backup and confidence … Having those conversations with them, you know are you comfortable, are there things that you want to talk to me about.
S7	Believing in what you're doing, you're doing it for the right reason and understanding that you know I'm having this chat with you so I can tell you what's here when you come on to my site, and I want you to stay safe, and I want you to be safe for the people around you. And to do that this is what I need you to know. So, let's just have a talk about this. Let's explain to you what's going on and give you a chance to ask questions if you want, anything that needs to be clarified … There's a two-way sort of dialogue that's my expectation. That's what I would like to see. But I would say I don't think that it happens that often … Not that sort of genuine 2-way discussion.
S10	It's also an opportunity for everybody on-site to meet one of our health and safety leaders that sits there, and if they can have a more human interaction with that person, then when there are issues further down the line, they're more likely to actually go to that person. But if they've just got a scary robot person standing up, repeating what it says on a piece of paper, then I guess you've lost a good opportunity there to build trust. I'm not going to say for a second that it works perfectly on all of our sites, but it's amazing where safety exists, where you go to a site, and everything is really just sort of working … It's that sort of trust and relationship side of things that seems to work.
S11	Trying to get engagement, you ask people if they're smokers or vapers, you ask do they know where the exits are? Just trying to reconfirm that knowledge. But it's hard. When you present to a group of construction workers, you get 0 feedback generally. You try making it engaging, but it's hard to know … Not every site has a video, but we've got a video on [REMOVED] … I guess that's trying to get the engagement up like the video is a little bit more sort of humorous, I guess, and tries to engage more than just listing off a whole set of rules.
S12	Making sure that they don't always listen to the same person with the same tone. Mix it up a little bit. Different people … different accents, different personalities. Presentations as well as tactile stuff as well as practical. So, we try and vary it as much as possible, but we're still dealing with people who are used to working in a practical hands-on environment most of the time and they struggle to be in the classroom for two days … My issue has always been in the delivery, not in the content. People will understand that they must do certain things that fall into the scope of their role. But I don't think they necessarily understand or have bought into the why or how important it is or how do I deliver it.

Table 36

Stakeholder Input on Trainee Engagement During Non-Site Induction OHS Training

Stakeholder ID	Quote
S1	We design our courses to make them interesting for adults … I get them to introduce themselves, like who are you, what do you do, and what do you like to do outside of work and just get them talking a little bit and then because I know something about what they do for a job and what they do outside of work, I can tie whatever I'm talking about back to what's real for them. For example, I might be talking about why you don't want to get injured. And it might be well if you're injured, you can't go fishing, you can't go hunting, you can't play volleyball, you can't play tennis ... And our course it's sort of designed to mix it up a little bit like, you know about every 10, 15 minutes. It's a change of activity … When I used to induct people into the company … I'd get out of them … what's their experience? How long have they been in the industry? What tools have they used? What tools have they not used? What have they been exposed to in the past?
S4	It doesn't matter where we come from on this planet, we always had stories told to us by our parents our grandparents our whanau so we've got stories about how we should be doing things. So I use stories as a way of explaining things. I might say right this is the legislation this is black and white, this is what you must and shall do. Now, this is how I interpret it in a real-life situation that you need to be looking after your mates, you need to be looking after yourself.
S5	We really ensure that we're still facilitating the learning, so we avoid having the trainer up the front telling our students everything that they know about the industry and how to work safely. It's about engaging the learners, and we really make a point of helping our trainees understand that the value on the day is the experience that they're actually bringing into the room … So that just helps with that engagement and relating what the learning is to the real world outside of a structured learning environment … There's definitely a key difference on the passion or the engagement of the person running the induction. I think that's critical in terms of how they actually engage with the audience or the learners.

5.7.8 Confirmation of Learning

As shown in Figure 37, survey participants were asked if they were given the opportunity to practice behavioural modelling during their most recent OHS site induction training; 62.24% of participants agreed to varying levels, while 28.57% disagreed to varying levels.

Figure 37

Survey Participants' Opportunity for Behavioural Modelling During Their Most Recent OHS Site Induction

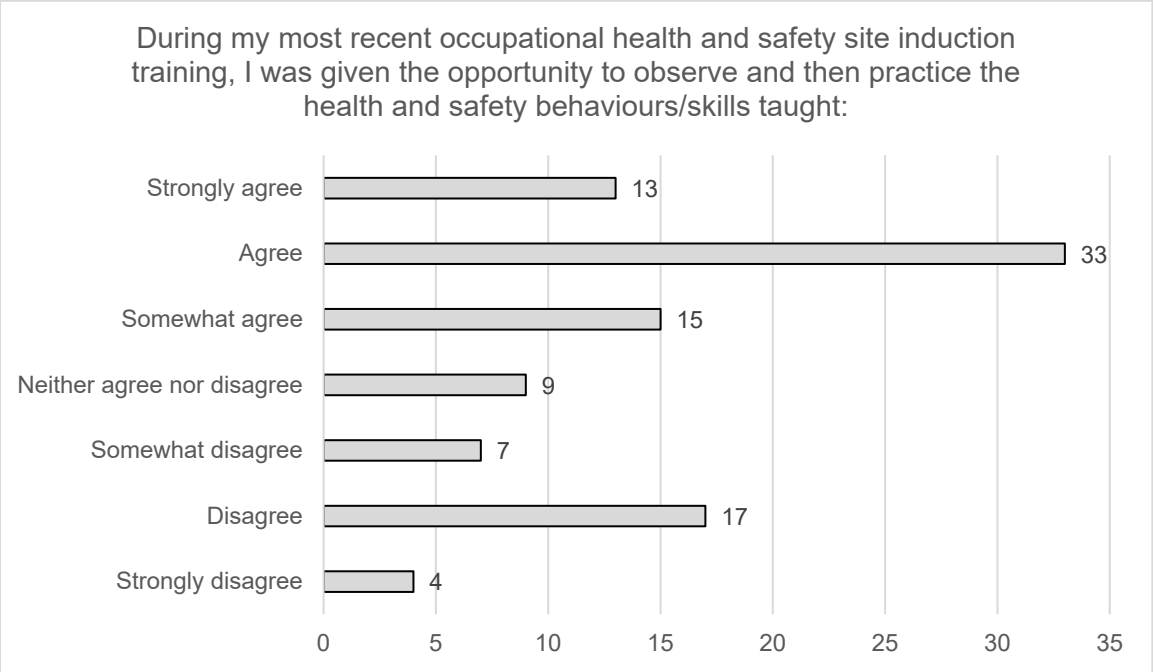


Figure 38 shows survey participants' responses when asked they received testing as a confirmation of learning during their most recent OHS site induction training. 48.94% received testing as a confirmation of learning, while the slight majority, at 51.06%, did not. Four survey participants commented on the confirmation of learning practices; their comments can be seen in Table 37. Stakeholders were asked for their input on confirmation of learning practices; their comments are shown in Table 38. Nine stakeholders commented on the use of follow-ups with trainees (see Table 39).

Figure 38

Survey Participant Testing as a Confirmation of Learning During Their Most Recent OHS Site Induction

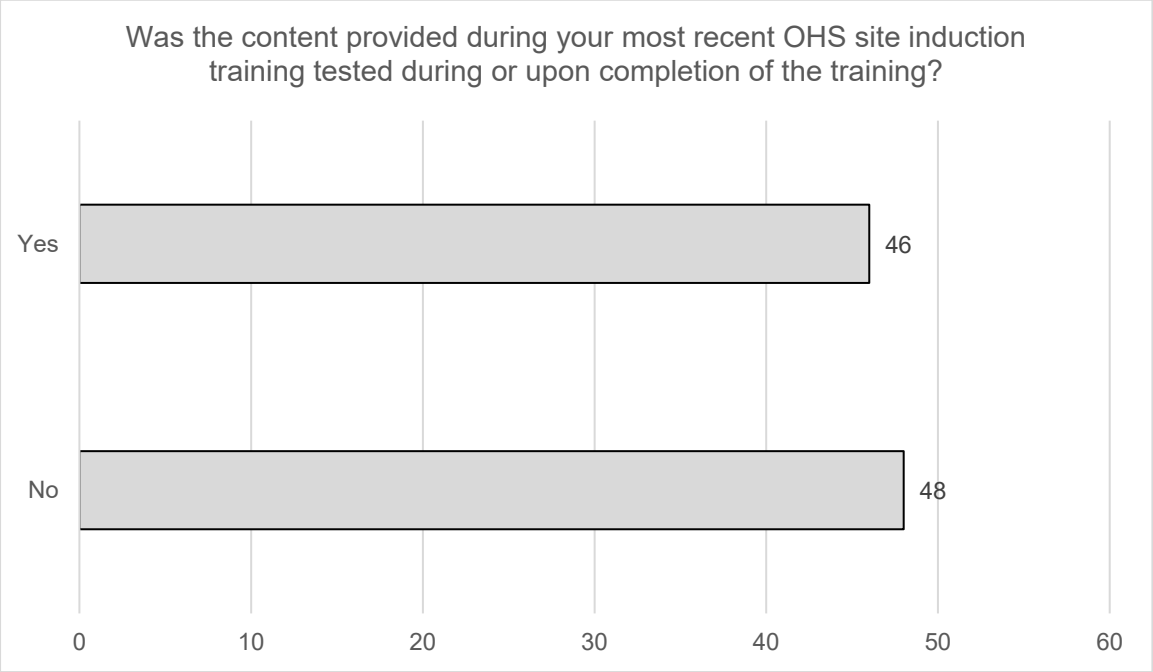


Table 37

OHS Site Induction Confirmation of Learning Practices, as Discussed by Survey Participants in Their Written Responses

Quote
It must be accompanied with competency checks on equipment. Discuss with supervisor and understand the job specific safe work method statements.
If I take an induction I ask the inductee questions about the induction along the way.
I would suggest a questionnaire needs to be done after an induction is completed. This way it will prove that people understand what was spoken about in the induction.
Should make it a requirement to register attendance and compliance on the hazard register at front gate.

Table 38

Stakeholder Input on OHS Site Induction Confirmation of Learning: Testing

Stakeholder ID	Quote
S2	You need to have verification that they understand, like a knowledge check at the end … You could actually have it as somebody asking them questions and having that discussion … For me, best practise is giving them an opportunity to ask, to challenge, because they might not necessarily understand what you're trying to say, but then you can explain.
S3	We have to. And we've really just changed this year; this year has been a big change for us. So, when we train a worker or a contractor or a subcontractor coming on board, we'll put them through our inductions and make sure we've done all of the tick boxes there and the skills checks and the knowledge checks … [On-site] it comes down to the facilitator and how confident they are … You might have a facilitator, but suddenly, they scheduled on to another job, or they're sick, or something's happened. But generally, because they've been through our doors and induction, they've got a lot of the content in their heads. So, when they're on doing the site induction, they can ask more questions pertaining to that site so it's more of interest to them. The ones that I've sat into the inductees and the participants have asked questions and got more involved. But it's also allowed the facilitator to ask pertinent questions and specific questions because they know they've been through the induction … So, it's sort of another skills and knowledge check before you go out the door.
S4	The paper ones, yes, because they'll sit down, and they say we'll go through the questionnaire and then they'll tick and ask if there are any questions ... And you can say yes or no … So, I do like the interaction paper format one … But not all of them. Some of them are as I said earlier are a one-pager. Just tick tick tick tick sign.
S9	I guess what they do on site shows whether they've been listening or not. But mainly, probably the only way you can tell at the time is having a few questions at the end.

Table 39

Stakeholder Input on OHS Site Induction Confirmation of Learning: Follow-Up

Stakeholder ID	Quote
S1	I go to some sites, and because I've been here before, they know me. But the site's different this time than it was last time. They're completely different, 3 months, six months, a year since I was last there. And they can sometimes be a bit casual about it like thinking well you've been here before I don't need to tell you everything … These guys who were drain layers. They go in early, do the initial layout of the drains, and then they go there right at the end to put the caps on the drains and the grills ... They're there twice, right at the start and right at the finish. I'm saying to them, you get inducted the second time, right? And they're going no. Really, they should because the building sites are completely different from the beginning to the end.
S2	What we do see on our dashboard is which of the questions has got the lowest pass rate the first time around … then we know that is an area we can focus on around toolbox talks … For me that it needs to tie in because then that is the way for us to understand what they aren't understanding. And you can quite easily clearly see where there are gaps in information and build on that … And I think it's kind of through the engagement process from the beginning of the induction and constantly checking in on them … So, it's part of the whole engagement process with our contractors rather than just tell tell tell because then you don't get anywhere.
S3	We now have a team out there that do VOCs - verification of competence … We'll assess them before they leave here, and when they land out there, I've got a team of four or five people that will go out there on the site. And they will look at those groups and check what level of competence are they at. We run through a one, two and a three, three being competent, consciously competent, and one being unconsciously incompetent ... If they're a level one, then we set them up with a buddy, and we also set them up for further training to get them to level two and get them to level three. Level three is really where we should be, they're out on their own, they're confident they're doing what they need to do. And then we just ensure that they remain competent … So, we do run that, that feeds back into a system that we've taken on board, which is CheckSafe, which is our competency and training management system. And then I have a team that sits at each of the four key sites who are our VOC managers for CheckSafe. And they will assess and make sure that people coming through are at the right level, but also feed through to the site managers and the leadership teams and the VOC assessors of what training needs to happen and administer that. So, we've sort of really putting a few gatekeepers in and stages to make sure any worker coming on board follows the right process and is checked, evaluated, tested, and is competent.

Stakeholder ID	Quote
S5	What I think would be extremely beneficial within induction training is ensuring that it's continued and ongoing throughout the work side of the job. It's not just I've got the sticker to get on site, and away we go; it's how do we incorporate that on a daily basis or weekly basis? … And whether it's through conversations, through questions, through competency, checkpoints or along the lines of that, how does this continue to be a living breathing thing that happens?
S6	I think verifications really important, and it could be linked into kind of normal verification and assurance practises on site … And maybe a bit of a contractual agreement, a verbal contract between people saying this is what I'm going to do, all right, which would likely be that, you know, over time as you go and work on the project … we are going to come and visit you while you're at work and just double check these important things. Because they're really important; this is about us caring about you and making sure you have everything you need … Don't worry, we're not policing you, but we're just making sure that some of these key aspects that you're going to get during this induction, you're actually implementing and applying.
S7	To do some follow-up … a couple of days later, I mean that's the only way that I could imagine they could check to see what sort of level of retention there has been … It could be just a random thing that once in a while someone goes out and does a quick questionnaire on this is what we covered in the induction, tell me about this and tell me where this is and tell me what you do in the event of this thing happening. But I've never seen that happen.
S9	Just by monitoring really, we had the weekly inspections and that kind of thing. We go around and can check that they're doing what they're told.
S10	An induction really should be an ongoing process and not just something that happens when somebody turns up at the gate. And then you know everything now, so off you go, and I don't expect to ever have to talk to you again.
S12	We do the first one well, the tick sheet goes good … We're not measuring very well what they've actually retained and what they've learned. And sometimes we feel that either they haven't paid attention, or they haven't retained what we need them to … We don't know what their behaviour is like once they're out there. And essentially the supervisor could tell us that, but we haven't taken steps to follow up.

5.8 Chapter Summary

This chapter has presented the quantitative and qualitative data collected from the survey and stakeholder interviews. Enabled by thematic analysis, the data were presented in the following overarching themes of: organisation characteristics, trainer characteristics, trainee characteristics, and training characteristics. Chapter 6 provides a discussion of these findings in line with the research questions and theoretical underpinning of this study.

Chapter Six: Discussion

6.1 Introduction

This chapter provides a discussion of the findings. As outlined in Chapter 5, the data collected have been organised into overarching themes and sub-themes. These themes will be discussed in conjunction with the literature reviewed and the primary research question: "What is the current state and effectiveness of occupational health and safety (OHS) site induction training within New Zealand's construction industry?"

The findings will also be analysed in parallel with the secondary research questions:

1. What are the OHS site induction training experiences of construction workers within New Zealand?
2. What is the perceived effectiveness of the OHS site induction training received from the construction workers' perspective?
3. What are the current OHS site induction training best practices and areas for improvement?
4. To what extent have ALT and ToT been applied within the site induction training to improve worker retention and application of knowledge?

The themes identified in Chapter 5 will be critically evaluated, beginning with Theme One: organisation characteristics, including employer, management, and peer support. Trainer characteristics will then be examined as Theme Two, focusing on trainer expertise, communication skills, responsibility, and accountability. Theme Three focuses on trainee characteristics, including cognitive ability, self-efficacy, motivation, and attitudes. Finally, Theme Four discusses training characteristics, including OHS site induction training purpose, environment, content, length, materials, personalised and adaptive measures, trainee engagement, and confirmation of learning. These themes are not isolated from one another but are interconnected and intertwined within each research question. Although each theme can be linked to a specific research question, the findings have implications at several levels and relevance across multiple research questions. These were designed to explore different aspects of the same problem, and the themes that emerged in the analysis speak to the interconnectedness of the study's focus. By examining the themes as they relate to each research question, the thesis provides a more nuanced understanding of the issues being researched.

6.2 Organisation Characteristics

As discussed in Section 3.3.1, the organisational environment has a recognised influence on ToT and includes the existing culture and support within the organisation (Blume et al., 2010; Chiaburu et al., 2010; Freitas & Silva, 2017). Cohesive support from all levels of an organisation is essential, as a unified approach to OHS promotes a positive safety culture (Potts, 2016; Tracey et al., 1995). If an organisation lacks support at one level, it can negatively impact OHS site induction outcomes; for example, if an employer provides support for effective training but management support is lacking, workers may feel as though they cannot dedicate as much time to training outcomes or may not feel supported to speak up about OHS issues. Organisation characteristics explored in this study included employer, management, and peer support. Each of these characteristics is discussed in the following sections.

6.2.1 Employer Support

Organisations with a positive safety culture are more inclined to experience training transfer among their workers (Potts, 2016). Most survey participants positively perceived their organisation's safety culture, which has positive implications for OHS site induction training transfer. When asked if their company values their input and if they feel confident that OHS concerns will be addressed, a significant number of participants agreed: "Agree" (44%) and "Strongly agree" (40%). When asked if their company had a proactive approach to health and safety, again, most participants agreed: "Strongly agree" (45%), followed closely by "Agree" (40%).

Survey participants were asked if their company prioritised productivity over the health and safety of their workers; this question had a higher variation of results. While slightly more participants disagreed with the statement to varying levels (51%), 45% agreed to varying levels. This indicates that almost half of the participants' companies are perceived to value productivity over health and safety, which has severe negative implications for the effectiveness of OHS site induction training, particularly regarding the resources allocated. However, as these results display more variability than other similar questions, this could indicate that some participants may have misinterpreted the question. One participant commented on the value their company places on productivity over health and safety: "Some sites value productivity over safety, it completely depends on the site leadership's competence and proactivity."

