GOVERNMENT OF WESTERN AUSTRALIA

CTF

HAS TRADE TRAINING CHANGED IN OTHER COUNTRIES TO ACCOMMODATE MODERN METHODS OF CONSTRUCTION?

PURPOSE

The purpose of this paper is to a) evaluate modern methods of construction from several countries to determine whether new techniques have prompted a change in the traditional trade training of apprentices and b) determine whether there are specialised construction skills that are evolving in these countries to meet the demands of the modern methods and establish any possible impact on the future of apprentices in Western Australia.

DESKTOP RESEARCH

This research focussed on numerous reports and papers from the United Kingdom and Australia who were the main countries offering an abundance of research into modern methods of construction and specialised construction skills.

FINDINGS

In 2013[1], research undertaken in the United Kingdom focused on the role of technology in driving high level skills needs in the construction industry, with a specific focus on offsite construction. The report highlighted that the greater uptake of offsite construction would likely have a gradual impact on existing skills and job roles. It also emphasised that the current training and qualifications offered for offsite employees is considered largely inadequate and has resulted in employers creating their own customised in-house training.

The report suggests that this may lead to a separation of offsite and onsite skills and job roles but with a common 'generic' skills base. The report acknowledged that in relation to apprenticeship training, the training still focuses on 'traditional' construction methods with offsite methods very narrowly covered within existing qualifications. Any training in offsite methods is often done 'in-house' or, employees are sent abroad to countries such as Austria, Germany or Belgium where industry led training models are perceived to work more effectively than those in the UK.

A 2015 editorial article written by the University of New South Wales[2] indicated that as new technologies emerge, the construction industry will have to develop a new generation of professional workers with multi-disciplinary and technological competencies who are able to work across traditional professional boundaries, relationships and knowledge domains. Although the industry is already using Business Information Technology (BIM), virtual and augmented reality and drones in Australia,

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[1] *Technology and skills in the Construction Industry, UK (2013)*

[2] *The risks and rewards of new construction technologies: University of New South Wales, Australia (2015)*

construction still remains a relatively low technology, labour intensive, craft-based industry in comparison to other industries such as manufacturing.

A 2016 report by Construction Skills Queensland and the CSIRO[3] revealed that prefabricated building manufacturing is growing in Australia, although small, 3% at present, it is expected to grow at 5% per annum until 2023, compared to a growth rate of 2.3% for the whole industry. The report specifies prefabricated building requires skills that are usually associated with manufacturing, rather than traditional building skills. Additionally, automation of pre-fabricated manufacturing could mean changes to traditional house building patterns and a reduction in the need for manual labour.

The report suggests that jobs carried out by glaziers, plasterers and tilers are estimated to have an 81.4% probability of being automated in the next 20 years. At the same time, construction managers and engineers are among jobs with the lowest chance of being automated over the same period. (PwC 2015). The expectation is for a change from skillsets focussed on manual skills and physical labour, to skillsets focussed on the intelligent and precise use of technology.

Further research in 2016, undertaken in the United Kingdom by the National House Building Council (NHBC)[4] aimed to establish current attitudes to Modern Methods of Construction (MMC) amongst larger house builders and housing associations.

Key findings through the research found:

- Most of the organisations had made use of Modern Methods of Construction (MMC): 98% of large and medium sized house builders and housing associations had used or considered at least one form of MMC in the last 3 years.
- The most widely-adopted form of MMC is sub-assemblies and components[5] with two thirds having used them for at least one home during 2015.
- Participants who were surveyed expected the role of MMC to grow or remain static over the next 3 years, only 3% expected it to decline. Drivers to increased use included overcoming skills shortages, faster build, increasing output, improving build quality and improving health and safety.

One of the key issues identified for preventing or restricting greater use of full volumetric construction[6], was the lack of skills to install volumetric units and a lack of understanding about working with them.

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[3] *Are you ready for change? Farsight for Construction: Construction Skills Queensland, Australia (2016)*

[4] *Modern methods of construction, Views from industry: NHBC Foundation, United Kingdom (2016)*

[5] *Larger components incorporated into new homes which include roof and door cassettes, prefabricated chimneys, porches and dormers and timber I-beams*

[6] *Free standing modules that are complete with finishes for wall, floors and ceilings and are constructed/manufactured and assembled in a fabrication facility (pre-fabricated)*

In 2018 a report by the Construction Industry Reference Committee[7] outlined its plan for two proposed research projects that will feed into the 2019 Skill Forecast. The proposed research projects are as follows:

- Building Information Modelling (BIM)
- Offsite Construction (including prefabrication)

The projects will examine how these technologies will affect construction occupations, with the outcomes of these two projects leading to:

- Identifying and updating any existing qualifications in the Construction, Plumbing and Services (CPC) training package that will be affected by BIM and offsite construction
- Identifying gaps in the training package where new qualifications for BIM and offsite construction are needed and developing those qualifications.

Research, including industry consultation, is to be undertaken between July and December 2018 with the outcomes from the report being incorporated into the 2019 Skills Forecast.

SUMMARY

The consensus across the research papers indicates that although the industry in both the UK and Australia may be slow in adopting modern methods of construction they are beginning to embrace them. This is highlighted particularly in Australia. The research projects underway in BIM and Offsite Construction have the potential to disrupt and challenge a major part of the construction industry's current processes, tasks and occupations that could in turn influence apprenticeship training.

[7] *Artibus Innovation, developing industry skills, Construction Plumbing and Services, Industry Reference Committee, Skills Forecast and Proposed Schedule of Work, Australia (2018)*