

Improving the Outcomes Apprenticeship Training Programme in the UK Construction Industry

Solent University RIKE Funded Research Project

Final Project Report

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Executive Summary

Apprenticeship programs for craftspeople were designed to attract and train people in order to meet labour shortages and age workforce being experience in the construction sector. This report was commissioned to explore the current knowledge relating to craftspeople apprenticeship training and suggest measures for improving its outcome. Interviews were conducted with relevant stakeholders involved in the training of craftspeople, such as, training providers, employers and apprentices. These interviews were transcribed and these transcripts were analysed using content analysis. Overall, the results indicate that apprenticeship for craftspeople has two main elements: theoretical and practical training. Lack of support for theoretical training, difficulty in evaluating the competence and lack of openings for on-the-job training are challenges facing the current apprenticeship training programs for craftspeople. The findings show that all stakeholders view apprenticeship training as important. However, there is a lack of understanding of certain components in the UK. For example, employers are not aware of the opportunity to claim back wages paid to apprentice during periods spent on theoretical training. Cost-effective measures for improving the outcomes of craftspeople apprenticeship training include (i) bridging the divide between theory and practical training; (ii) collaboration between trainers and employers; (iii) the use of competency-based assessment tasks; (iv) matching candidates with appropriate trade; and (v) engaging apprentice in the execution of various tasks.

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1.0 Overview of the Project

This research project aims to identify the current knowledge and practice surrounding the delivery of craftspeople apprentice training programme and suggest ways of improving the outcomes of craftspeople apprenticeship training programs in the UK construction industry. The Solent University funds this research project, through the Research, Innovation and Knowledge Exchange early career Seed funding. The project commenced fully in August 2018 and was completed in June 2019. This report presents the background to the study, the findings and conclusions from the investigation.

1.2 Background and Rational for the Study

There is a growing body of literature that recognises the importance of craftspeople in achieving the pre-planned objectives of construction projects. Increasing project cost and low productivity, which results in poor performance of construction projects, are associated with shortages of craftspeople (Castañeda et al., 2005; Karimi et al., 2017). Also, the ageing craftspeople have a negative effect on labour productivity at construction project sites (see Cataldi et al., 2012). In the United Kingdom, it was reported that about 40% of the construction workforce are above 45 years of age (McNair and Flynn, 2006). Based on the foregoing, it can be suggested that shortage and ageing of craftspeople are main factors affecting the performance of construction projects in the UK. Over the years, several craftspeople apprenticeship training programs have been implemented in the construction sector of the UK to address this problem. However, the poor outcomes of apprenticeship training programs continue to affect the number of workmen available to the construction sector (see O'Connor, 2016). Hence, improving the outcomes of craftspeople apprenticeship training programs would provide the needed skills and improve performance of projects in the construction sector.

Apprenticeship programs are specifically designed to provide trainees with requisite broad-based skills for practising a trade. The acquisition of the required level of competence and/or certification are metrics for assessing the success of an apprenticeship training program (see O'Connor and Harvey, 2001; Taylor and Freeman, 2011). Completion of apprenticeship training remains a problem in several countries across the globe. In the UK, the non-completion rate for apprenticeship program is over 30% (O'Connor, 2016). Similarly, the non-completion rate of apprenticeship programs in Australia was 45% (Bednarz, 2014). An increase in the number of trainees and stipend has been implemented as a measure to improve the completion rates of apprenticeship programs (O'Connor, 2016). However the impact of these intervention strategies have not resulted in improved

outcomes (see Coe, 2013), this clearly shows that these interventions do not adequately address the existing problems.

The success of apprenticeship training programs is important for the construction sector for several reasons. First, it provides a viable means for skills acquisition and attracting young workers to the construction industry. Second, it addresses the ageing construction workforce problem in the UK construction industry. The proposed study attempts to fill a gap in knowledge by investigating the current implementation process of apprenticeship training programs for craftspeople in the UK construction industry and identify how it could be improved.