As noted in Section 3.3.1.1, employers can support ToT by providing the resources necessary for effective training (Albert & Routh, 2021; Namian et al., 2016; Waehrer & Miller,

2009). Most survey participants positively perceived the resources allocated to OHS and OHS site induction training. When asked if their company spends sufficient money on health and safety, most participants selected “Strongly agree” (39.18%), followed by “Agree” (34.02%). Only 7.22% collectively disagreed to varying levels. Those who selected “Disagree” and “Strongly disagree” indicated they worked for a micro-sized company. As highlighted in Section 2.4.1.1, SMEs often cannot devote as many economic, human, and technical resources to OHS (Beaver, 2003; Micheli & Cagno, 2010); This was reflected in one survey respondent’s comment: “Coming from a small building firm into a larger one, the H&S focus is a lot better from the larger firm.”

When asked if their company spends sufficient time on health and safety, most survey participants selected “Agree” (40.4%), followed closely by “Strongly agree” (35.35%). Only 7.07% collectively disagreed to varying levels. The participants who selected “Disagree” and “Strongly disagree” again indicated that they worked for a micro-sized company (see above paragraph).

When asked if their company spends sufficient money on OHS site induction training, most survey participants selected “Strongly agree” (28.57%) or “Agree” (28.57%); however, 10.2% collectively disagreed to varying levels. When asked if their company spends sufficient time on OHS site induction training, most survey participants selected “Agree” (32.65%), followed by “Strongly agree” (24.49%). 6.12% collectively disagreed to varying levels. These findings indicate that, while most participants were content with the resources allocated to OHS and OHS site induction training, there is room for improvement. Organisations should ensure the necessary resources are available to those designing and delivering OHS site inductions to ensure their effectiveness (Albert & Routh, 2021).

Organisations that lack a positive safety culture are less inclined to experience training transfer among their workers, as trainees may perceive the training to solely benefit the employer or be a ‘tick-in-the-box’ exercise (Potts, 2016). This was evident in the research findings, with multiple survey participants sharing their view of OHS site induction training being a ‘tick-in-the-box’ exercise, including:

> “People just get the paperwork done. Then carry on as usual.”
>
> “Just seen as a tick box as opposed to seeing the reason for it. When the site gets busy subcontractor supervisors always try get people to work before doing the induction.”
>
> “Some sites it is just a tick box exercise.”
>
> “It’s a tick box.”
>
> “There needs to be a balance between genuinely caring about employees H&S and merely making the induction a tick box exercise to avoid any litigation.”

These comments reiterate the importance of a positive organisational safety culture; workers need to feel as though their employer genuinely cares about their health, safety, and well-being. Worker engagement is one way of achieving this; Section 6.5.7 further discusses trainee engagement.

6.2.2 Management Support

As discussed in Section 3.3.1.2, management support positively impacts ToT (Freitas & Silva, 2017). Management's approachability, visitation frequency, safety attitudes, and worker support are common indicators of an organisation's safety climate (Flin et al., 2000). Survey participants showed an overall positive perception of their management's support and involvement. Survey participants were asked whether their site managers were approachable and open to their input regarding OHS; most participants agreed (48.48%), followed by strongly agreed (28.28%). Most survey participants also agreed that their safety representatives were approachable and open to their input, with a collective 79.17% either agreeing or strongly agreeing. Some survey participants commented on the approachability of their health and safety team:

> "Our H+S team is very approachable but sometimes when you get them involved it blows out of proportion."
>
> "People that [are] doing health and safety should be approachable. A lot of times people use health and safety as a beating stick to punish rather than teach."

These comments highlight the importance of management's approachability; improvements to OHS are hindered if workers do not feel comfortable raising health and safety concerns (Ajayi et al., 2022).

Survey participants were asked how frequently senior management visited their workplace; most participants indicated that management visited their site often (48.94%), followed by sometimes (36.36%), seldom (9.57%), and never (2.13%). One survey participant commented on the frequency of management's visitations: "Some project leaders don't leave the office and get out on site enough. The good ones always do."

Survey participants were asked if their management abided by safety rules and regulations and set a good example when visiting their site. Most participants agreed (43.3%), followed closely by strongly agreed (42.27%). This finding has positive implications for the organisational safety culture within New Zealand's construction industry; management's actions and attitudes towards OHS can be perceived as setting a standard around expected behaviours that their workers then emulate.

Questions regarding survey participants' management's response to worker injuries, focusing on investigation, support, return-to-work planning, blame, and punishment, were also canvassed. When asked if management investigates and takes appropriate action when workers are injured, most participants selected "Always" (71.88%). When asked if management supports injured workers and ensures they get the help they need to recover, most survey participants selected "Always" (67.74%), followed by "Often" (22.58%). However, when asked if management works with injured workers to create a return-to-work plan, fewer of the survey participants selected "Always" (58.24%), followed by "Often" (24.18%). This indicated that support regarding return-to-work planning was less frequent and may highlight an area for improvement.

When asked if management blames the workers when they are injured, most survey participants selected "Never" (40.48%), followed by "Seldom" (33.33%), "Sometimes" (20.24%), "Often" (3.57%), and "Always" (2.38%). When asked if management punishes the workers when they are injured, most survey participants selected "Never" (54.76%), followed by "Seldom" (33.33%), "Sometimes" (8.33%), "Often" (2.38%), and "Always" (1.19%). While most participants indicated that injured workers were never blamed or punished, it is still concerning that 20.24% were sometimes blamed, and 8.33% were sometimes punished. As highlighted in Section 3.3.1, establishing a no-blame culture enables workers to overcome challenges on-site through open communication (Gunasekera & Chong, 2018; Mainga, 2017). If workers fear blame or punishment, they are less inclined to report incidents and near-misses on-site, hindering corrective action and placing other workers at risk (Dekker, 2009).

6.2.3 Peer Support

As discussed in Section 3.3.1.3, workers' perception of and motivation towards OHS and OHS training outcomes are heavily influenced by their peers (Klink et al., 2001). Survey participants were asked about their co-workers' attitudes towards health and safety and OHS site induction training. Distributions for both questions were similar, with most participants agreeing to varying levels that their co-workers display a positive attitude. This finding has positive implications for the effectiveness of OHS site induction training, as workers whose peers display a positive attitude to OHS or training are likely to positively influence the attitudes and actions of those around them (Klink et al., 2001).

6.3 Trainer Characteristics

The majority of survey participants received their most recent OHS site induction training from their site manager (32.23%), closely followed by their supervisor/manager (28.93%). As highlighted in Section 3.3.2, in-house trainers' contribution to ToT is significant due to their involvement across the several stages of the training process, before, during, and after training (Freitas & Silva, 2017). These trainers are responsible for the preparation, presentation, and follow-up of training to facilitate ToT (Burke & Saks, 2009; Salas et al., 2012). Trainer characteristics explored in this study included expertise, communication skills, responsibility and accountability. Each of these characteristics is discussed in the following sections.

6.3.1 Expertise

As discussed in Section 3.3.2.1, trainers with high knowledge and professional expertise in the subject area are better equipped to deliver the desired content (Burke & Hutchins, 2008). Credible trainers are more positively perceived by trainees, increasing the likelihood that they are listened to and that the content taught is taken seriously. Trainers with experience in the practice of different teaching principles and learning needs are also better prepared to aid in training transfer, as trainers who can effectively recognise the needs of their trainees are more inclined to employ suitable learning methods (Khamarko et al., 2012).

Most survey participants agreed they were confident in their trainer's ability, with 90.43% agreeing to varying levels. Despite the majority agreement, some survey participants highlighted issues with their trainer's ability; criticisms included:

> "The people giving seminar are not qualified."
>
> "The person was not really knowledgeable about the subject."
>
> "Not given by people with HSE in mind."
>
> "Typically they are just reading off of a presentation/check sheet. They don't really "teach" you anything. Are just there to read something "at" you."

These quotes indicate room for improvement regarding OHS site induction trainers' expertise, which is unsurprising given the lack of evidence or mandate regarding the qualifications required to design or deliver OHS site induction training in the construction industry. Building on these survey participant quotes, stakeholders were asked about the competencies held by their OHS site induction trainers. Their responses indicated that there is a diversity of qualifications or training held by OHS site induction trainers, ranging from

formalised courses to in-house coaching to none. They also highlighted that this is an area of development for some companies. Key quotes included:

> "I've got 20 odd years within learning, development, training, facilitation leadership, so I ensure the team have got the skills to be able to do it, whether that's train the trainer or whether I send them to an NZQA adult learning to give them that sort of formalised approach … [On-site] It depends on the management team and the person. From my team's perspective, we go there, and we're there to support and give constructive feedback and review the content and help those health and safety advisors … There's not like a formalised onboarding for a facilitator or a site induction… It's more from a coaching perspective and support." (S3).
>
> "We do have some training where we have to do speeches, but that's more for toolboxes." (S9).
>
> "We send our people through the Learning Wave's Lead Safe course. There's Lead Safe Leader and Lead Safe Supervisor, and we use a combination of those. So having positive health and safety conversations and really scrutinising what safety is … But it's general soft skills that people have … Lead Safe talks about a whole bunch of things, talks about communication." (S10).
>
> "They've revised sort of what each role what training they receive, and part of that is communication, so yes, we've got that now, but I've been with the company almost four years, and we didn't have it four years ago when I was doing the inductions." (S11).
>
> "They are technical trainers, so they themselves have been subject matter experts in certain areas … And so that's part of what I would like to bring is building their expertise and awareness around what does it actually mean for me to educate others. How do I do that in the best way? How do I recognise what language I need to use to reach what person in the room at the time? So that's a development area for us." (S12).

Perhaps a standardised approach to OHS site induction trainer qualifications would improve the quality of inductions delivered. Implementing a standard qualification or course would provide assurance that OHS site induction trainers hold the expertise required to deliver the content and provide them with the foundation level of presentation competencies required to cater to the trainees' learning needs. Due to the resource constraints within the sector, particularly amongst SMEs, further investigation is needed to determine the feasibility of such an approach.

6.3.2 Communication Skills

Research has indicated that the communication skills of trainers influence ToT (Freitas & Silva, 2017; Ismail et al., 2010; Velada et al., 2007), and given the high number of migrant workers within New Zealand's construction industry (refer to Section 2.2.2 & 2.4.1.3), trainers' ability to use easily understood, accessible language is vital. As discussed in Section 3.3.2.2, clarity of speech, appropriate intonation, and speed positively impact participants' ability to retain training content and, thereby, the likelihood of training transfer

(Freitas & Silva, 2017; Towler, 2009; Towler & Dipboye, 2001). 82.97% of survey participants either agreed or strongly agreed that the person who delivered their most recent OHS site induction training spoke in a way that was easy to understand. Survey participants were asked if the trainer at their most recent OHS site induction allowed them to ask questions or clarify the content taught. While most participants selected “Yes” (86.02%), it is still concerning that 13.98% of participants selected “No”, as workers that are unable to ask questions may not understand the content and thereby be unable to acquire the required OHS competencies. Of these participants, only three of the 13 had completed their most recent OHS site induction training online, which may explain their lack of content clarification opportunities.

As previously identified in Section 6.3.1, implementing a basic foundation level of training for trainers could improve their communication skills, enabling them to provide more effective training. Again, this is an area that would require further investigation. One stakeholder recommended using a diverse range of people to deliver OHS site inductions, as it increases the likelihood that they will use the language appropriate for their audience. Different individuals have different communication styles, preferences, and backgrounds, and having a range of presenters can ensure that the information is presented in a way that is understandable and relatable to a wider range of people. A typical comment can be seen below:

> “The people involved should be a diverse range of people with different perspectives on work at the project … Not just in terms of organisation … but people who do different work to provide their own perspective … You can really couple what that project's critical risks are around health and safety and have the right sort of person with the right sort of operational expertise talking about that. What you're also likely to get is that in the audience, that will … strike much more of a chord having information delivered from peer to peer; it doesn't tend to feel too patronising. You're probably increasing the likelihood that that person is using the language which the audience uses, so there's probably that parity of communication, and they'll probably be even a cultural match as well.” (S6)

6.3.3 Responsibility and Accountability

As highlighted in Section 3.3.2.3, trainers’ responsibility and accountability for training outcomes impact ToT (Freitas & Silva, 2017). Higher levels of personal accountability and responsibility for training outcomes increase the trainer’s commitment to ensuring that the learning objectives are successfully attained and transferred into the workplace (Burke & Saks, 2009). Survey responses indicated that most participants agreed to varying levels that the people providing OHS site inductions within their workplace are held accountable for ensuring the training is effective. However, 12.63% of participants collectively somewhat disagreed or disagreed, indicating room for improvement. Some stakeholders discussed

OHS site induction trainer accountability, explaining the mechanisms in place to ensure that their trainers perform to the required standard. Key quotes included:

> “From a delivery perspective, we go down to ensure the quality is there and make sure the content is right by working with our health and safety because they own the content, but we provide governance … And we want to make sure training is fit for purpose … We have a standard, we have quality and expectations that link back to the objectives of the project.” (S3).
>
> “The main thing is that they’re doing it and that it’s up to date, and it’s part of the audit.” (S9).

One stakeholder discussed the importance of promoting forward-looking accountability and using humble enquiry methods to ensure that the training has met its required outcomes:

> “I think that fear and anxiety around backwards-looking accountability causes people to game the work so that they can then meet the objective of covering their own backside … Accountability can be applied, but it can be applied in a forward-looking way … You can actually apply accountability for the people who design and deliver induction processes to take first responsibility for doing their best to produce an experience that meets the objectives that we've agreed upon … But the forward-looking accountability piece is about how do we participate in assuring ourselves that we've met these objectives which is through learning. And you do learning by going out talking to people using humble inquiry methodologies or others to ask people about their experiences.” (S6).

These findings indicate that while some organisations are ensuring that their trainers are held accountable for OHS site induction outcomes, it can be a complex area to measure. It highlights the need for increased worker engagement to confirm that trainers are performing to the required standard and that the OHS site induction has met its objectives.

6.4 Trainee Characteristics

As discussed in Section 3.3.3, trainee characteristics play an essential role in ToT (Burke & Hutchins, 2007). Trainee characteristics investigated in this study included cognitive ability and self-efficacy, motivation, and attitudes. These characteristics are discussed in the following sections.

6.4.1 Cognitive Ability and Self-Efficacy

A significant body of research indicates that trainees with higher cognitive abilities are more competent at processing and retaining training content which strongly predicts training transfer (Blume et al., 2010; Burke & Hutchins, 2007; Velada et al., 2007). It was challenging to assess participants' cognitive ability levels through a survey; however, their education levels were collected to gain a superficial understanding. Secondary school (years

9-13) was the highest level of education held by most survey participants (37%), followed by a Diploma (25%), Bachelor's degree (21%) and Master's degree (6%). From these results, it could be assumed that all participants possess the cognitive abilities to comprehend and apply OHS site induction training content.

Self-efficacy within a safety context is an individual's belief in their ability to attain the competencies required to meet safety requirements (Katz-Navon et al., 2007; Wood & Bandura, 1989). Individuals with higher self-efficacy are more confident in acquiring and implementing the knowledge and skills taught and have higher endurance levels for complex tasks (Blume et al., 2010; Velada et al., 2007). This notion has significant implications for training programmes focusing on complex work behaviours, such as OHS training, requiring trainees to obtain specific safety competencies. It is encouraging that most survey participants felt confident in their ability to understand and implement the knowledge and skills taught during OHS site inductions, with 48.48% strongly agreeing and 41.41% agreeing.

However, it is essential to note that higher reported levels of self-efficacy may not always lead to better transfer outcomes. High self-efficacy can cause inflated feelings of competency, known as the Dunning-Kruger effect, resulting in individuals who believe they are adequately prepared to reduce their motivation towards learning outcomes (Vancouver & Kendall, 2006). One low-cost way of supporting trainees' self-efficacy is by providing them with an overview of the training content before the training commences (Tai, 2006), enabling trainees to understand what is expected of them. Despite this, only 18 survey participants were provided with learning objectives. It is recommended that more organisations implement this strategy to support training retention and transfer; if trainees perceive the required training outcomes to be realistic, their self-efficacy will increase, affecting the training outcomes.

6.4.2 Motivation

Motivation refers to an individual's intensity, direction, and persistence towards achieving a goal (Robbins & Judge, 2009). Within a training context, trainees' motivation influences their willingness to attend, exert effort towards the programme, and transfer the learning to their workplace (Baldwin & Ford, 1988; Burke & Hutchins, 2007; Maurer & Tarulli, 1994). As discussed in Section 3.2.5, while adult learners are motivated by extrinsic factors, such as salaries and promotions, they are also heavily influenced by intrinsic factors, such as an enhanced quality of life and a desire for job satisfaction (Albert & Hallowel, 2013). This study found that the most significant motivator for applying the content taught during OHS

site inductions within participants' workplaces was keeping themselves and others safe (68.09%), while the lowest motivator was receiving incentives (2.13%). Key quotes from survey participants included:

> "Anything that makes sure people make it home to their families in one piece helps in NZ's construction sector."
>
> "Keeping people safe so they can return to their families - no one wants to get hurt at work."
>
> "The thought of someone being hurt under my instruction."
>
> "To make sure everyone on site is as safe as possible as soon as they get on site."
>
> "I believe everyone should be able to go home safely at the end of each day."

These findings indicate that to support trainee motivation during OHS site induction training, trainees should be provided with an explanation of how the training content ensures the safety of themselves and others on-site.

Trainees' motivation towards training outcomes is also influenced by their sense of responsibility, with trainees who feel responsible for training outcomes more inclined to implement the content within their workplace (Grossman & Salas, 2011). Most survey participants felt responsible for OHS site induction outcomes, with 39.39% strongly agreeing and 46.46% agreeing. Survey participants were then asked who they believed should be responsible for ensuring the effectiveness of OHS site induction training. It is concerning that only 31% of participants responded that everyone on site should be responsible, with other responses including management (23%), the trainer (13%), and the head contractor (11%). If trainees do not feel responsible for training outcomes, they may reduce their motivation towards training outcomes. To reduce motivation inhibition during OHS site induction training, trainees should receive an explanation of what they are responsible for regarding training outcomes and how their participation benefits both themselves and others around them on the worksite (Freitas & Silva, 2017).

Stakeholders were asked how trainees could be made to feel responsible for training outcomes. They highlighted the importance of ensuring that the trainees understand their purpose for being on-site and creating a sense of connection between the site, the organisation, and the trainee. Key quotes included:

> "That's the critical part to ensuring the trainings effective, that each individual understands … what they're here for … That's where you come back to the trainer having that capability to actually draw out of the learners the why are you here, what's that bigger picture … This continues to try and flip that back onto the learners is that hey it's not just sit down attend the course for the day and get ticked off … Let's try to make sure that they're actually responsible for the learning." (S5).

> “We can't make people feel responsible, so people have got to kind of want to … If you give people a good sense of place in a work environment, then that creates a sense of connection to that place and a sense of obligation to participate in the culture and do their best for that project … So that for me is why inductions can be really important because if the controlling organisation for that site … in most cases is collaborating and working with a client in an effective way that what they would be doing is providing a real identity for that project or contract that may be quite different to other projects and contracts people have worked in. And it then provides this ability to have this sense of place which we know removes workplace stressors and creates a working environment where people can thrive.” (S6).

6.4.3 Attitudes

As identified by ALT, adults bring an accumulation of previous life experiences into the learning situation (Noe, 2017). These past experiences, particularly negative ones, can impact trainee attitudes, which can significantly impact a trainee’s receptiveness to the learning content (Galbraith & Fouch, 2007). It was therefore significant that most participants strongly agreed that they had a positive attitude towards health and safety (50.51%). Most participants stated that they had a positive attitude towards OHS site inductions; 39.39% strongly agreed, and 36.36% agreed. One survey participant highlighted that attitudes towards OHS and OHS site induction training are improving: “It’s getting better. Most workers are keen to be involved and understand their role.”

6.5 Training Characteristics

As highlighted in Section 3.3.4, training characteristics significantly impact trainee learning and ToT (Grossman & Salas, 2011). Training characteristics explored within this study included OHS site induction purpose, environment, content, length, materials, personalised and adaptive measures, trainee engagement, and confirmation of learning. Each of these characteristics is discussed in the following sections.

6.5.1 OHS Site Induction Purpose

Stakeholders were asked what they believed the purpose of an OHS site induction was (see Section 5.7.1). Overall, their comments indicated that the purpose was to:

- Provide workers with site-relevant information (S1, S4)
- Provide workers with an overview of the site’s purpose (S6, S9)
- Provide workers with a familiarity of the current site activities (S1, S2, S6, S7, S10)
- Make workers aware of the site-specific hazards and risks and how these should be controlled (S1, S2, S3, S4, S6, S9, S10, S12)

- Provide workers with a familiarity with the site, including the site layout and facilities (S1, S2, S6, S7)
- Inform workers about emergency response plans, assembly points, and first aid kit locations (S1, S2, S3)
- Inform workers about vehicle management/site management plans (S3)
- Inform workers who the main points of contact are for the site (S2, S3, S7, S9)
- Inform workers about PPE requirements (S1, S3)
- Ensure that the workers hold the required competencies to operate safely on site (S4, S10)
- Set the expectations of not just what the company expects from the workers but what the workers can expect from the company (S2, S10).

6.5.2 Environment

As discussed in Section 3.3.4.1, the training environment impacts ToT, with realistic training environments positively influencing ToT (Noe, 2017). Realistic training environments include the trainee's workplace or similar environment, thereby ensuring the content is transferable to workplace demands (Noe, 2017; Velada et al., 2007; Waehrer & Miller, 2009). Survey participants were asked where their most recent OHS site induction training took place; the most common locations were on-site, where their work takes place (44.25%), on-site in a classroom/office space (38.94%), and online (13.27%). As previously identified, training conducted in a classroom-style setting promotes passive attention from the trainees (Albert & Hallowell, 2013; Bhandari & Hallowell, 2017; Wilkins, 2011), and such training approaches do not yield the desired OHS outcomes (Burke et al., 2006; Namian et al., 2016). This was highlighted in one survey participant's comment:

> "Most workers in the construction industry are not academics therefore class room training is not as effective as visual and hands on training which is the way most of the workers learn the best."

While it is not always possible to conduct OHS site induction training on-site in the work area due to space and resource constraints, it is recommended that inductions that take place within a classroom or office environment are accompanied by site walks. Doing so promotes active trainee engagement, increasing the likelihood of training transfer, as highlighted by some stakeholders:

> "The best site inductions I've done or seen are the ones that are actually practically applied, and so therefore, they become a site tour … You take groups of people around site, you can actually point out the work areas, and people can learn from an experiential point of view rather than from a theoretical point of view which they normally would … Knowledge is more likely to be maintained and reinforced because

> people are practically experiencing the site for themselves in a safe way, but also seeing the things that you're trying to explain to them that are unique to that site … I think that most inductions then become a hybrid, … then actually they deliver something else, which is normally classroom based. It normally involves somebody speaking and a bunch of people listening, and it's not the perfect environment to engage our people or to maximise their ability to learn the important things that they need to learn." (S6)
>
> "I think that inductions can … make guys switch off, [the idea] was to get them more involved in the induction as far as actually taking them around the site, rather than just sitting there staring at you for half an hour." (S9)

Survey participants were asked to select their delivery preference for OHS site inductions from in-person, online, or a combination of the two. Most participants preferred in-person delivery (59.6%), followed by a combination of the two (34.34%). Only 6.06% preferred the training to be solely delivered online. While research has shown that users of older age are statistically less technologically competent than their younger counterparts (Hawthorn, 2000), these results show only a slight correlation between age and delivery preference (refer to Figure 27). Two survey participants commented on the use of in-person versus online training:

> "I do find a in person training is way better gives people opportunity to have their say, also as a person who is running the induction give him a understanding where everybody stand from the way they behave and body language."
>
> "Online courses are mind numbing for experienced construction professionals."

Building on these findings, stakeholders were asked for their opinion on online OHS site induction training. Their comments indicated that while they can be a useful supplementary tool, it was not recommended to use them in lieu of in-person training. Identified limitations of online inductions included the difficulty in ensuring trainee engagement and training transfer. Key criticisms are shown below:

> "It's sort of a bit of a mixed bag. The first one I did online was just awful; it was just watching a video. The video was quite good, but … they don't know if I was watching it or staring out the window … It's extremely easy to use, possibly a little bit too easy … But you can just flick through it so quickly without really reading it, … without really understanding it … If you're delivering that induction, you can get a sense of is this person listening to me and do they understand what I'm saying or are they just staring at their phone or just staring at the window? Or are they looking at you dumbfounded?" (S1)
>
> "For me, there still has to be human interaction … That's why we have the tablets in the office as well, so that they can have that interaction … Then you can clarify because they can ask questions ... And it starts a relationship." (S2)
>
> "The evaluation, the tests, the assessments through that they're not always that robust, and really doesn't check competency and doesn't really check … knowledge retention or capability. It's just giving knowledge. And people are just doing it to tick the box. So, I don't think they're that effective … People don't get that hands-on practical, experiential learning, and then don't get the opportunity to ask, challenge,

question, or just to gain clarity if they're doing it right … So, I think there's a place for it, but not so much in construction." (S3)

We don't know is how well that information that's being passed through that online tool, how well that's been understood and absorbed by the person … It's very difficult in an online environment to understand the real context of the place … I think the online tools could probably augment or maybe shorten the onsite experience, I think that the better methodology would be a mixed methods approach where they would still need to be some form of practical engagement and communication with people in the place where they're going to work." (S6)

"It is very easy to just next, next, next, and then submit ... There's no checking to see any sort of retention of knowledge and that sort of thing. Other than two examples from the same company up in Taranaki. And it was great. I thought … you've actually gone through the right information now, you've checked that I've understood it, it's great. But mostly, it's tick the box." (S7)

"I just think they're a bit of a waste of time to a degree because I think that probably it's like an hour top, but by the time they get to it, they've probably forgotten it all anyway … I think it's better to probably do it in person if they want the guys to actually pay attention anyway … For some sites, I don't even look at the training; I just go click click click." (S9).

Some stakeholders viewed online inductions as a 'tick in the box' way of ensuring compliance:

"I think they're just a way to do a mass amount of learning very quickly, but you're also able to report on it … But for people on site, no, I don't think that it's an effective learning model." (S3)

"To have an induction, that's … here's a tablet. Go and do that. I'd be hesitant about how effective that would be across the board. It's a way to palm off the responsibility from whether it's the foreman or whoever is running the site." (S5)

"I'm a big fan of using a range of different solutions. I think where the concern would be is if the induction was solely delivered within an online format. And the reason why is I think that that's likely to move towards the induction being more of a compliance obligation rather than an ethical obligation to ensure people really have the information they need to enable them to work efficiently and safely." (S6)

Stakeholders also highlighted the barriers to using online inductions, including technological abilities and language disparities. Key comments included:

"If you're not an English speaker, forget it, where you've got to go through and read and agree virtually, but you don't have somebody reading out ... You've got to have literacy, and you've got to be able to read in English as well." (S4)

"We definitely get hesitation from learners of what's the bloody hells in front of me? They just want a good old pen and paper and get on with it, but often there's just a barrier because they're not familiar and comfortable with the technology." (S5)

"A lot of the guys on our sites wouldn't be able to do an online one; it's more of a pain in the ass trying to get them in front of a laptop. Because they don't have one at home or don't have data." (S9)

"There's different types of people, right? Like there's people that don't have data on their phones, are technology illiterate or technology challenged … it's frustrating and

> people turn up and they can't use their phone because they haven't got data. We put in a visitor Wi-Fi, but they’re incapable of logging into that. Some of it becomes really frustrating.” (S11)

Despite the aforementioned pitfalls of using online OHS site inductions, there are some notable benefits of utilising online platforms. As identified in Section 3.3.4.4, within a construction context, online-based safety training has been proven beneficial when dealing with a large number of trainees due to cost and time savings (Clevenger et al., 2015; Ho & Dzeng, 2010; Zhou et al., 2012). Such forms of training can minimise the time spent away from work, as they enable workers to complete their training before coming on-site. Online training is also beneficial when in-person training is not feasible, such as during the COVID-19 pandemic. Two stakeholders highlighted the benefits of online OHS site induction training, which included the ability to track worker inductions and reduce the amount of content presented during in-person inductions:

> “They are becoming more common, and I think it's a great idea because it's in real-time. And the other thing is too that it helps the site; when I go back another time, and I've already been inducted, they don't have to ask the question have I been inducted?” (S4)

> “It was really just when we got this [online induction], and we got the ability to have consistent online inductions that we kind of realised that what it did is it unlocked the ability to have those face-to-face inductions be exactly what they are at the moment … If we can take the I'm going to read 10 minutes of just blah to you ... Actually, being able to say I don't need to do that. Instead, I can say, hey, what are you up to today? … Actually being able to understand a bit more about the person and what they're up to.” (S10)

6.5.3 Content

As discussed in Section 3.3.4.2, training transfer is significantly related to the training content (Deister, 2009; Noorizan et al., 2016). Trainees who perceive the training as relevant and valuable are more inclined to apply the training content within their workplace (Chiaburu & Lindsay, 2008; Gilpin-Jackson & Bushe, 2007). This ties into the ALT assumption of adults’ relevancy orientation, where adult learners are more motivated to learn when they view the content to be applicable to their immediate work needs (Noe, 2017). This relevancy orientation can be met by ensuring that training content is relevant to the working conditions experienced by the trainees (Wilkins, 2011). Encouragingly, most survey participants (89.9%) agreed at varying levels that the content of their most recent OHS site induction training was relevant to their role. When asked if the information provided during their most recent OHS site induction training was sufficient to enable them to work safely, again, most participants agreed to varying levels (91.92%). These results indicate an overall positive perception of content applicability by participants. Despite these positive results, many

survey participants highlighted that repetition or the inclusion of generic content may cause trainees to disengage from the training. Key quotes included:

> "There is usually far too much information to fully take in fully, so typically people will focus on the items most relevant to their activities and may disregard something that they don't need to rely on for months or years."
>
> "Content should be relevant to your role. Seems to all be generic and done only because it is a requirement. Seems that there is not a lot of effort put into it."
>
> "Becomes difficult to focus when the content is the same as before."
>
> "There is a lot of generic information that gets repeated, focus needs to be on very specific site risks and procedures/rules."
>
> "Nearly every time it is just telling us the basic of how to do our jobs, and hardly ever cover the actual risks unique to the site."
>
> "Material covered in the daily prestart meeting should also be left out of the induction, except for high risk hazards."
>
> "H&S inductions need to focus on just the key info that keeps workers safe on site, often other messages are included which do not make the person safer."
>
> "When developing H&S induction for large projects we often sway from just delivering H&S content and also end up delivering cultural and environmental inductions (I think they should be separate)."

To support ToT, Galbraith and Fouch (2007) recommend providing trainees with learning objectives at the beginning of training sessions to give them an overview of the content and its relevancy, thereby supporting trainee attention and engagement. Under the ALT assumption of adults' relevancy orientation, if the purpose of a programme is ambiguous, many trainees will not engage, rendering it a waste of time and resources (Potts, 2016). As previously identified in Section 6.4.1, only 18 survey participants were provided with learning objectives. This is concerning as the provision of learning objectives aids trainees in determining the relevance of training content, thereby impacting their motivation and effort dedicated towards training outcomes (Galbraith & Fouch, 2007). It is recommended that more organisations implement this strategy to support training retention and transfer.

6.5.4 Length

Training sessions must be a suitable length to aid ToT; sessions that are too short limit the content that can be taught; however, sessions that are too long inhibit ToT through cognitive overload (Burke & Sarpy, 2003; Freitas & Silva, 2017). Sessions that are too long also increase trainees' time away from their workplace, impacting work requirements and increasing worker stress (Freitas & Silva, 2017). This is a significant issue within the construction industry, where workers are exposed to high time pressures. Training content

should exclude unnecessary information to mitigate cognitive overload and time constraints (Blume et al., 2010; Quesada-Pallares, 2012). Most survey participants experienced a training length of 10-30 minutes (37.37%), closely followed by a length of 30-60 minutes (33.33%). 14.14% of participants experienced a training length of 60+ minutes; as highlighted in Section 3.3.4.3, the recommended training length for OHS site inductions is no longer than one hour at a time (Ricci et al., 2016). This recommendation was reflected in survey participants' comments highlighting their preferences for shorter induction lengths:

> "People tend to get bored very fast."
> "Inductions that are too long don't tend to hold people's attention."
> "Long winded inductions are a sure way to have people switch off."

The provision of a timetable at the beginning of training can provide trainees with an overview and direction of the session, helping them to judge the timeframe and aiding in maintaining attention and engagement (Galbraith & Fouch, 2007). Despite this, only 13 survey participants were provided with a timetable of training in the OHS site inductions they attended over the past year. For longer OHS site inductions, particularly those over an hour long, it is recommended that organisations provide trainees with a timetable, to enable trainees to gauge how long their attention is required for.

As discussed in Section 3.3.4.3, pre-site competency assessments can aid in minimising repetitive and unnecessary instruction, thereby reducing OHS site induction training length (Jeelani et al., 2017). Pre-site competency assessments were required for most participants (60.61%), with participants either completing a Site Safe Passport or the ConstructSafe Foundation Assessment. Survey participants were asked if the pre-site competency assessment covered similar content to the OHS site induction training they had completed over the past year; most participants agreed to varying levels (77.77%). This finding indicates that using pre-site competency assessments to reduce the generic content covered within OHS site inductions could be a feasible solution, as shown in one survey participant's comment:

> "All generic stuff is covered by site safe, construct safe or equivalent so doesn't need repeating."

To expand on the above finding, some stakeholders were asked whether pre-site competency assessments could be used to reduce the content included in OHS site inductions. Overall, stakeholders indicated that they either weren't happy with the quality of the current pre-site competency assessments available and that there could be issues with ensuring that workers complete them before coming to site:

> “I'm not too happy about the content of a lot of it and the way that they don't check that people actually understood; they give them the answers.” (S2)
>
> “Because of the inconsistent way in which training induction, competency and supervision are applied across the construction industry ... there’s real variability around the people that are going to do that work and their level of capability and knowledge … Some inductions have been broadened to cope with that gap of knowledge and understanding and experience … First of all, I'd have some really clear requirements of what people need before they come … To set an expectation that all workers are trained to a foundation level, particularly around health and safety, and that all workers have some form of confirmation of their competence … Now I think if that's done quite well, we can get some assurance of when people turn up is that they are trained and they are competent to do their work and therefore it means that the induction doesn't need to replace that prerequisite learning or training that people need.” (S6)
>
> “I think probably one of the failings in that situation is a lot of them don't do the pre-training, they don't do the learning before you come. And so, if it's a prerequisite, it's a requirement before you can move on to the next stage that becomes an issue … What are we going to do if they haven't done it, are we going to send them away?” (S7)
>
> “That could be an idea, but then they might be able to say, “we don't remember that”. And then also with the Site Safe passport, there are different topics so they might not necessarily cover what we covered in the induction. Like, because you can refresh your site so fast, you can refresh your Site Safe passport by doing an EWP course, and that won’t cover anything in our induction.” (S9)

Two survey participants echoed the above concerns with the quality of current pre-site competency assessments, as shown below:

> “Site safe passport is a joke. Just a box ticking exercise at this point.”
>
> “ConstructSafe is a requirement for many sites that does not benefit anyone except for the companies that get the money for it.”

It is recommended that further research be conducted in this area to investigate the feasibility of using pre-site competency assessments to reduce the content covered in OHS site inductions.

6.5.5 Materials

As discussed in Section 3.3.4.4, various materials can be utilised within the training process to support training transfer. Survey participants were asked to select which materials were used during the OHS site inductions they attended over the past year. The most used materials were visual presentations, like PowerPoint (27.09%). As highlighted by one survey participant and one stakeholder, the use of low-interaction materials like PowerPoint can be ineffective in engaging trainees:

> “Most workers don't pay much attention to the PPT.”