1.3 Research Aim and Objectives

The overall aim of the study is to identify current knowledge and practice surrounding craftspeople apprentice training programme and suggest ways of improving the outcomes of craftspeople apprenticeship training programs in the UK construction industry.

Table1: Research deliverables and how it was achieved

	Research Objectives and Deliverables	How it was achieved
1	Determine the state of the current knowledge on apprenticeship programs through literature review	Through a systematic literature. See appendix A for the a journal article submitted for review based on the review findings
2	Identify current delivery practice apprenticeship training programme	Through semi-structured interviews. See result and discussion section
3	Determine how the current apprentice training programme can be improved	Through semi-structured interviews. See result and discussion section

2.0 Research Method

The study commenced with a systematic literature review to understand the current status quo of craftspeople apprenticeship training programme. The result from the systematic literature review was further developed into a journal article which was submitted to *Education and Training Journal*. The contribution is currently under review. See appendix A for a sample of the submitted manuscript. The literature review also contributed to the development of the interview questions. Semi-structured interview was

used to collect evidence that provide answers to the research objectives. The empirical data was gathered from participants whom have a variety of different relationships with apprentice schemes. These participants include clients, the main contractors, training providers, the apprentices and the regulatory agency. Most of the interviews was done via face to face and were subsequently transcribed to identify the emerging themes. Seventeen semi-structured interview were conducted with the key stakeholders. Details of the interviewees are presented in Table 2.

Table 2: Background of Respondents

	Respondents Code	Trade	Stage in Training	Outcome Level
1	AP01	Brick layering	Final stage	Level 3
2	AP02	Painting	Year 2	Level 3
3	AP03	Electrician	Final stage	Level 3
4	AP04	Plumbing	Final stage	Level 3
5	AP05	Carpentry	Year 1	Level 3
6	AP06	Carpentry	Year 1	Level 3
7	AP07	Carpentry	Year 2	Level 3
8	AP08	Thermal Installation	Year 2	Level 3
9	AP09	Carpentry and Joinery	Year 3	Level 3
10	AP10	Carpentry	Year 2	
11		Position in organisation	Years of Experience	
12	EM01	Community Liaison Manager	20	
13	EM02	Skill Development and Plan Manager	20	
14	EM03	Engineer	26	
15	RA01	Apprentice Coordinator	30	
16	TPO1	Training Manager	16	
17	TPO2	Tutor	15 gency, TA= Training Prov	

AP= Apprentice, EM = Employer, RA = Regulatory Agency, TA= Training Provider

3.0 Result and Discussion

3.1 Overview of Current Craftspeople Apprentice Training Programme

Block release/ Day Release and classroom theory and practical split

In the UK, apprentice's carryout the theory element of their training either by block release or day release. In block release, an apprentice will for instance work on site working for an employer for a long period of time and will then attend a training institution to learn theory elements for a much shorter period, ranging from 5 days in five weeks up to just 4 blocks per year. EM03 states:

"It's a block, so it's on site and then it's college work as in how to do specific things and they have to do sufficient maths and English. So they do that 4 times a year and then obviously the rest of the time they're on site with people like me who supervise them".

However, some employers do not like block release, for instance RA01 highlights issues with bricklayers, stating "they say why we should pay someone when they're not here for a week and they're not producing for us". This suggests some employers do not understand how apprentice schemes are funded by the CITB. As pointed out by O'Connor (2006) employers that pay training levy could claim back monies paid to apprentice during periods spent on theoretical training. The CITB training levy is still in place and covers and covers the cost of paying the apprentice for their training period whether day release or block release (HM Government 2019a).

Theoretical and practical assessments

The apprentice's off-the-job and on-the-job training are assessed by the training provider. The theory elements were assessed using exams, AP04 stated "there were 10 exams (...) they were all multiple choice, but you had to get 100%, so if you get 80% then you go back in and they ask you questions on the ones you got wrong, or just to make sure you know what you got wrong and put you in". The pass mark of 100% suggests that the bar is very high for the examinations; however, training institutions provide effective feedback to apprentice on areas that require improvement. The apprentice practical skills were assessed on the work they did onsite, TR02 pointed out that:

"The NVQ element of an apprenticeship is students gathering evidence of the work they're doing on site based on traditionally what an awarding body expects them to do on site. An apprentice is expected to keep records in the form of photographic evidence which will prove to an assessor of certain task being completed; this is completed alongside site visits from an assessor in person".