> “I didn't want it to be a death by PowerPoint. You can have death by PowerPoint at home on the couch looking through it. It's the digital induction. And then when you come to the site, I want that to be a genuine human interaction.” (S10)

The use of videos during training is found to improve trainee engagement, thereby supporting training transfer (Cherrett et al., 2009). As multimedia sources can be reused, this form of training provides a cost-effective solution and aids in the consistency of training (Goldenhar et al., 2001; Ho & Dzeng, 2010). 19.12% of survey participants had watched a video during the OHS site inductions attended during the past year. Two stakeholders discussed using videos; one stakeholder indicated that while they had tried to implement videos during their site inductions, there was hesitancy regarding whether the trainees were paying attention:

> “On one of my last sites we made a video of it … We put them in the room, and they watch it. But most of the sites I’ve suggested that if they want to, we can do this but, to be honest, most of them have said no we’re not going to do that … We would actually bring in a laptop and sit with them, so even though it was on a video we would be making sure they weren’t just sitting there staring at their phones because I think some of the times the guys won’t actually be paying attention.” (S9)

> “We do a video. Not every site has a video, but we've got a video on [REMOVED] … I guess that's trying to get the engagement up like the video is a little bit more sort of humorous … and tries to engage more than just listing off a whole set of rules.” (S11)

Given the risk associated with offering safety training within the work environment, particularly in a construction setting, multiple studies have advocated using virtual environments (Albert et al., 2014; Jeelani et al., 2020; Zhao & Lucas, 2015). The primary advantage of VR is the ability to simulate hazardous workplace conditions that cannot be replicated in real-life due to the safety implications (Zhou et al., 2012). VR use within OHS site inductions in New Zealand’s construction industry is currently under development. In 2018 the New Zealand engineering consultancy firm Beca, along with Fletcher Construction Company (FCC), began the development of a VR module for site inductions in the construction industry. One stakeholder (S8) from Beca was interviewed to gain more insight into the development of this project (see Appendix I). An overview of this interview is provided in the following paragraphs.

Because the construction industry had the highest number of OHS claims it was seen as being the industry that would benefit most from taking a different approach to health and safety. After conducting initial research, collaborating with industry organisations, and identifying the required content, the Beca software development team devised virtual reality-based scenarios using 360-degree imagery. To accommodate non-native English speakers, the VR induction was translated into Samoan and Filipino; these being the languages most commonly spoken within the industry. The VR induction also includes an assessment to

confirm learning, giving users a score. This score is passed on to their management, who can follow up with the trainee if areas for improvement are identified.

To ensure the efficacy of the software developed, it was tested with several site managers, followed by workers across two construction sites. The feedback received was mostly positive, however, some users struggled with technological competency or had a negative attitude to OHS site induction training: “I don't think you're ever going to get 100% of people totally engaged in health and safety.”

While the uptake of VR is increasing, its adoption in the New Zealand construction industry is still in its genesis, with cost being an influencing factor. However, as it is becoming easier to develop such solutions, the cost to organisations for implementing VR is reducing. As with online inductions, the stakeholder identified that VR was not a cover-all solution and should not be used to replace the entire induction process, as it is impossible for the content to cover all required site information:

> “We initially thought about the tool and the solution we were pitching, and we saw it as an alternative to your standard induction process … Whilst the tool and the solution is really great at pointing out some of the common hazards, … there are some site-specific things that you're not going to be able to include ... It's very clear that our solution is a supporting tool rather than an alternative to it.” (S8)

6.5.6 Personalised and Adaptive Measures

Studies have advocated for the personalisation of training interventions to cater to trainees’ specific learning needs, thereby reducing their inattention and frustration (Jeelani et al., 2017; Tang et al., 2019). As highlighted in Section 3.3.4.5, this personalisation should consider trainees’ culture and language (Albert & Routh, 2021). Language barriers pose a significant barrier to the effectiveness of OHS site induction training within New Zealand’s construction industry (refer to Section 2.4.1.3). Non-native English-speaking survey participants were asked if training materials were provided to them in their first language during their most recent OHS site induction training. Of those participants, 55.56% were provided with materials in their first language, while 44.44% were not. Participants that were provided with materials in their first language identified as NZ Māori, Samoan, Tongan, Chinese, Southeast Asian, African, and Filipino. Those not provided with materials in their first language identified as Indian, African, Romanian, and Dutch.

While training programmes should be presented in trainees’ first language, it is important to note the significant resources this would require; this can be challenging for many organisations, particularly SMEs. While it may not be feasible to present training in every trainee's first language, it is recommended that trainers use easy-to-understand

language and provide non-native English-speaking trainees with easily interpretable training materials (Albert & Routh, 2021). Survey participants were asked if the content of their most recent OHS site induction training was straightforward and easy to understand; most participants selected “Agree” (52.53%), followed by “Strongly agree” (26.26%).

Stakeholders were asked about the support given to non-native English speakers or workers that require literacy support during OHS site inductions. Current support given included using easily understood materials such as drawings, utilising workers on site that can speak different languages and upskilling them to be able to deliver the training, having online inductions translated into different languages, and providing online English courses to non-native speakers. Key quotes are shown below:

> “We've got a lot of people on our sites where English is not their first language. Some of them can't even read, even if English is their first language … We started working on making it more user-friendly … The recent update [for the VR induction] had been around languages; we’ve added Te Reo, Filipino and Mandarin to the suite of languages in there; that’s what we're planning on doing going forward as well [with the site inductions].” (S2)

> “This is something that … we've had to shift fairly quickly to accommodate this year with … the skills and labour out there being reduced quite heavily because of COVID and a high level of migrants now coming in … So we find somebody on site that we know, for example, can speak Filipino, and then we'll upskill them on how to deliver the content, how to engage and facilitate. We've got people in the team that can speak for example fluent Samoan, Tongan, Te Reo, Chinese, Mandarin, and Taiwanese, so have the ability where possible to adapt and upskill people to be able to then interpret or deliver training in their own preferred language.” (S3)

> “Tends to be the bigger construction sites that have definitely taken on board the different languages. Numeracy, literacy, not so much. But there again saying that I have seen some that use whiteboards to do drawings rather than using words … It's on the maturity of the organisations; the bigger ones have probably got more awareness of it and more experience with it.” (S4)

> “I guess literacy-wise, it’s audio so they don’t have to read it. The language barrier side of things, if someone doesn't speak English, they have to have their supervisor there or someone to translate for them.” (S9)

> “We're just looking at that to be fair, I know that's an increasing issue for the whole industry. We're also involved in bringing people in directly from the Philippines for instance. So, there's a certain minimal literacy requirement to that, but conversational English and colloquial English and technical English are always a little bit different … People have chosen to come to New Zealand. Come a long way. And that should be supported, and we do that. We were lucky that we have a Filipino person within the training team so we can provide assistance there. And we also have lots of Italians within the wider team … we provide that support too. We are funding and providing some online English courses which helps. But we’re seriously thinking about how we can take some additional English language lessons and cohorts that are tailored specifically toward cultural groups.” (S12)

6.5.7 Trainee Engagement

> "In my opinion it's all about engagement. Get the lads engaged in the induction training. Some guys have good relevant information to add to the inductions."

Trainee engagement before, during, and after OHS site induction training aids in fulfilling multiple assumptions of ALT. As highlighted in Section 3.2.1, one such assumption of ALT is adults' relevancy orientation. Adult learners need to know why they are learning something and the applicability of the training content to their immediate work needs (Noe, 2017), as training deemed irrelevant or time-wasting is ineffective in influencing trainee competencies (Galbraith & Fouch, 2007). Trainee engagement aids in fulfilling this assumption, as it helps ensure that the training content is applicable to the trainees' role and workplace (Smith, 2017; Wilkins, 2011).

Another assumption of ALT tied to trainee engagement is adults' need for self-direction and autonomy (Noe, 2017). As discussed in Section 3.2.2, this assumption is tied to the idea that as people mature, their independence increases and they become more self-directing and capable of making decisions independently (Merriam, 2017). Therefore, for effective learning to occur during training, adult trainees need to be free to direct themselves (Falasca, 2011) and feel they have a say in the content (Dalto, 2015; Galbraith & Fouch, 2007).

As discussed in Section 3.2.3, the principle that adults bring an accumulation of previous life experiences into the learning situation is another assumption of ALT that can be fulfilled by trainee engagement (Noe, 2017). Adult trainees have diverse backgrounds, experiences, and learning styles which aid the mutual learning and enquiry process (Albert & Hallowel, 2013). Adults can also apply their life experiences to the learning environment, which draws upon their reflective and reasoning abilities to solve problems (Bressiani & Roman, 2017; Guirguis, 2020). Trainers should consider both positive and negative past experiences of trainees and, where possible, incorporate them into the training programme to ensure relevance and engagement (Galbraith & Fouch, 2007).

Another assumption is adult learners' problem-centred approach (see Section 3.2.4). Adult trainees are predominantly task or problem-centred, preferring practical lessons that enable them to deal with practical tasks and problems encountered in their workplace or everyday lives (Fornaciari & Lund Dean, 2014). They are also less inclined to pay attention to learning content not deemed essential to their roles and real-life problems (Albert & Hallowel, 2013). Collaborative approaches ensure that the content and delivery method are applicable to the learners' roles, thereby promoting learner motivation (Knowles et al., 2014).

With the benefits of collaboration in mind, survey participants were asked if they were included in the planning of their most recent OHS site induction; most participants disagreed to varying levels (49.49%), while 39.39% agreed to varying levels. While it is not feasible to include all workers in the development of OHS site inductions, particularly on sites with high worker numbers or turnover, it is recommended that workers are included where possible. Building on this finding, some stakeholders were asked for their input on trainee engagement during the development of OHS site inductions. Stakeholders commented on their current trainee engagement practices, highlighting the importance of trainee feedback to ensure that the content is relevant and easily understood:

> “We started decided to go simple … We went to site, and we said, hey, guys, how do you feel about this? … So, we had a session, coffee and muffin … the site management team and the EHS person will then run them through it and say, what do you think about this? … We've been really bad at telling people, well, great at telling people but very bad in listening and engaging when they do make comments … Because that's a critical point for me. It doesn't help us here. We can have the best induction in the world. If people don't understand what we're trying to say, we've done nothing. You've wasted your time.” (S2)

> “We use a human-centred design approach. So, we go out to them directly to see how they want to learn or prefer to learn … Anything that we do within my team from a training perspective, we go out, and we talk to the workers on site … and then we come back and go, okay, this is working, this is not, this is what they want. And it's come back to a lot of the things like ConstructSafe or NZQA, is that for everything online is that we don't really understand a lot of that. So that's why we've changed our model of delivery, changed our inductions … And then we get them to come and evaluate it.” (S3)

> “Try and get a diversity of opinion from people that do different jobs or maybe different specialist trade contractors, all of these different diverse people that would be expected to come and sit in and experience this, get their feedback on what is that they might want from the process, what's important for them and how that might be done because that might, certainly at the beginning of a capital project before you open a site or certainly an iterative process.” (S6)

Survey participants were asked if they were given the opportunity to participate in the delivery of their most recent OHS site induction training. 41.94% of participants agreed to varying levels, while 45.92% disagreed to varying levels. As with the development of OHS site inductions, it is not feasible for every trainee to be involved in their delivery. However, it is recommended that organisations include trainees in the delivery of OHS site inductions where possible to ensure trainee engagement with the content and commitment to the training’s outcomes.

Stakeholders were asked how they supported trainee engagement during the delivery of OHS site inductions. Stakeholders spoke about using conversations, building trust, utilising different materials, and use of multiple trainers with different backgrounds to promote trainee engagement. Key quotes included:

> “The key thing for me is that the workers are empowered … They are given the backup and confidence … Having those conversations with them, you know are you comfortable, are there things that you want to talk to me about.” (S4)

> “Believing in what you're doing, you're doing it for the right reason and understanding that you know I'm having this chat with you so I can tell you what’s here when you come on to my site, and I want you to stay safe, and I want you to be safe for the people around you. And to do that this is what I need you to know. So, let's just have a talk about this. Let's explain to you what's going on and give you a chance to ask questions if you want, anything that needs to be clarified … There's a two-way sort of dialogue that's my expectation. That's what I would like to see. But I would say I don't think that it happens that often … Not that sort of genuine 2-way discussion.” (S7)

> “It's also an opportunity for everybody on-site to meet one of our health and safety leaders that sits there, and if they can have a more human interaction with that person, then when there are issues further down the line, they're more likely to actually go to that person. But if they've just got a scary robot person standing up, repeating what it says on a piece of paper, then I guess you've lost a good opportunity there to build trust. I'm not going to say for a second that it works perfectly on all of our sites, but it's amazing where safety exists, where you go to a site, and everything is really just sort of working … It's that sort of trust and relationship side of things that seems to work.” (S10)

> “Trying to get engagement, you ask people if they're smokers or vapers, you ask do they know where the exits are? Just trying to reconfirm that knowledge. But it's hard. When you present to a group of construction workers, you get 0 feedback generally. You try making it engaging, but it's hard to know … Not every site has a video, but we've got a video on [REMOVED] … I guess that's trying to get the engagement up like the video is a little bit more sort of humorous, I guess, and tries to engage more than just listing off a whole set of rules.” (S11)

> “Making sure that they don't always listen to the same person with the same tone. Mix it up a little bit. Different people … different accents, different personalities. Presentations as well as tactile stuff as well as practical. So, we try and vary it as much as possible, but we're still dealing with people who are used to working in a practical hands-on environment most of the time and they struggle to be in the classroom for two days … My issue has always been in the delivery, not in the content. People will understand that they must do certain things that fall into the scope of their role. But I don't think they necessarily understand or have bought into the why or how important it is or how do I deliver it.” (S12)

Stakeholders who were involved in delivering OHS training (excluding site inductions) were asked how they supported trainee engagement. Even though this is a different form of training, their comments can still be applied within a site induction context. Stakeholders highlighted the use of storytelling and linking the training back to the trainees’ backgrounds, ensuring that trainees understood the purpose of the training and how it benefits them, and using trainers that have a genuine passion for the course and its outcomes. Key quotes included:

> “We design our courses to make them interesting for adults … I get them to introduce themselves, like who are you, what do you do, and what do you like to do outside of work and just get them talking a little bit and then because I know something about what they do for a job and what they do outside of work, I can tie whatever I'm talking

about back to what's real for them. For example, I might be talking about why you don't want to get injured. And it might be well if you're injured, you can't go fishing, you can't go hunting, you can't play volleyball, you can't play tennis ... And our course it's sort of designed to mix it up a little bit like, you know about every 10, 15 minutes. It's a change of activity … When I used to induct people into the company … I'd get out of them … what's their experience? How long have they been in the industry? What tools have they used? What tools have they not used? What have they been exposed to in the past?" (S1)

"It doesn't matter where we come from on this planet, we always had stories told to us by our parents our grandparents our whanau so we've got stories about how we should be doing things. So I use stories as a way of explaining things I might say right this is the legislation this is black and white, this is what you must and shall do. Now, this is how I interpret it in a real-life situation that you need to be looking after your mates, you need to be looking after yourself." (S4)

"We really ensure that we're still facilitating the learning, so we avoid having the trainer up the front telling our students everything that they know about the industry and how to work safely. It's about engaging the learners, and we really make a point of helping our trainees understand that the value on the day is the experience that they're actually bringing into the room … So that just helps with that engagement and relating what the learning is to the real world outside of a structured learning environment … There's definitely a key difference on the passion or the engagement of the person running the induction. I think that's critical in terms of how they actually engage with the audience or the learners." (S5)

6.5.8 Confirmation of Learning

Confirmation of learning through questions or assessments is a commonly employed method to aid and assess training transfer (Rohrer et al., 2010). The retrieval practice during assessments can significantly enhance training content retention, thereby assisting in ToT (Roediger et al., 2011). Survey participants were asked if they were tested during or upon completion of their most recent OHS site induction training; 48.94% received testing as a confirmation of learning, while 51.06% did not. This finding indicates a significant area for improvement within New Zealand's construction industry; if trainees are not tested, it can be difficult to assess whether they have acquired the required knowledge and achieved the desired safety competencies. Some survey participants reflected this in their comments, key quotes included:

"It must be accompanied with competency checks on equipment. Discuss with supervisor and understand the job specific safe work method statements."

"I would suggest a questionnaire needs to be done after an induction is completed. This way it will prove that people understand what was spoken about in the induction."

To further explore this finding, some stakeholders were asked about their OHS site induction confirmation of learning practices. Their comments highlighted the importance of confirming trainee learning through assessments or questions throughout or at the end:

> “You need to have verification that they understand, like a knowledge check at the end … You could actually have it as somebody asking them questions and having that discussion … For me, best practise is giving them an opportunity to ask, to challenge, because they might not necessarily understand what you’re trying to say, but then you can explain.” (S2)

> “We have to. And we’ve really just changed this year; this year has been a big change for us. So, when we train a worker or a contractor or a subcontractor coming on board, we’ll put them through our inductions and make sure we’ve done all of the tick boxes there and the skills checks and the knowledge checks … [On-site] it comes down to the facilitator and how confident they are … You might have a facilitator, but suddenly, they scheduled on to another job, or they’re sick, or something’s happened. But generally, because they’ve been through our doors and induction, they’ve got a lot of the content in their heads. So, when they’re on doing the site induction, they can ask more questions pertaining to that site so it’s more of interest to them. The ones that I’ve sat into the inductees and the participants have asked questions and got more involved. But it’s also allowed the facilitator to ask pertinent questions and specific questions because they know they’ve been through the induction … So, it’s sort of another skills and knowledge check before you go out the door.” (S3)

> “The paper ones, yes, because they’ll sit down, and they say we’ll go through the questionnaire and then they’ll tick and ask if there are any questions ... And you can say yes or no … So, I do like the interaction paper format one … But not all of them. Some of them are as I said earlier are a one-pager. Just tick tick tick tick sign.” (S4)

> “I guess what they do on site shows whether they’ve been listening or not. But mainly, probably the only way you can tell at the time is having a few questions at the end.” (S9)

However, basic tests, such as multiple-choice or true/false questions, only measure short-term memorisation and do not evaluate trainees’ abilities to apply their knowledge to real-world scenarios. Thus, to confirm knowledge transfer, more practical application assessments are recommended, including behavioural modelling (Grossman & Salas, 2011; Taylor et al., 2005) and the use of follow-up initiatives to confirm that the required OHS competencies have been achieved (Freitas & Silva, 2017; Roediger et al., 2011).

As discussed in Section 3.3.4.6, behavioural modelling is a low-fidelity simulation that allows trainees to observe and practice the desired training behaviours, increasing their ability to learn and retain new information (Grossman & Salas, 2011). This practice also enables trainers to confirm whether trainees have achieved the required competencies. Survey participants were asked if they were given the opportunity to observe and then practice the health and safety behaviours taught during their most recent OHS site induction training. 62.24% of participants agreed to varying levels, while 28.57% disagreed to varying levels. This indicates an area of potential improvement, and organisations are recommended to implement behavioural modelling practices within their OHS site inductions where possible.

As previously highlighted, end-of-course assessments enable the identification of areas that require further training (Roediger et al., 2011). As discussed in Section 3.3.4.6, this can be beneficial in an OHS site induction context, as it supports the implementation of follow-up initiatives that provide trainees with further direction (Freitas & Silva, 2017). Stakeholders commented on the use of follow-up initiatives; practices identified included linking OHS site induction assessment scores to toolbox talks and implementing regular competency checks for workers on site. Key quotes included:

> “What we do see on our dashboard is which of the questions has got the lowest pass rate the first time around … then we know that is an area we can focus on around toolbox talks … For me that it needs to tie in because then that is the way for us to understand what they aren't understanding. And you can quite easily clearly see where there are gaps in information and build on that … And I think it's kind of through the engagement process from the beginning of the induction and constantly checking in on them … So, it's part of the whole engagement process with our contractors rather than just tell tell tell because then you don't get anywhere.” (S2).

> “We now have a team out there that do VOCs - verification of competence … We'll assess them before they leave here, and when they land out there, I’ve got a team of four or five people that will go out there on the site. And they will look at those groups and check what level of competence are they at. We run through a one, two and a three, three being competent, consciously competent, and one being unconsciously incompetent ... If they're a level one, then we set them up with a buddy, and we also set them up for further training to get them to level two and get them to level three. Level three is really where we should be, they're out on their own, they're confident they're doing what they need to do. And then we just ensure that they remain competent … So, we do run that, that feeds back into a system that we've taken on board, which is CheckSafe, which is our competency and training management system. And then I have a team that sits at each of the four key sites who are our VOC managers for CheckSafe. And they will assess and make sure that people coming through are at the right level, but also feed through to the site managers and the leadership teams and the VOC assessors of what training needs to happen and administer that. So, we've sort of really putting a few gatekeepers in and stages to make sure any worker coming on board follows the right process and is checked, evaluated, tested, and is competent.” (S3)

> “What I think would be extremely beneficial within induction training is ensuring that it’s continued and ongoing throughout the work side of the job. It's not just I’ve got the sticker to get on site, and away we go; it’s how do we incorporate that on a daily basis or weekly basis? … And whether it’s through conversations, through questions, through competency, checkpoints or along the lines of that, how does this continue to be a living breathing thing that happens?” (S5)

> “I think verifications really important, and it could be linked into kind of normal verification and assurance practises on site … And maybe a bit of a contractual agreement, a verbal contract between people saying this is what I'm going to do, all right, which would likely be that, you know, over time as you go and work on the project … we are going to come and visit you while you're at work and just double check these important things. Because they're really important; this is about us caring about you and making sure you have everything you need … Don't worry, we're not policing you, but we're just making sure that some of these key aspects that you're going to get during this induction, you're actually implementing and applying.” (S6)

> “To do some follow-up … a couple of days later, I mean that's the only way that I could imagine they could check to see what sort of level of retention there has been … It could be just a random thing that once in a while someone goes out and does a quick questionnaire on this is what we covered in the induction, tell me about this and tell me where this is and tell me what you do in the event of this thing happening. But I've never seen that happen.” (S7)
>
> “Just by monitoring really, we had the weekly inspections and that kind of thing. We go around and can check that they're doing what they're told.” (S9)
>
> “An induction really should be an ongoing process and not just something that happens when somebody turns up at the gate. And then you know everything now, so off you go, and I don't expect to ever have to talk to you again.” (S10)
>
> “We do the first one well, the tick sheet goes good … We're not measuring very well what they've actually retained and what they've learned. And sometimes we feel that either they haven't paid attention, or they haven't retained what we need them to … We don't know what their behaviour is like once they're out there. And essentially the supervisor could tell us that, but we haven't taken steps to follow up.” (S12)

6.6 Chapter Summary

This chapter examined the previous chapter’s findings, organised into the overarching themes of organisation, trainer, trainee, and training characteristics. These themes were discussed in conjunction with the literature reviewed to answer the primary research question: “What is the current state and effectiveness of OHS site induction training within New Zealand’s construction industry?” The findings presented in this chapter showed the variations in the OHS site induction training practices experienced across the sector.

Theme One focused on the organisation characteristics of employer, management, and peer support. This theme identified the issue of OHS site induction training being viewed as a ‘tick in the box’ exercise and highlighted the importance of a positive organisational safety culture. This theme also highlighted the importance of a no-blame culture, with some survey participants indicating that injured workers are sometimes blamed or even punished. Theme Two discussed trainer characteristics, including expertise, communication skills, responsibility and accountability. This theme highlighted the lack of mandate required to design or deliver OHS site induction training and, therefore, the diversity of abilities held by trainers. Theme Three examined trainee characteristics, focusing on trainees’ cognitive ability and self-efficacy, motivation, and attitudes. This theme indicated that most survey participants displayed sufficient cognitive ability and self-efficacy to comprehend OHS site induction training and that the most significant motivator for implementing the content taught within their workplace was keeping themselves and others safe. Finally, Theme Four discussed training characteristics, including OHS site induction training purpose, training environment, training content, training length, training materials, personalised and adaptive training, trainee engagement, and confirmation of learning. Key findings from this theme

included a preference for OHS site inductions to include some form of in-person interaction and the importance of trainee engagement before, during, and after OHS site induction training.

The following chapter summarises this study and its key findings, alongside recommendations in response to the collected data. The recommendations focus on improvements to the current state of OHS site induction training within New Zealand's construction industry, as well as identifying areas that require further research.

Chapter Seven: Conclusion and Recommendations

7.1 Introduction

This thesis has investigated the current state and effectiveness of OHS site induction training within New Zealand's construction industry. From the literature reviewed in Chapter Three, it was evident that the application of ALT and ToT can significantly contribute to OHS site induction outcomes. As previously highlighted, while research is available on the current state and effectiveness of OHS training in New Zealand's construction industry (Gao et al., 2019; Lamm et al., 2017), there is a distinct dearth of research specifically focusing on OHS site induction training, particularly through a learning theory lens. This gap is problematic as OHS site induction training is commonly workers' first on-site OHS training experience, and as such, it sets their expectations and familiarity with the organisation and its underlying OHS rules. This chapter summarises the key themes and research findings from this study and provides recommendations for improving the current state and effectiveness of OHS site induction training within New Zealand's construction industry. The contribution of this research, its limitations, and areas for future research are also identified.

7.2 Summary of Main Themes and Key Findings

As identified above, this study has investigated the current state and effectiveness of OHS site induction training within New Zealand's construction industry by applying ALT and ToT. The themes identified in Chapters Five and Six are summarised below.

7.2.1 Theme One: Organisation Characteristics

Theme One investigated the impact of organisation characteristics on OHS site induction training, including employer, management, and peer support.

As discussed in Section 3.3.1, the organisational environment has a recognised influence on ToT and includes the existing culture and support within the organisation (Blume et al., 2010; Chiaburu et al., 2010; Freitas & Silva, 2017). Organisations with a positive safety culture are more inclined to experience training transfer among their workers (Freitas & Silva, 2017; Potts, 2016). Cohesive support from all levels of an organisation is essential, as a unified approach to OHS promotes a positive safety culture (Potts, 2016; Tracey et al., 1995). A key finding was that while most survey participants displayed a generally positive perception of their organisations' culture, a disturbing 45% of survey participants indicated that their company prioritised productivity over the health and safety of their workers, which has severe negative implications for the effectiveness of OHS site

induction training, particularly regarding the resources allocated. However, as these results display more variability than other similar questions, this could indicate that some participants may have misinterpreted the question.

The perception of OHS site induction training as a ‘tick in the box’ exercise was another key finding from this study. This is concerning as organisations that lack a positive safety culture are less inclined to experience training transfer among their workers, as trainees may perceive the training to solely benefit the employer (Potts, 2016). This highlights the importance of a positive organisational safety culture; workers must feel their employer genuinely cares about their health, safety, and well-being.

While most survey participants indicated that their management supports injured workers during their recovery process, it is concerning that 20.24% indicated that injured workers were sometimes blamed, and 8.33% were sometimes punished. As highlighted in Section 3.3.1, establishing a no-blame culture enables workers to overcome challenges on-site through open communication (Gunasekera & Chong, 2018; Mainga, 2017). If workers fear blame or punishment, they are less inclined to report incidents and near-misses on-site, hindering corrective action and placing other workers at risk.

7.2.2 Theme Two: Trainer Characteristics

Theme Two highlighted the impact of trainer characteristics on OHS site induction training, including expertise, communication skills, and responsibility and accountability.

A key finding was that while most survey participants agreed they were confident in their trainer’s ability, some highlighted issues with their trainer’s expertise, teaching ability, and OHS focus. Their comments indicate room for improvement regarding OHS site induction trainers’ proficiency, which is unsurprising given the lack of evidence or mandate regarding the qualifications required to design or deliver OHS site induction training within New Zealand’s construction industry. To build on this, stakeholders were asked about the competencies held by their OHS site induction trainers. Their responses indicated a diversity of qualifications and training held by trainers, ranging from formalised courses to in-house coaching to none. They also highlighted that this is an area of development for some companies.

Another key finding was the survey participants’ trainers’ communication skills. While most survey participants agreed that the person who delivered their most recent OHS site induction spoke in a way that was easy to understand, 13.98% of participants were not given the opportunity to ask questions or clarify the content taught. This is concerning as workers unable to ask questions may not understand the content and, thereby, be unable to acquire

the required OHS competencies. Of these participants, only three of the 13 had completed their most recent OHS site induction training online, which may explain their lack of content clarification opportunities.

Higher levels of personal accountability and responsibility for training outcomes increase the trainer's commitment to ensuring that the learning objectives are successfully attained and transferred into the workplace (Burke & Saks, 2009). It was therefore pleasing to note that survey responses indicated that most participants agreed that the people providing OHS site inductions within their workplace are held accountable for ensuring the training is effective. However, 12.63% of participants disagreed, indicating room for improvement. Stakeholders highlighted using quality checks and audits to ensure their trainers perform to the required standard. One stakeholder discussed the importance of promoting forward-looking accountability and using humble enquiry methods to ensure the training meets its required outcomes.

7.2.3 Theme Three: Trainee Characteristics

Theme Three discussed the impact of trainee characteristics on OHS site induction training, focusing on cognitive ability and self-efficacy, motivation, and attitudes.

A key finding was that survey participants' most significant motivator for applying the content taught during OHS site inductions within participants' workplaces was keeping themselves and others safe (68.09%), while the lowest motivator was receiving incentives (2.13%). Trainees' motivation towards training outcomes is also influenced by their sense of responsibility. Survey participants were asked who they believed should be responsible for ensuring the effectiveness of OHS site induction training; it is concerning that only 31% of participants responded that everyone on site should be responsible, with other responses including management (23%), the trainer (13%), and the head contractor (11%). If trainees do not feel responsible for training outcomes, they may reduce their motivation towards achieving training outcomes. Some stakeholders were asked how trainees could be made to feel responsible for training outcomes. They highlighted the importance of ensuring the trainees understand their purpose for being on-site and creating a connection between the site, the organisation, and the trainee.

7.2.4 Theme Four: Training Characteristics

Finally, Theme Four discussed the impact of training characteristics on OHS site induction training, including OHS site induction purpose, environment, content, length,

materials, personalised and adaptive measures, trainee engagement, and confirmation of learning.

Stakeholders were asked what they believed the purpose of an OHS site induction was; overall, their comments indicated that the purpose was to:

- Provide workers with site-relevant information
- Provide workers with an overview of the site's purpose
- Provide workers with a familiarity of the current site activities
- Make workers aware of the site-specific hazards and risks and how these should be controlled
- Provide workers with a familiarity with the site, including the site layout and facilities
- Inform workers about emergency response plans, assembly points, and first aid kit locations
- Inform workers about vehicle management/site management plans
- Inform workers who the main points of contact are for the site
- Inform workers about PPE requirements
- Ensure that the workers hold the required competencies to operate safely on site
- Set the expectations of not just what the company expects from the workers but what the workers can expect from the company

A key finding concerning the training environment was the survey participants' perception of online training. Survey participants were asked to select their delivery preference for OHS site inductions from in-person, online, or a combination. Most participants preferred in-person (59.6%), followed by a combination of the two (34.34%). Only 6.06% preferred the training to be solely delivered online. Stakeholders were also asked for their input on online OHS site induction training; their comments indicated that while they can be a useful supplementary tool, using them instead of in-person training was not recommended. Identified limitations of online inductions included the difficulty in ensuring trainee engagement and training transfer, technological ability limitations and language barriers. However, identified benefits of using online inductions included the ability to track worker inductions and using them as a supplementary tool to reduce the amount of content presented during in-person inductions.

Long induction sessions increase trainees' time away from their workplace, impacting work requirements and increasing worker stress (Freitas & Silva, 2017). This is a significant issue within the construction industry, where workers are exposed to high time pressures.

14.14% of participants experienced a training length of 60+ minutes; however, the recommended training length for OHS site inductions is no longer than one hour at a time (Ricci et al., 2016). This was reflected in survey participants' comments highlighting their preferences for shorter induction lengths. Participants indicated that the repetition or the inclusion of generic content might cause trainees to disengage from the training and should be kept to a minimum to reduce induction length. Pre-site competency assessments can aid in minimising repetitive and unnecessary instruction, thereby reducing the OHS site induction training length (Jeelani et al., 2017). Pre-site competency assessments were required for most participants (60.61%), with participants either completing a Site Safe Passport or the ConstructSafe Foundation Assessment. When survey participants were asked if the pre-site competency assessment covered similar content to the OHS site induction training they had completed over the past year; most participants agreed (77.77%). This indicates that using pre-site competency assessments to reduce the generic content covered within OHS site inductions could be a feasible solution. To expand on the above finding, some stakeholders were asked whether pre-site competency assessments could be used to reduce the content included in OHS site inductions. Overall, stakeholders indicated that they either were not happy with the quality of the current pre-site competency assessments available or that there could be issues with ensuring that workers complete them before coming to site.

Given the risk of offering safety training within the work environment, particularly in a construction setting, multiple studies have advocated using virtual environments (Albert et al., 2014; Jeelani et al., 2020; Zhao & Lucas, 2015). VR use within OHS site inductions in New Zealand's construction industry is currently under development. In 2018 the New Zealand engineering consultancy firm Beca, along with Fletcher Construction Company (FCC), began the development of a VR module for site inductions in the construction industry. One stakeholder from Beca was interviewed to gain more insight into the development of this project (see Appendix I). While the uptake of VR is increasing, its use is not yet embedded in New Zealand's construction industry, with cost being an influencing factor. As with online inductions, the stakeholder identified that VR was not a cover-all solution and should not be used to replace the entire induction process, as it is impossible for the content to cover all required site information.

Studies have advocated personalising training interventions to cater to trainees' specific learning needs, thereby reducing inattention and frustration (Jeelani et al., 2017; Tang et al., 2019). This personalisation should consider trainees' culture and language (Albert & Routh, 2021), particularly as language barriers pose a significant barrier to the

effectiveness of OHS site induction training within New Zealand's construction industry. Non-native English-speaking survey participants were asked if training materials were provided in their first language during their most recent OHS site induction training. Of concern is that 44.44% were not provided with materials in their first language. Participants provided with materials in their first language identified as NZ Māori, Samoan, Tongan, Chinese, Southeast Asian, African, and Filipino. Those not provided with materials in their first language identified as Indian, African, Romanian, and Dutch. While training programmes should ideally be presented in trainees' first language, it is important to note the significant resources this would require, which can be challenging for many organisations, particularly SMEs. Stakeholders were asked about the support given to non-native English speakers or workers that require literacy support during OHS site inductions. Current support included using easily understood materials like drawings, utilising workers on-site who speak different languages and upskilling them to deliver the training, having their online inductions translated into different languages, and providing online English courses to non-native speakers.

Another key finding from this study was the support for trainee engagement during the development and delivery of OHS site induction training. Trainee engagement before, during, and after OHS site induction training aids in fulfilling multiple assumptions of ALT, including adults' relevancy orientation, their need for self-direction, the acknowledgement of their prior experiences, and their problem-centred approach. Survey participants were asked if they were included in planning their most recent OHS site induction; most participants disagreed to varying levels. Stakeholders highlighted the importance of trainee engagement during the development process to ensure the content is relevant and easily understood. Survey participants were asked if they were given the opportunity to participate in the delivery of their most recent OHS site induction training; 45.92% disagreed to varying levels. Stakeholders were asked how they supported trainee engagement during the delivery of OHS site inductions. They spoke about using conversations, building trust, utilising different materials, and using multiple trainers with different backgrounds to promote trainee engagement. Stakeholders who were not directly involved in the delivery of OHS site inductions recommended storytelling and linking the training back to the trainees' backgrounds, ensuring that trainees understood the purpose of the training and how it benefits them, and using trainers that have a genuine passion for the course content and its outcomes.

Confirmation of learning through questions or assessments is a commonly employed method to aid and assess training transfer (Rohrer et al., 2010). The retrieval practice during

assessments can significantly enhance training content retention, thereby assisting ToT (Roediger et al., 2011). Survey participants were asked if they were tested during or upon completion of their most recent OHS site induction training the slight majority, at 51.06%, were not. This finding indicates a significant area for improvement within New Zealand's construction industry; if trainees are not tested, it can be challenging to assess whether they have acquired the required knowledge and achieved the desired safety competencies. However, it is essential to note that basic tests, such as multiple-choice or true/false questions, only measure short-term memorisation and do not evaluate trainees' abilities to apply their knowledge to real-world scenarios. Thus, to confirm knowledge transfer, more practical application assessments are recommended, including behavioural modelling (Grossman & Salas, 2011; Taylor et al., 2005) and the use of follow-up initiatives to confirm that the required OHS competencies have been achieved (Freitas & Silva, 2017; Roediger et al., 2011). Survey participants were asked if they were given the opportunity for behavioural modelling during their most recent OHS site induction training; 62.24% of participants agreed to varying levels, while 28.57% disagreed, indicating a further area of potential improvement. Stakeholders commented on the use of follow-up initiatives; practices identified included linking OHS site induction assessment scores to toolbox talks and implementing regular competency checks for workers on site.

7.3 Recommendations

Building on the aforementioned key findings, recommendations are presented in the following sections to assist in improving the current state and the effectiveness of OHS site induction training practices within New Zealand's construction industry. These are organised into the same four recurring themes.

7.3.1 Theme One: Organisation Characteristics

As discussed in Section 7.2.1, this study found multiple areas for improvements in organisational culture. One such area was the prioritisation of productivity over worker health and safety and the perception of OHS site induction training to be a 'tick in the box' exercise. To address this, organisations must promote a cohesive safety culture from all levels where workers feel their health, safety, and well-being are a priority (Potts, 2016; Tracey et al., 1995). This can be achieved through trainee engagement, which is further discussed in Section 7.3.4.