This is consistent with the finding of O'Connor (2006) who pointed out that apprentices are assessed by using specifications and checklists. In England, the framework system of assessment appraises the competence of apprentice by using theoretical exams as well as providing evidence of their practical work (HM Government 2019b). However, the issue with the assessment through photos is that it is difficult to know if

the apprentice was the one who carried out the work in the evidence.

Apprentice taken through the supply chain as part of bid requirement

As part of the NVQ apprentices are required to gain practical knowledge of their chosen trade, this is achieved by apprentices working for employers within the supply chain. Main contractors are required to have apprentices on their site, this is part of the planning requirements, EM02 states that

"Through planning obligations, we engage with the developer and then usually very quickly the main contractor (...) which will include new apprenticeships and it will also include existing apprentices that have been brought on to site by companies and apprenticeship completions".

Previously, the recruitment of apprentices was employer-based and driven by demand, relying on employers voluntarily taking on apprentices and the training was more company specific rather than being broad (Arkani et al,. 2003). Clarke and Herman (2007) also pointed out that employers do not take action to resolve skill shortages. The current bid requirements ensure that there is a continuous demand for apprentice. This approach provides a platform for apprentices to develop their practical skills within the supply chain.

3.2 Strategies to Improve Current Craftspeople Apprentice Training Programme

Engaging with teaching and use of real-world scenarios

The classroom elements of the crafts training is delivered by engaging with the apprentices and using real world scenarios, APO3 stated "The teacher made it interesting, they had a unique way of teaching that they didn't just make us copy off the board, it was more involved and engaging". And further points out that "Because there was a lot of equations and things like that to learn and because the teacher explained it in more practical real-world scenarios it made sense".

This suggests that trainers get more successful outcomes from apprentices by delivering the training with an approach that makes the theory interesting and relevant; this motivates and enables the apprentices to relate the theory to practice. Woods (2012)

pointed out that by through delivering meaningful training, apprentices can link the theoretical classroom element to the work element which increases their motivation to learn Errington (2011) also pointed out that near world scenario-based learning increases student motivation and is an excellent method that assists their learning by making the curriculum more stimulating.

Interaction with peers of similar age group

Better learning in the classroom element of apprenticeships seemed to be boosted by apprentices being of similar ages; AP01 stated

"It was just like the same age so you could all bounce off of each other for ideas when we were doing our work and stuff like that. It was quite helpful because of as I say everyone was about the same age and got similar knowledge"

This would suggest that apprentices benefit from learning alongside others of a similar age and ability. Brooks (2005) pointed out that government ministers suggested that an improvements in 16 to 18 year olds achievements could be gained by age segregated classes because the needs of younger and older learners are different. However, Brooks (2005) found that although age mixing is displeasing to 16 to 19 year olds, mixed age learning resulted in a positive effect on the process of learning as well as having positive outcomes in non-education matters.

Communication between trainers and employers

The trainers and employers play key roles in enabling the successful outcome of apprentice schemes and therefore communication between the parties is critical, for instance TR02 stated:

"It's really important that the apprentices know that we talk to employers, because it's in everyone's best interests, whether it be the training provider, the student or the employer that young person gets qualified".

Good communication between the trainers and employers is vital to the success of the training programme it lets the apprentice know that attendance is monitored by both parties. It can reveal any issues in a timely manner so that resolutions can be swiftly implemented and it enables tracking of the competence developed by the apprentice during training.

Poor communication from trainers to employers has been reported as a significant barrier to employer involvement in apprenticeships. (Johnson et al., (2015). Furthermore,

Gambin, Hasluck and Hogarth (2011) found that poor communication between the trainers and employers meant that employers are not aware of apprentice poor performance in academic or practical component of crafts training.