Another area that requires improvement is the "blame" culture identified by some survey participants, where injured workers were sometimes blamed or punished. If workers

fear blame or punishment, they are less inclined to report incidents and near-misses on-site, hindering corrective action and placing other workers at risk (Dekker, 2009; Gunasekera & Chong, 2018; Mainga, 2017). It is recommended that organisations within New Zealand's construction industry establish a learning-supportive no-blame culture to enable workers to feel confident when raising concerns and contributing to OHS outcomes. To assist with such a culture, injured workers should never be blamed or punished. Such actions can cause ridicule, isolation, and demotivation, reducing workers' engagement with OHS activities such as site induction training, thereby reducing its effectiveness (Zhou et al., 2022).

7.3.2 Theme Two: Trainer Characteristics

As highlighted in Section 7.2.2, an identified area for improvement that arose from this study is the competency level of OHS site induction trainers. Some survey participants highlighted issues with their trainer's expertise, teaching ability, OHS focus, and communication skills. Stakeholder responses indicated a diversity of qualifications or training held by trainers, ranging from formalised courses to in-house coaching to none. Their comments indicate room for improvement, which is unsurprising given the lack of evidence or mandate regarding the qualifications required to design or deliver OHS site induction training within New Zealand's construction industry. Perhaps a standardised approach to OHS site induction trainer qualifications could improve the quality of inductions delivered; this is further discussed in Section 7.6. Higher levels of personal accountability and responsibility for training outcomes increase the trainer's commitment to ensuring that the learning objectives are successfully attained and transferred into the workplace (Burke & Saks, 2009). Therefore, drawing on stakeholder suggestions, it is recommended that organisations implement regular quality checks and humble enquiry methods to ensure that their OHS site induction trainers are performing to the required level and that the training is achieving its desired outcomes.

7.3.3 Theme Three: Trainee Characteristics

As trainees' motivation influences their willingness to attend OHS site induction training, exert effort towards the programme, and transfer the learning to their workplace, organisations must draw upon key motivators (Baldwin & Ford, 1988; Burke & Hutchins, 2007; Maurer & Tarulli, 1994). As found in this study, survey participants' most significant motivator for applying the content taught during OHS site inductions within their workplaces was keeping themselves and others safe, while the lowest motivator was receiving incentives. These findings indicate that to support trainee motivation during OHS site

induction training; trainees should be provided with an explanation of how the training content ensures the safety of themselves and others on-site.

Trainees' motivation towards training outcomes is also influenced by their sense of responsibility; If trainees do not feel responsible for training outcomes, they may reduce their motivation (Grossman & Salas, 2011). To reduce motivation inhibition during OHS site induction training, it is recommended that trainees receive an explanation of what they are responsible for regarding training outcomes and how their participation benefits both themselves and others around them on the worksite (Freitas & Silva, 2017). Stakeholders recommended ensuring the trainees understand their purpose for being on-site and creating a connection between the site, the organisation, and the trainee.

7.3.4 Theme Four: Training Characteristics

A key recommendation arising from this study is the importance of trainee engagement before, during and after OHS site induction training. As most survey participants were not included in the design or delivery of OHS site inductions, this indicates a significant area for improvement. While it is not possible for every trainee to be consulted, particularly at each stage, organisations must ensure that sufficient collaboration takes place for OHS site induction training to be effective. Engaging trainees during the development of site inductions ensures that the content is relevant, the delivery mode is appropriate, and that the language used is easily understood. Stakeholders suggested collaborating with workers on site and facilitating open discussion to ensure that the induction is suitable for its intended audience.

Engaging trainees during the delivery of OHS site inductions ensures active participation, thereby supporting training transfer (Albert & Hallowell, 2013; Farr et al., 2019). Recommended trainee engagement strategies during the delivery of site inductions included:

- Using conversations and questions
- Using storytelling to link the training content to the trainees' backgrounds
- Ensuring that the purpose and benefits of the training are explained to the trainees
- Using a range of facilitators to increase the likelihood that the speaker connects with the trainees
- Using trainers that have a genuine passion for the course and its outcomes.

Realistic training environments positively influence ToT by ensuring the content is transferable to workplace demands (Noe, 2017; Velada et al., 2007; Waehrer & Miller, 2009). Survey participants noted their preference for hands-on training methods that took

place outside of the classroom to promote active engagement from trainees. Due to site activities and space constraints, it is not always possible to conduct OHS site inductions on-site in the work area; however, it is recommended that classroom-based inductions are accompanied by site walks. As highlighted by stakeholders, doing so promotes active trainee engagement whilst simultaneously familiarising trainees with the site.

Interestingly, this study found that the vast majority of survey participants were not in favour of OHS site inductions being delivered solely online. Therefore, online platforms are not recommended in place of in-person OHS site induction training but should be used instead as a supplementary tool. Identified limitations included difficulty ensuring trainee engagement and training transfer, technological ability limitations and language barriers. However, benefits of using online inductions included the ability to track worker inductions and using them as a complementary method before in-person training to reduce the amount of content presented during inductions.

Training sessions that are too long increase cognitive overload alongside trainees' time away from the workplace, impacting work requirements and increasing worker stress (Freitas & Silva, 2017). Therefore, OHS site inductions are recommended to be kept as short as possible, with Ricci et al. (2016) finding that the ideal length is no longer than one hour. As highlighted by survey participants, decreasing repetitive or generic content can reduce the length whilst preventing trainees from disengaging from the training. Pre-site competency assessments can assist in minimising repetitive and unnecessary instruction, thereby reducing OHS site induction training length (Jeelani et al., 2017). As indicated by most survey participants, the content of their pre-site competency assessment often overlapped with the content taught during OHS site inductions over the past year, highlighting that using pre-site competency assessments to reduce the generic content covered within OHS site inductions could be a feasible solution. This is further discussed in Section 7.6.

OHS site induction training must be presented in a way that all trainees understand; OHS training will have little to no impact on workers' protection if they cannot understand the content (Arcury et al., 2010; New Zealand Immigration, n.d.). The languages spoken by trainees must be considered when delivering OHS site inductions, particularly given the diverse ethnicities employed within the sector. While it is preferable for site inductions to be presented in trainees' first language, it is essential to note the significant resources this would require, which can be challenging for many organisations, particularly SMEs. Where translation services are unavailable, using easily understood materials is vital (Albert & Routh, 2021). Stakeholders suggested translating materials into the most commonly spoken

languages, including Samoan, Tongan, Te Reo Māori, Mandarin, Taiwanese, and Filipino. Other stakeholder recommendations included using easily interpretable materials like drawings and utilising workers on-site who speak different languages and upskilling them to deliver the training.

As the retrieval practice during assessments can significantly enhance training retention (Roediger et al., 2011), it is recommended that confirmation of learning practices are incorporated more widely into OHS site inductions. If trainees are not tested, assessing whether they have acquired the required knowledge and achieved the desired safety competencies can be difficult. However, it is essential to note that basic tests, such as multiple-choice or true/false questions, only measure short-term memorisation and do not evaluate trainees' abilities to apply their knowledge to real-world scenarios. Thus, to confirm knowledge transfer, more practical application assessments are recommended, including behavioural modelling (Grossman & Salas, 2011; Taylor et al., 2005) and the use of follow-up initiatives to confirm that the required OHS competencies have been achieved (Freitas & Silva, 2017; Roediger et al., 2011). Stakeholders suggested using basic testing during or upon the completion of training to identify areas of concern that can be built upon during toolbox talks. Another recommendation was implementing regular casual on-site competency checks for workers to ensure they have obtained the required safety competencies.

7.4 Strengths and Relevance of the Research

Given the distinct dearth of research on OHS site induction training within New Zealand's construction industry, this study significantly contributes to the extant knowledge and research. As no similar study has been conducted within a New Zealand context, this research provides a snapshot of the current state and effectiveness of OHS site induction training where none existed prior. Further, as this study has been conducted with a focus on OHS through a learning theory lens, these findings have a unique perspective compared to most studies focusing on OHS site induction training. As such, the findings have provided new insights into the topic area.

The themes identified and explored throughout this study have contributed to relevant recommendations not only for the New Zealand construction sector generally but also for individual companies. Additionally, some of the recommendations presented in Section 7.3 may be transferrable in an international context. Nonetheless, some research limitations arose during this study; these are discussed in the following section.

7.5 Limitations

Several limitations became apparent during the research process; these were addressed or mitigated as they arose. As self-selection sampling was employed for the survey data collection process, only those that participated chose to. However, the participants that chose to complete the survey may have held stronger opinions on the research topic, which motivated them to participate (Sharma, 2017). Additionally, it is possible that some participants who held negative experiences or opinions did not wish to share these. Although the survey was anonymous, one mode of survey delivery was through specific construction companies, and consequently participants may have been concerned that their responses would be shared with their employers. Therefore, the participants of this study and the subsequent findings may not be a representative sample of the entire New Zealand construction industry, and the opinions and experiences expressed may not be shared amongst the greater cohort.

Lastly, the survey sample size poses a limitation for this research. 100 usable survey responses were collected; while this is a relatively small number, it was considered achievable in the timeframe and appropriate for Master's-level research (Smith, 2015). As such, the findings are not representative of construction workers nationally. However, this small sample size was mitigated through triangulation; where the 12 interviews with key stakeholders ensured the validity and reliability of the data collected. In addition to acknowledging the limitations of this research, it is essential to highlight what research gaps require further investigation; these are discussed in the following section.

7.6 Areas for Future Research

As this study has incorporated ALT and ToT, it has examined the current state and effectiveness of OHS site induction training within New Zealand's construction industry through a very broad scope. As such, this has provided a general overview of the research area and not an in-depth examination of each influencing factor. As highlighted in Section 7.5, the number of survey participants for this study was relatively small, and therefore the findings may not be representative of the wider population, rather indicating trends to investigate. Further research should be conducted on a larger scale, potentially focusing on a smaller set of training factors.

As identified in Section 7.2.2, survey participants highlighted issues with their trainer's expertise, teaching ability, OHS focus, and communication skills. Stakeholder responses indicated a diversity of qualifications or training held by trainers, ranging from formalised courses to in-house coaching to none. Their comments indicate room for

improvement, which is unsurprising given the lack of any mandate regarding the qualifications required to design or deliver OHS site induction training within New Zealand's construction industry. Perhaps a standardised approach to OHS site induction trainer qualifications could improve the quality of inductions delivered. Implementing a standard qualification or course could also provide assurance that OHS site induction trainers hold the expertise required to deliver the content and provide them with the foundation level of presentation competencies required to cater to the trainees' learning needs. Due to the resource constraints experienced in the sector, particularly amongst SMEs, further investigation would be needed to determine the feasibility of such an approach.

Another area that requires further research is the possibility of using pre-site competency assessments to reduce the content and length of OHS site induction training. As noted by survey participants, there was an overlap of generic content; using pre-site assessments could ensure that only site-relevant content is included in site inductions, assisting in both length reduction and trainee engagement (Jeelani et al., 2017). However, stakeholders indicated that they were not happy with the quality of the current pre-site competency assessments available and that there could be issues with ensuring that workers complete them before coming to site. It is recommended that further investigation be conducted in this area to investigate the feasibility of using pre-site competency assessments to reduce the content covered in OHS site inductions.

7.7 Chapter Summary

This chapter has summarised the key findings from this research, alongside presenting recommendations for improving the current state and effectiveness of OHS site induction training within New Zealand's construction industry. The contributions and limitations of this study were elucidated, and areas for future research were identified.

As the findings of this study show, some assumptions and factors of ALT and ToT, whilst not necessarily intentionally, have been incorporated into the design and delivery of OHS site inductions. However, there are still significant areas for improvement. Notably, there needs to be a more significant focus on trainee engagement throughout the induction process to ensure that the content and delivery are suitable for the intended audience and to promote a positive organisational safety culture. Doing so can aid in changing the perception of OHS site inductions as a 'tick in the box' compliance exercise and ensure workers feel their health, safety, and well-being are a priority.

Ensuring the effectiveness of OHS site induction training within New Zealand's construction industry is a complex yet essential task to support the health, safety, and well-

being of construction workers. Given the high injury and fatality rates within the sector, all OHS initiatives must be purposefully designed and continuously assessed to ensure they are functioning to the required standard. If OHS site induction training fails to provide workers with the required safety competencies, they become nothing but safety clutter and a waste of time and resources (Albert & Routh, 2021; Ford et al., 2018).

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Appendices

Appendix A

Ethics Approval Letters

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology
D-88, Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

12 May 2022

Danae Anderson
Faculty of Business Economics and Law

Dear Danae

Ethics Application: 22/104 OHS Induction Training: An Insight into New Zealand's Construction Industry

Thank you for submitting your application for ethical review. We are pleased to advise that the Auckland University of Technology Ethics Committee (AUTEC) approved your ethics application at their meeting on 2 May 2022, subject to:

1. Provision of an assurance that any consultation with the Mātauranga Māori committee will occur before the research commences. AUTEC advises that it is not appropriate to consult with them about differences in participation rates of Māori and Non-Māori once the research is underway;
2. Provision of a plan to deal with possible disclosures of illegal activity;
3. Provision of a 'Permission to Access' form and an Information Sheet for the intended organisations;
4. Amendment of the Information Sheet as follows:
    a. Inclusion of advice about who the researcher works for;
    b. In the 'How was I invited…' include advice that they responded to an advertisement;
    c. Inclusion of advice that only limited confidentiality (for interviews) can be offered given that some organisations will elect to be named and interviews may take place in the workplace;
    d. Inclusion of details in relation to any disclosure of illegal activities.

Please provide us with a response to the points raised in these conditions, indicating either how you have satisfied these points or proposing an alternative approach. AUTEC also requires copies of any altered documents, such as Information Sheets, surveys etc. You are not required to resubmit the application form again. Any changes to responses in the form required by the committee in their conditions may be included in a supporting memorandum.

Please note that the Committee is always willing to discuss with applicants the points that have been made. There may be information that has not been made available to the Committee, or aspects of the research may not have been fully understood.

Once your response is received and confirmed as satisfying the Committee's points, you will be notified of the full approval of your ethics application. Full approval is not effective until all the conditions have been met. Data collection may not commence until full approval has been confirmed. If these conditions are not met within six months, your application may be closed and a new application will be required if you wish to continue with this research.

To enable us to provide you with efficient service, we ask that you use the application number and study title in all correspondence with us. If you have any enquiries about this application, or anything else, please do contact us at ethics@aut.ac.nz.

We look forward to hearing from you,

(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat
Auckland University of Technology Ethics Committee

Cc: ywv9203@autuni.ac.nz

Auckland University of Technology Ethics Committee (AUTEC)

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17 June 2022

Danae Anderson
Faculty of Business Economics and Law

Dear Danae

Re Ethics Application: **22/104 OHS Induction Training: An Insight into New Zealand's Construction Industry**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 16 June 2025.

Standard Conditions of Approval

1. The research is to be undertaken in accordance with the Auckland University of Technology Code of Conduct for Research and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard and that all the dates on the documents are updated.
8. AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted and you need to meet all ethical, legal, public health, and locality obligations or requirements for the jurisdictions in which the research is being undertaken.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through http://www.aut.ac.nz/research/researchethics

(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat
Auckland University of Technology Ethics Committee

Cc: ywv9203@autuni.ac.nz

Appendix B

Survey Questionnaire

Intro

Survey Introduction.
Project Title: OHS Induction Training: An Insight into New Zealand's Construction Industry
Project Supervisors: Dr Danaë Anderson, Dr Felicity Lamm
Researcher: Kate Poole

Introduction:

My name is Kate Poole, and I am studying a Master of Business at AUT University. I would like to invite you to participate in this research on the current state and effectiveness of occupational health and safety (OHS) site induction training practices within New Zealand's construction industry. This research will form the basis of my Master's thesis. Your participation in this research is voluntary - you may withdraw from this research without adverse consequences.

What is the purpose of this research?

This research seeks to explore the current state and

effectiveness of occupational health and safety (OHS) site induction training within New Zealand's construction industry, focusing on:

1. The OHS site induction training experiences of construction workers within New Zealand
2. The perceived effectiveness of the OHS site induction training received from the construction workers' perspective
3. Current induction training best practices and areas for improvement
4. The extent to which Transfer of Training Theory and Adult Learning Theory have been applied within OHS site induction training to improve worker retention and application of knowledge

These areas will be explored through two phases of data collection: a nationwide survey of construction workers and interviews with stakeholders.
The findings of this research may be used for academic publications and presentations. This research will also form the basis of my Master of Business degree.

This research is not being funded by any organisations that may have a conflict of interest in the research findings. The primary researcher (Kate Poole) is currently employed by Construction Health and Safety New Zealand (CHASNZ); however, CHASNZ's sole involvement

will be distributing the Participant Information Sheets. CHASNZ will have no access to any data gathered through the research or the participants themselves.

How was I identified and why am I being invited to participate in this research?

You have been invited to participate in this survey on the current state and effectiveness of occupational health and safety (OHS) site induction training within New Zealand's construction industry because you are currently a construction worker in New Zealand. The invitation for the survey stage of this research has been extended to all current construction workers in New Zealand. To fit the participant criteria, you must be at least 18 years old, have worked within New Zealand's construction industry within the past year, and have completed at least one OHS site induction training within the past year so that you can reflect on your experiences during the survey.

Q1. Please select the following option to confirm that you meet this criteria:

☐ I confirm that I am at least 18 years of age, have worked within New Zealand's construction industry within the past year, and have completed at least one occupational health and safety (OHS) induction training within the past year.

Consent

Informed Consent . **How do I agree to participate in this research?**
You can volunteer to participate in the survey stage by opening the survey link, completing the survey, and submitting it. By submitting this survey, you will consent to participate in the research.

Your participation in this research is voluntary (it is your choice), and whether or not you choose to participate will neither advantage nor disadvantage you. You can withdraw from the survey at any point until your response has been submitted, but once this has occurred, your data cannot be identified or withdrawn because the survey is anonymous.

What will happen in this research?
Given your knowledge and experiences in this area, I would like to ask you questions about your OHS site induction training experiences using an online survey. This survey can be completed anywhere with an internet connection and should take approximately 20-30 minutes to complete. You can skip any of the questions, except for Q.1 and Q.2 as these indicate that you meet the criteria and consent to participate. The nature of the questions will require you to reflect on your OHS site induction training experiences within the past year. All

responses you provide in this survey will be anonymous.

What are the discomforts and risks?

Minimal discomfort or risk is anticipated for participants. However, the survey may address topics you disagree with or are concerned about. This survey can be completed in any safe space of your choice. You will be able to terminate the survey at any time.

How will these discomforts and risks be alleviated?

You may decline to answer any of the questions in the survey simply by skipping these or terminating the survey altogether.

AUT Student Counselling and Mental Health are able to offer three free sessions of confidential counselling support for adult participants in an AUT research project. These sessions are only available for issues that have arisen directly as a result of participation in the research and are not for other general counselling needs. To access these services, you will need to:

- drop into our centre at WB203 City Campus, email counselling@aut.ac.nz or call 921 9998.
- let the receptionist know that you are a research participant and provide the title of my research and my name and contact details as given in this Information Sheet.

You can find out more information about AUT counsellors and counselling on https://www.aut.ac.nz/student life/student-support/counselling-and-mental-health

What are the benefits?

This research will contribute to formulating suggestions on improvements to the current state and effectiveness of OHS site induction training within New Zealand's construction industry. This research will also contribute to my Master's thesis, which is part of the Master of Business requirements.

How will my privacy be protected?

The only other people who will be able to access the raw survey data are my supervisors (Associate Professor Dr Felicity Lamm and Dr Danaë Anderson). The survey data will be used only for the purpose of this research: the writing of my Master's thesis and any academic publications or presentations that may arise from this research. The data will be kept in a secure location for six years and will then be destroyed. You will not be identified in the research - all your survey responses will be anonymous. If you include any identifying data in your written question responses, this information will be de-identified so that your answers cannot be identified by others.

What are the costs of participating in this research?
The only cost of participating in this research is the time you give for the survey, which is approximately 20-30 minutes long.

How long will this survey remain open?
The survey closes at the end of August 2022. Throughout this time, you can get in touch with me to ask questions.

Will I receive feedback on the results of this research?
If you wish to receive a final summary of the findings, you can enter your email address using the link at the end of the survey. This is voluntary and will not be linked to your previous answers. This email address will then be only used to send you the summary of findings and will then be deleted.

What do I do if I have concerns about this research?
Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Danaë Anderson, danae.anderson@aut.ac.nz, 921 9999 ext. 5601.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, ethics@aut.ac.nz, (+649) 921 9999 ext. 6038. Whom do I contact for further information about this research?
Please keep the Information Sheet for your future

reference.

You are also able to contact the research team as follows:

Researcher Contact Details:

Kate Poole. Faculty of Business, AUT University.
ywv9203@aut.ac.nz

Project Supervisor Contact Details:

Dr Danaë Anderson. Faculty of Business, AUT University.
danae.anderson@aut.ac.nz, 921 9999 ext. 5601

Approved by the Auckland University of Technology Ethics Committee on 12/05/2022, AUTEC Reference number 22/104.

Q2. Please tick the following box to confirm you have read and understood the provided survey information, and that you consent to participating in this research project:

☐ I have read and understood the provided survey information, and I consent to participating in this research project.

Section A: General Information

Section A. General Information

A.0. Please remember that you can skip any of the following questions.

A.1. What is your age?

- ○ 18-20
- ○ 21-25
- ○ 26-30
- ○ 31-35
- ○ 36-40
- ○ 41-45
- ○ 46-50
- ○ 50+

A.2. What ethnicity or cultural group do you identify with most?

- ○ NZ European
- ○ NZ Māori
- ○ Samoan
- ○ Cook Island Māori

- ○ Tongan
- ○ Niuean
- ○ Tokelauan
- ○ Fijian
- ○ Indian
- ○ Chinese
- ○ Southeast Asian
- ○ Middle Eastern
- ○ Latin American
- ○ African
- ○ [ ] Other (please specify in the text box below)

A.3. What level of education do you hold?

- ○ Primary school (Year 1-8)
- ○ Secondary school (Year 9-13)
- ○ Diploma
- ○ Bachelor's degree
- ○ Master's degree
- ○ PhD
- ○ [ ] Other (please specify in the text box below)

A.4. How long have you been employed in the construction industry?

- ○ 1-5 years
- ○ 6-10 years
- ○ 11-15 years
- ○ 16-20 years
- ○ 20+ years

A.5. In which area of New Zealand were you most recently employed?

- ○ Northland
- ○ Auckland
- ○ Waikato
- ○ Bay of Plenty
- ○ Gisbourne
- ○ Hawke's Bay
- ○ Taranaki
- ○ Manawatū-Whanganui
- ○ Wellington
- ○ Tasman
- ○ Nelson
- ○ Marlborough
- ○ West Coast
- ○ Canterbury
- ○ Otago
- ○ Southland

A.6. Which construction sector do you work in? (Please select all that apply)

- ☐ Residential
- ☐ Commercial
- ☐ Heavy and civil engineering
- ☐ Construction services (the trades, e.g. plumbers, electricians, concreters, etc.)
- ☐ Other (please specify in the text box below)

A.7. Are you an employee, contractor, or subcontractor?

- ○ Employee
- ○ Contractor
- ○ Subcontractor

A.8. What size company do you currently work for?

- ○ Micro (1-5 personnel)
- ○ Small (6-19 personnel)
- ○ Small-to-medium (20-49 personnel)
- ○ Medium (50-99 personnel)
- ○ Large (100+ personnel)

A.9. How long ago was your most recent OHS site induction training?

- ○ 0-2 months
- ○ 3-4 months
- ○ 5-6 months
- ○ 7-8 months
- ○ 9-10 months
- ○ 11-12 months

Trainee Characteristics

Section B. Trainee Characteristics

B.0. Please remember that you can skip any of the following questions.

B.1. I have a positive attitude towards health and safety:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree

- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

B.2. I have a positive attitude towards occupational health and safety site induction training:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

B.3. I feel confident in my ability to understand and implement the knowledge and skills taught during occupational health and safety site induction training:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

B.4. I feel responsible for ensuring the content taught during occupational health and safety site induction training is applied in my workplace:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

B.5. What motivates you to ensure the content learnt during occupational health and safety site induction training is applied within your workplace?

B.6. Who do you believe should be responsible for ensuring occupational health and safety site induction training is effective?

Training Characteristics

Section C. Training Characteristics

C.0. Please remember that you can skip any of the following questions.

C.1. Where was your most recent occupational health and safety site induction training delivered? (Please select all that apply)

- ☐ On site in the area my work takes place
- ☐ On site in a classroom/office space
- ☐ Online
- ☐ Other (please specify in the text box below)

C.2. What was length of your most recent occupational

health and safety site induction training?

- ○ Under 10 minutes
- ○ 10-30 minutes
- ○ 30-60 minutes
- ○ 60+ minutes (please specify how long in the text box below)

C.3. What is the average length of the occupational health and safety site induction trainings you received over the past year?

- ○ Under 10 minutes
- ○ 10-30 minutes
- ○ 30-60 minutes
- ○ 60+ minutes (please specify how long in the text box below)

C.4. The content of my most recent occupational health and safety site induction training was relevant to my role:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree

- ○ Disagree
- ○ Strongly disagree

C.5. The most recent occupational health and safety site induction training I received provided sufficient information to allow me to work safely:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

C.6. During my most recent occupational health and safety site induction training, I was given the opportunity to observe and then practice the health and safety behaviours/skills taught:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree

- ○ Strongly disagree

C.7. The content of my most recent occupational health and safety site induction training was straight-forward and easy to understand:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

C.8. At my most recent occupational health and safety site induction training, I was given the opportunity to participate in the planning of the training:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

C.9. At my most recent occupational health and safety site induction training, I was given the opportunity to participate in the delivery of the training:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

C.10. At my most recent occupational health and safety site induction training, I was given the opportunity for self-directed learning:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

C.11. What training materials have been used during the occupational health and safety site induction trainings that you have received during the last year? (Please select all that apply)

- ☐ Visual presentations (e.g. PowerPoint)
- ☐ Printed handouts
- ☐ Electronic handouts
- ☐ Learning objectives
- ☐ Timetable of training
- ☐ E-learning activities (online training)
- ☐ Videos
- ☐ Other (please specify in the text box below)

C.12. Do you prefer occupational health and safety site induction training to be in-person, online, or a combination of the two?

- ○ In-person
- ○ Online
- ○ Combination of in-person and online

C.13. If English is not your first language, were training materials available for you in your first language at your

most recent occupational health and safety induction training?

- ○ Yes
- ○ No
- ○ N/A

C.14. Was the content provided during your most recent occupational health and safety site induction training tested during or upon completion of the training?

- ○ Yes
- ○ No

C.15. In the past year, were you required to complete an additional health and safety assessment before going on site? (e.g. Site Safe Foundation Passport, ConstructSafe assessment etc.)

- ○ Yes (please specify which ones in the text box below)

  [ ]
- ○ No

C.16. If you answered yes to the previous question, did you find that (on average over the past year) the content of the health and safety assessment was similar to your occupational health and safety site induction trainings?

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree
- ○ N/A

C.17. Do you have any other comments regarding occupational health and safety site induction training content?

Trainer Characteristics

Section D. Trainer Characteristics

D.0. Please remember that you can skip any of the following questions.

D.1. Who delivered your most recent occupational health and safety site induction training? (Please select all that apply)

- ☐ Site Manager
- ☐ Supervisor/Manager
- ☐ Training Manager
- ☐ External Company
- ☐ Other (please specify in the text box below)

D.2. At my most recent occupational health and safety site induction training, the person or persons who delivered it spoke in a way that was easy to understand:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree

- ○ Disagree
- ○ Strongly disagree
- ○ N/A

D.3. At my most recent occupational health and safety site induction training, I was confident in the abilities of the person or persons who delivered it:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree
- ○ N/A

D.4. The people that provide occupational health and safety site induction training within my workplace are held accountable for ensuring the training is effective:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree

- ○ Strongly disagree
- ○ N/A

D.5. At your most recent occupational health and safety site induction training, did the person or persons who delivered it give you opportunities to ask questions or clarify the content taught?

- ○ Yes
- ○ No
- ○ N/A

D.6. Do you have any other comments regarding your experiences of the person or persons who provided your occupational health and safety site induction training?

Organisational Characteristics

Section E. Organisational Characteristics

E.0. Please remember that you can skip any of the following questions.

E.1. My company values my input; I feel comfortable raising concerns about health and safety and I am confident that my concerns will be addressed:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

E.2. My company has a proactive approach to health and safety; risks and hazards are dealt with appropriately before they lead to an incident:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree

- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

E.3. My company values productivity over the health and safety of their workers; safety rules are not followed if they slow down work:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

E.4. Our safety reps are easy to approach and open to our input regarding our health and safety:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree
- ○ N/A

E.5. Our site managers are easy to approach and open to our input regarding our health and safety:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree
- ○ N/A

E.6. Senior management visits my workplace:

- ○ Often
- ○ Sometimes
- ○ Seldom
- ○ Never
- ○ N/A

E.7. When management visits my place of work, they abide by safety rules and regulations and set a good example:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree
- ○ N/A

E.8. When management visits my place of work, they take the time to talk to us and actively listen to our input:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree
- ○ N/A

E.9. When workers are injured, management:

	Always	Often	Sometimes	Seldom	Never	N/A
Investigates the incident and takes appropriate steps to ensure it is prevented from happening again	○	○	○	○	○	○
Supports injured workers and ensures they get the help they need to recover	○	○	○	○	○	○
Works with the injured workers to create a 'return to work' plan	○	○	○	○	○	○
Blames the workers	○	○	○	○	○	○
Punishes the workers	○	○	○	○	○	○

E.10. My company spends a sufficient amount of money on health and safety:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

- ○ N/A

E.11. My company spends a sufficient amount of money on occupational health and safety site induction training:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree
- ○ N/A

E.12. My company spends a sufficient amount of time on health and safety:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree
- ○ N/A

E.13. My company spends a sufficient amount of time on occupational health and safety site induction training:

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree
- N/A

E.14. My co-workers have a positive attitude towards health and safety:

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree
- N/A

E.15. My co-workers have a positive attitude towards occupational health and safety site induction

training:

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree
- ○ N/A

E.16. Do you have any other comments regarding organisational support for occupational health and safety site induction training?

General

Section F. General Questions

F.0. Please remember that you can skip any of the following questions.

F.1. Do you have any other comments regarding occupational health and safety site induction training practices within New Zealand's construction industry?

Appendix C

Indicative Interview Questions

Information & Confidentiality (to be verbally explained at the beginning of the interview)

The purpose of this research is to understand the current state and effectiveness of occupational health and safety (OHS) induction training within New Zealand's construction industry. The information is being collected through semi-structured interviews with stakeholders, and through an online survey. The benefits of participating in this research include identifying leading practices amongst OHS site induction training, as well as opportunities for improvement. This information will be published in a thesis, which can be shared with industry organisations so they can gain more knowledge on how they can improve their OHS induction training practices.

Your participation in this research is voluntary (it is your choice). If you choose to participate or not it will neither advantage nor disadvantage you. If you decide not to continue, then you will be able to terminate the interview at any time.

With your agreement, I would like to make a recording of the interview. You may decline to have your interview recorded prior to the commencement of the interview, and you may also ask for the recording to be stopped at any time, without needing to provide a reason. If you choose to withdraw from the research, the recording will be destroyed. All information given as a result of this interview will be transcribed and analysed by me. A copy of the transcript will be provided to each participant to amend or correct within two weeks of the interview taking place. After that time the information will be available as a finished Master's thesis.

This semi-structured interview will take approximately 45 minutes. As a stakeholder involved with the construction industry within New Zealand, you will be asked to share your insights and opinions on current OHS training practices and their effectiveness. It is preferable that your name, position, and organisation be identified in the published research to give context and backing to your insights and opinions. However, if you wish for your identity to remain confidential, a generic role or expertise identifier will instead identify you to give context, such as 'OHS Trainer' or 'Site Manager'. In the interview transcripts and reporting of results, you will only be identified by a generic identifier, and no personal information will be disclosed that could reveal your identity to the reader.

The answers you provide in the interview will be collated with all other responses from the interviews to provide a summary of the current state and effectiveness of OHS induction training within New Zealand's construction industry.

You will now also be given the opportunity to sign a consent form after fully understanding what the project is about and what your involvement entails.

The research team has been advised that the formal Ethics has been approved by the AUT University Human Participants Ethics Committee.

Introduction to the interview

- The interview should take approximately 45 minutes to complete.
- The purpose of the interview is to understand the current state and effectiveness of current OHS induction training practices in New Zealand's construction industry.
- The questions will provide you with an opportunity to put forward your opinions on OHS induction training practices.
- You can decline to answer any of the questions at any stage of the interview.

Section A: Understanding the stakeholder's role

- What's your position title?
- Can you tell me a bit about your role?
- What experience have you had in relation to OHS site inductions or adult learning?

Section B: OHS induction training practices

- What do you think the purpose of a site induction is?
- What content do you believe at a minimum should be included in a site induction?
- How do you think workers should be made to feel responsible for applying the content learnt within site inductions?
- Who designs and delivers your site inductions?
- What competencies do your trainers have to deliver site inductions?
- How are your trainers held accountable for site induction outcomes?
- Where are your site inductions delivered?
- What are your thoughts about online site inductions?
- What do you think about using pre-site competency training or assessments to reduce the amount of content covered during site inductions?
- What materials do you use during your site inductions?
- What literacy or language support do you provide trainees?
- How do you engage workers before, during, and after site inductions?
- How do you ensure the content taught has been understood and will be applied within the workplace?
- Are you aware of any effective current site induction practices?
- Are you aware of any ineffective current site induction practices?

Appendix D

Survey Participant Information Sheet

Participant Information Sheet: Survey

Date Information Sheet Produced:

27/02/2022

Project Title

OHS Induction Training: An Insight into New Zealand's Construction Industry

An Invitation

My name is Kate Poole, and I am studying a Master of Business at AUT University. I would like to invite you to participate in this research on the current state and effectiveness of occupational health and safety (OHS) site induction training practices within New Zealand's construction industry. This research will form the basis of my Master's thesis. Your participation in this research is voluntary - you may withdraw from this research without adverse consequences.

What is the purpose of this research?

This research seeks to explore the current state and effectiveness of occupational health and safety site induction training within New Zealand's construction industry, focusing on:

1. The OHS site induction training experiences of construction workers within New Zealand
2. The perceived effectiveness of the OHS site induction training received from the construction workers' perspective
3. Current OHS site induction training best practices and areas for improvement
4. The extent to which Transfer of Training Theory and Adult Learning Theory have been applied within the induction training received to attempt to improve worker retention and application of knowledge

For this research, OHS site induction training refers to occupational health and safety site inductions.

These areas will be explored through two phases of data collection: a nationwide survey of construction workers and interviews with stakeholders.

The findings of this research may be used for academic publications and presentations. This research will also form the basis of my Master of Business degree.

This research is not funded by any organisations that may have a conflict of interest in the research findings. The primary researcher (Kate Poole) is currently employed by Construction Health and Safety New Zealand (CHASNZ); however, CHASNZ's sole involvement will be distributing the Participant Information Sheets. CHASNZ will have no access to any data gathered through the research or the participants themselves.

How was I identified, and why am I being invited to participate in this research?

You have been invited to participate in this survey on the current state and effectiveness of OHS site induction training within New Zealand's construction industry because of your expertise, experience, or unique insights into this area. You will have been invited either through an advertisement on social media or email. The invitation for the survey stage of this research has been extended to all current construction workers in New Zealand. To fit the participant criteria, you must be at least 18 years old and have completed at least one OHS site induction training within the last year so that you can reflect on your experiences during the survey.

How do I agree to participate in this research?

You can volunteer to participate in the survey stage by opening the survey link, completing the survey, and submitting it. The start of the survey will also have information about consenting to be involved in this research; by submitting the survey, you will consent to participate in the research.

The survey link is: https://aut.au1.qualtrics.com/jfe/form/SV_5auccjVKx2ApcLc

Your participation in this research is voluntary (it is your choice), and whether you choose to participate or not will neither advantage nor disadvantage you. You can withdraw from the survey until your response has been

submitted, but once this has occurred, your data cannot be identified or withdrawn because the survey is anonymous.

What will happen in this research?

Given your knowledge and experiences in this area, I would like to ask you questions about your OHS site induction training experiences using an online survey. This survey can be completed anywhere with an internet connection and should take approximately 20-30 minutes. The nature of the questions will require you to reflect on your OHS site induction training experiences within the past year. All responses you provide in this survey will be anonymous.

What are the discomforts and risks?

Minimal discomfort or risk is anticipated for participants. However, the survey may address topics you disagree with or are concerned about. This survey can be completed in any safe space of your choice. You will be able to terminate the survey at any time.

How will these discomforts and risks be alleviated?

You may at any time decline to answer any of the questions in the survey simply by skipping these or terminating the survey completely.

AUT Student Counselling and Mental Health is able to offer three free sessions of confidential counselling support for adult participants in an AUT research project. These sessions are only available for issues that have arisen directly as a result of participation in the research and are not for other general counselling needs. To access these services, you will need to:

- drop into our centre at WB203 City Campus, email counselling@aut.ac.nz or call 921 9998.
- let the receptionist know that you are a research participant and provide the title of my research and my name and contact details as given in this Information Sheet.

You can find out more information about AUT counsellors and counselling on https://www.aut.ac.nz/student-life/student-support/counselling-and-mental-health

What are the benefits?

This research will contribute to formulating suggestions on improvements to the current state and effectiveness of OHS site induction training within New Zealand's construction industry. This research will also contribute to my Master's thesis, which is part of the Master of Business requirements.

How will my privacy be protected?

The only other people who will be able to access the raw survey data are my supervisors (Associate Professor Dr Felicity Lamm and Dr Danaë Anderson). The survey data will be used only for this research: the writing of my Master's thesis and any academic publications or presentations that may arise from this research. The data will be kept in a secure location for six years and will then be destroyed.

You will not be identified in the research - all your survey responses will be anonymous. If you include any identifying data in your written question responses, this information will be de-identified so that others cannot identify your answers.

What are the costs of participating in this research?

The only cost of participating in this research is the time you give for the survey, approximately 20-30 minutes long.

What opportunity do I have to consider this invitation?

You will be able to consider this survey invitation for up to two months. The survey closes at the end of August 2022. You can get in touch with me throughout this time to ask questions.

Will I receive feedback on the results of this research?

If you wish to receive a final summary of the findings, you can follow the link provided at the end of the survey. This link will take you to a separate survey where you can enter your email address. This is voluntary and will not be linked to your previous answers. This email address will only be used to send you the summary of findings and will then be deleted via secure data disposal.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Danaë Anderson, danae.anderson@aut.ac.nz, 921 9999 ext. 5601.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, *ethics@aut.ac.nz*, (+649) 921 9999 ext. 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Kate Poole. Faculty of Business, AUT University. ywv9203@aut.ac.nz

Project Supervisor Contact Details:

Dr Danaë Anderson. Faculty of Business, AUT University. danae.anderson@aut.ac.nz, 921 9999 ext. 5601

Approved by the Auckland University of Technology Ethics Committee on 12/05/2022, AUTEC Reference number 22/104.

Appendix E

Interview Participant Information Sheet

Participant Information Sheet: Interviews

Date Information Sheet Produced:

27/02/2022

Project Title

OHS Induction Training: An Insight into New Zealand's Construction Industry

An Invitation

My name is Kate Poole, and I am studying a Master of Business at AUT University. I would like to invite you to participate in this research on the current state and effectiveness of occupational health and safety (OHS) site induction training practices within New Zealand's construction industry. This research will form the basis of my Master's thesis. Your participation in this research is voluntary - you may withdraw from this research without adverse consequences.

What is the purpose of this research?

This research seeks to explore the current state and effectiveness of occupational health and safety site induction training within New Zealand's construction industry, focusing on:

1. The OHS site induction training experiences of construction workers within New Zealand
2. The perceived effectiveness of the OHS site induction training received from the construction workers' perspective
3. Current OHS site induction training best practices and areas for improvement
4. The extent to which Transfer of Training Theory and Adult Learning Theory have been applied within the site induction training received to attempt to improve worker retention and application of knowledge

These areas will be explored through two phases of data collection: a nationwide survey of construction workers and interviews with stakeholders.

The survey targets New Zealand's construction industry workers who have completed an OHS site induction training within the past year. The interviews will take place after survey collection, with the findings of the survey collection guiding the interview content.

The findings of this research may be used for academic publications and presentations. This research will also form the basis of my Master of Business degree.

This research is not funded by any organisations that may have a conflict of interest in the research findings. The primary researcher (Kate Poole) is currently employed by Construction Health and Safety New Zealand (CHASNZ); however, CHASNZ's sole involvement will be distributing the Participant Information Sheets. CHASNZ will have no access to any data gathered through the research or the participants themselves.

How was I identified, and why am I being invited to participate in this research?

You have been invited to participate in this interview on the current state and effectiveness of OHS site induction training within New Zealand's construction industry because of your expertise, experience, or unique insights into this area. You will have been invited either through an advertisement on social media or email. Examples of stakeholders that may provide valuable insights into the current state and effectiveness of OHS site induction training within New Zealand's construction industry may include (but are not limited to) OHS site induction trainers, site managers, and heads of leading sector organisations. All participants must be at least 18 years of age and based in New Zealand.

How do I agree to participate in this research?

You can volunteer to participate in the interview stage of this research by emailing me and expressing your interest (Kate Poole: ywv9203@aut.ac.nz). You can also contact me to ask further questions if required. When expressing your interest, please identify your role or stakeholder interest in this topic. This ensures that if a larger volume of volunteers apply to participate than I can interview, chosen participants will cover a range of stakeholder roles and

insights. Accompanying this Information Sheet is also an Interview Consent Form and an Oral Consent Protocol Form for interviews over Zoom. I will ask you to sign this form before the interview takes place.

Your participation in this research is voluntary (it is your choice), and whether you choose to participate or not will neither advantage nor disadvantage you. You can withdraw from the study at any time. If you decide to withdraw from the study, you will be offered the choice between having any identifiable data belonging to you removed or allowing it to continue to be used. However, once the findings have been collated, removing your data may no longer be possible.

What will happen in this research?

Given your knowledge and experiences in this area, I would like to interview you as part of my research project. The interview will involve approximately 45 minutes of your time on a date convenient to you. For participants based within Auckland, interviews will take place at a location of your choosing, for example, your workplace or a café. Interviews will be conducted online via Zoom for participants based outside of Auckland.

As a stakeholder involved with the construction industry within New Zealand, you will be asked to share your insights and opinions on current OHS training practices and their effectiveness. It is preferable that your name, position, and organisation be identified in the published research to give context and backing to your insights and opinions. However, if you wish for your identity to remain confidential, a generic role or expertise identifier will instead identify you to give context, such as 'OHS Trainer' or 'Site Manager'. In the interview transcripts and reporting of results, you will only be identified by a generic identifier, and no personal information will be disclosed that could reveal your identity to the reader.

With your agreement, I would like to make an audio recording of the interview. You may decline to have your interview recorded before the commencement of the interview, and you may also ask for the recording to stop at any time without needing to provide a reason. If you withdraw from the research, the recording will be destroyed. All information collected during the interview will be transcribed and analysed by me. A copy of the transcript will be provided to each participant to amend or correct within two weeks of the interview. After that time, the information will be available as a finished Master's thesis.

What are the discomforts and risks?

Minimal discomfort or risk is anticipated for participants. However, the interview may address topics you disagree with or are concerned about. I will make every effort for the interview to be a calm, reflective experience; however, the interview can be terminated at any time should you wish not to continue.

How will these discomforts and risks be alleviated?

You may at any time decline to answer any of the questions in the interview, ask me to stop audiotaping, or terminate the interview. You also have the right to withdraw any information you provide without giving any reason.

AUT Student Counselling and Mental Health is able to offer three free sessions of confidential counselling support for adult participants in an AUT research project. These sessions are only available for issues that have arisen directly as a result of participation in the research and are not for other general counselling needs. To access these services, you will need to:

- drop into our centre at WB203 City Campus, email counselling@aut.ac.nz or call 921 9998.
- let the receptionist know that you are a research participant and provide the title of my research and my name and contact details as given in this Information Sheet.

You can find out more information about AUT counsellors and counselling on https://www.aut.ac.nz/student-life/student-support/counselling-and-mental-health

What are the benefits?

This research will contribute to formulating suggestions on improvements to the current state and effectiveness of OHS site induction training within New Zealand's construction industry. This research will also contribute to my Master's thesis, which is part of the Master of Business requirements.

How will my privacy be protected?

To give backing and context to your insights and opinions, it is preferable that your name, position, and organisation be identified in the published research. Should you consent to this, I cannot provide confidentiality to your involvement in the research.

However, if you wish for your identity to remain confidential, a generic role or expertise identifier will instead identify you to give context, such as 'OHS Trainer' or 'Site Manager'. In the interview transcripts and reporting of

results, you will only be identified by a generic identifier, and no personal information will be disclosed that could reveal your identity to the reader.

If you want to keep your involvement confidential from your colleagues, we can meet in a public place of your choosing, such as a café or one of the AUT campuses. If you choose to conduct the interview in your workplace, I cannot provide confidentiality to your involvement in this research.

The only other people who will be able to access the raw interview data (i.e., the audio recording and transcription of the recording) are my supervisors (Associate Professor Dr Felicity Lamm and Dr Danaë Anderson). The interview data will be used only for this research, the writing of my Master's thesis and any academic publications or presentations that may arise from this research. The data will be kept in a secure location for six years and will then be destroyed.

What are the costs of participating in this research?

The only cost of participating in this research is the time you give for the interview, approximately 45 minutes long.

What opportunity do I have to consider this invitation?

You will have approximately three weeks to consider accepting this invitation. You can contact me to ask questions or volunteer to participate throughout this time. Approximately two weeks after you indicate your willingness to participate, I will contact you to confirm that you still wish to proceed with the interview and organise an interview date and time. However, if a greater number of potential participants get in contact than I can interview, they will be categorised into groups based on their experiences and roles, and a select number from each group will be chosen at random. This will ensure a mixture of stakeholder backgrounds, providing a range of opinions, experience, and expertise. In this case, I will still contact all volunteers and let them know if they were chosen to participate, or if not, thank them for their time and interest.

Will I receive feedback on the results of this research?

You will be given the opportunity to review and edit transcripts of your interview recording, if requested, for one month following the interview. You will also be provided with a copy of the finished research if you wish (this will be asked as part of the Consent Form). This will be emailed to an address of your choice.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Danaë Anderson, danae.anderson@aut.ac.nz, 921 9999 ext. 5601.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, ethics@aut.ac.nz, (+649) 921 9999 ext. 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Kate Poole. Faculty of Business, AUT University. ywv9203@aut.ac.nz

Project Supervisor Contact Details:

Dr Danaë Anderson. Faculty of Business, AUT University. danae.anderson@aut.ac.nz, 921 9999 ext. 5601

Approved by the Auckland University of Technology Ethics Committee on 12/05/2022, AUTEC Reference number 22/104.

Appendix F

Interview Consent Form

Consent Form: Interviews

Project title: *OHS Induction Training: An Insight into New Zealand's Construction Industry.*

Project Supervisors: *Dr Danaë Anderson, Ass. Prof. Dr Felicity Lamm*

Researcher: *Kate Poole*

O	I have read and understood the information provided about this research project in the Information Sheet dated 27/02/2022.		
O	I have had an opportunity to ask questions and to have them answered.		
O	I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.		
O	I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.		
O	I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.		
O	I agree to take part in this research.		
O	I wish to receive a summary of the research findings (please tick one):	YesO	NoO
O	I consent to my name being identified in the published research (please tick one):	YesO	NoO
O	I consent to my position being identified in the published research (please tick one):	YesO	NoO
O	I consent to my organisation being identified in the published research (please tick one):	YesO	NoO

Participant's signature:

Participant's name:

Participant's Contact Details (if appropriate):

Date:

Approved by the Auckland University of Technology Ethics Committee on 12/05/2022, AUTEC Reference number 22/104.

Note: The Participant should retain a copy of this form.

Appendix G

Oral Consent Protocol

Oral Consent Protocol

Project title: *OHS Induction Training: An Insight into New Zealand's Construction Industry.*

Project Supervisors: *Dr Danaë Anderson, Ass. Prof. Dr Felicity Lamm*

Researcher: *Kate Poole*

The participant joins the videoconference

- ○ Do you agree to my recording your consent to participate?

If they agree, then the record function will be activated, and they will be asked the following:

- ○ Have you read and understood the information provided about this research project in the Information Sheet dated 27/02/2022?
- ○ Do you have any questions about the research?
- ○ Do you understand that notes will be taken during the interviews and that the interview will also be recorded and transcribed?
- ○ Do you understand that taking part in this study is voluntary (your choice) and that you may withdraw from the study at any time without being disadvantaged in any way?
- ○ Do you understand that if you withdraw from the study then you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used? However, once the findings have been produced, removal of your data may not be possible.
- ○ Do you agree to take part in this research?
- ○ Do you wish to receive a summary of the research findings? (please tick one): Yes○ No○
- ○ Do you wish to receive a copy of the recording for this consent? (please tick one): Yes○ No○
- ○ Do you consent to your name being identified in the published research (please tick one): Yes○ No○
- ○ Do you consent to your position being identified in the published research (please tick one): Yes○ No○
- ○ Do you consent to your organisation being identified in the published research (please tick one): Yes○ No○
- ○ Please confirm your name and contact details

Participant's name:

Participant's Contact Details (if appropriate):

Date:

I will now turn off the recording of the Consent and then will start a separate recording for the interview.

Approved by the Auckland University of Technology Ethics Committee on 12/05/2022, AUTEC Reference number 22/104

Note: The Participant should retain a copy of this form

Appendix H

Organisation Consent Form

Permission for researchers to access organisation staff.

Project title: *OHS Induction Training: An Insight into New Zealand's Construction Industry*

Project Supervisor: *Dr Danaë Anderson, Ass. Prof. Dr Felicity Lamm*

Researcher: *Kate Poole*

- ○ I have read and understood the information provided about this research project in the Information Sheet dated 27/02/2022.
- ○ I give permission for the researcher to undertake research within _____
- ○ I give permission for the researcher to access the staff / students / employees of _____

Principal's CEO's signature:

Principal's CEO's name:

Principal's CEO's Contact Details (if appropriate):

Date:

Approved by the Auckland University of Technology Ethics Committee on 12/05/2022, AUTEC Reference number 22/104.

Note: The head of the organisation should retain a copy of this form.

Appendix I

Overview of the Beca VR Site Induction

Theme	Quote
Design Process	The genesis really came through with a senior member of the building's team saying, hey, I think there's an opportunity to help the vertical construction industry achieve better health and safety outcomes on their construction sites. It was coupled with research that showed that the construction industry was one of the leading areas for occupational safety and health claims. And so it was seen as an industry that would get the most benefit out of taking a different approach to health and safety … We had an idea to use or leverage our approach to virtual reality to support developing health and safety inductions for construction sites and as a part of that, we partnered with ACC through their grant programme … Once that funding was secured, the project went through some initial research, so we had a learning and development person come on board. We created a number of engaging workshops with the construction industry themselves, and so that included members from the buildings team, members from our occupational health and safety team, but more importantly, site safety managers and site managers from I think three or four of the leading vertical construction companies in New Zealand where they took us through what is their current state in terms of how they're delivering the training and then what are their biggest challenges … We continued that engagement with those companies to get some content … the 360-degree imagery of the different construction sites at various stages … By being able to provide a more targeted health and safety message that aligns with the stage of construction, people were likely to retain that information and be able to apply it. We used storyboards that spoke to each of the relevant health and safety challenges for I think it was seven different stages of construction … And then we used the software development team to create virtual reality-based scenarios that walked each person through that … We tested it out with a number of the site managers to say hey is this kind of what you'd expected and then once we had that endorsement we went on to I think it was two actual construction sites and trialled the virtual reality experiences with actual people working on site … We initially thought about the tool and the solution we were pitching, and we saw it as an alternative to your standard induction process … Whilst the tool and the solution is really great at pointing out some of the common hazards, … there are some site-specific things that you're not going to be able to include ... It's very clear that our solution is a supporting tool rather than an alternative to it.
Languages	We did Samoan and Tagalog/Filipino. The reason for that was that they made up quite a large proportion of the construction industry and it also happened that we had people within Beca that could speak those languages. Language support is quite a challenging environment to be in because of the different interpretations and

Theme	Quote
Languages (cont.)	different translations that you can have … Ideally, we would have liked to have done Te Reo Māori given we're in New Zealand … I think translation services have matured quite a bit over the last three years, noting that, you know, we really developed this product three years ago.
Use	The solution has an admin portal, and then you use the Oculus Quest for example as the headset … I think it's available on the Apple Store as well now … you can download the app onto your Android or your Apple phone, and you can use Google Cardboard ... It's basically just lenses that look at your phone and turn it into 360 … So, multi-platform, and we did that to make it as accessible as we could to various people … Going through that experience is pretty simple, but it does rely on you having a fundamental appreciation of how you navigate through virtual reality. There is a bit of knowledge required to manage and maintain the solution and the sessions from an administrative perspective. And that's why it is important that the site manager knows what they're doing. They know how to set the sessions up, so that requires a little bit of training, but it's not that much more complicated than a please follow these 10 steps, generate your PIN codes and give the device to the person.
Confirmation of Learning	It actually gives you a score. So, you can just go click to the next screen, click to the next screen … done. But you'll get a score of 0 out of 10. And your site manager will see that ... The cultural challenge is, as a site manager, what do you do with that information? So, if you've got someone who's come on-site … they've gone through the experience, not engaged with that at all, just to tick the box. What do you do with that person that's got zero out of 10? Or what is the benchmark? … So one of the capabilities that we wanted to build into it is the ability for the site manager to go through and see what they struggled with within that experience. So you can say, hey look, you did really well. I noticed in this part you didn't really identify any of the trip hazards. Let's have a quick chat about that.
Feedback	I would say that the feedback was mixed, but the large majority of it was positive … For the people that work in our office, virtual reality is second nature to them … One of the challenges that we face going on to site is that you're working with a very different demographic and many of them hadn't come across virtual reality at all … the newness of it took a little while to get over. Once they got over that, I would say 75 to 80% of the people who went through the virtual reality experience really loved it … But there was still probably that 10 to 20% that weren't engaged, saw it as a tick box exercise and just weren't interested. I don't think you're ever going to get 100% of people totally engaged in health and safety.
Uptake	We are starting to see a lot more of that now. People think that VR and AR have been around and that they must be embedded in all these industries. The reality is it's not … We are starting to see more and more adoption of it, but in terms of consistent adoption throughout the industry, I would still say it's still in its genesis … I

Theme	Quote
Uptake (cont.)	definitely think that that [cost] is an influencing factor … We actually had a signed contract with a construction company to use this on one of their new development sites. Their budgets then got slashed and because this was seen as a discretionary activity, despite the fact that it was probably only going to be call it 10 to 15K over the space of their contract … It really depends on how you value the enabling technology for health and safety because no one sees the real cost of someone having an injury on site. I'm sure it comes through in the ACC premiums, but to the site manager, he's like, well, I can just give someone a presentation and I don't have to do this … I think the cost to develop and implement is definitely coming down. It's becoming easier to develop these solutions so that we're able to pass that saving onto the customers … I guess I'd just like to see more of the industry giving it a go. I think everyone is so busy these days that some of these cool, innovative tools that have really been designed to help drive health and safety outcomes are seen as noise or too hard or I don't have time to invest in understanding how to deliver it … I think organisations like ours are more than happy to support the industry and go through it like at almost zero cost just to give it a go. And there's just not enough people that are doing that.