However, the Department for Business Innovation and Skills (2014) also pointed out that where communication between the employer and trainer was good, this resulted in valuable feedback on apprentice's performance and training needs. Moreover, Callan, Johnston and Poulston (2015) found that the implementation of e-portfolios for assembling the apprentice's evidence improved communication between the apprentice, trainers and employers and resulted in increased engagement from the apprentices.

Use of competency-based test

The apprentices are required to prove they are competent to a certain level to gain their NVQ, they are formatively assessed throughout their apprenticeship by their training institution in preparation for their final summative assessment. For instance, TR02 explained that:

"Now there's something called standards, and the standards are all about end point assessments, so there's an end point exam, one exam, theory exam, and there's an end point synoptic test, so you get six hours to do something so where you're given a drawing on the day and the students need to complete that. So it's moving away from more coursework".

The way apprentices are assessed in England aim to change from framework to standards by 2020 whereby apprentices will be required to undergo an end point examination in which an independent government approved organisation will assess the competency of the apprentice (HM Government 2019b). Conversely, Gordon, Edmonds and Wilson (2009) highlights that in Scotland the system has been changing from final examinations to continuous competency-based assessments as it is a more reliable method of measuring an apprentice's skill level rather than relying on a snap shot on the day of the examination.

Matching Candidate with the Appropriate Trade

RA01 described how their organisation works hard to accurately match candidates with appropriate trades and courses:

"That's where we actually start doing more in-depth recruitment, making sure we get the right person in the right job on the right course. So that's our philosophy at the moment, to look at recruitment"

Gambin, Hasluck and Hogarth (2011) found a mismatch between apprentice abilities and trade is one of the factors responsible for non-completion.

Hogarth *et al.*, (2010) also recommends that the apprentices must be well informed about what to expect from the training provider and employer as well as themselves having the intellectual capability, motivation and aptitude to complete their apprenticeship and succeed in their trade.

Variety of task

A factor that keeps apprentices motivated and therefore maintains a certain performance level at work is influenced by the apprentice not having to carrying out repetitive and mundane tasks, for instance APO3 stated that "I enjoyed the variety of the jobs as well; they weren't all the same thing every day". Variety of task in the workplace has been found to improve productivity as well as increases that chance of an employee staying with a company (Staats and Gino 2012).

However, providing an apprentice with variety of taskscan be challenging at early stages of training due to the competence of apprentice to execute a variety tasks.

Moreover, the availability of a variety of task is also largely dependent on the nature of each individual project; the construction industry is about temporary production therefore can provide variety in tasks. However, some tasks are still very repetitive and will serve to be de-motivators.

4.0 Conclusion

This research project aims to identify the current knowledge and practice surrounding the delivery of craftspeople apprentice training programme and suggest ways of improving the outcomes of craftspeople apprenticeship training programs in the UK construction industry. The study found that apprenticeship training programme is a burning issue within the UK construction industry. This is primarily due to the current reality of skill shortage, the looming Brexit and their likely impact on the sector. The study found that the apprentice programme within the construction sector is broad, which ranges from level 2 to level 7.

The study found that in the UK apprenticeship schemes are commonly delivered through block release or day release. However the study revealed that both methods have their pro's and con's and is normally driven by factors relating to the employer's business needs, and the classroom element focuses the majority of the time on practical training

rather than the theoretical teachings. Furthermore the ways apprenticeship schemes are assessed are in the midst of a change of format. While some participants have been through the framework set up whereby their work on site is assessed by collecting evidence of their work as well as taking exams on theoretical element, others are facing the new 'standard whereby they will face a single endpoint competency exam which is prepared for by taking numerous formative exams.

The investigation found that apprentices are recruited through policy as part of the bid process as employers generally cannot be relied upon to resolve skills shortages and this stimulates demand for new apprentices. The employability skills training and apprenticeship schemes contribute to equip would be employees with the skills that they will need to find a career and meet the demands imposed by the construction industry in the future.

The study reveals that the strategies for improving apprenticeship programmes fall into two categories: "recruitment improvements and early engagement", and "improvements in the learning experience during the apprenticeship". There is a need to provide information about what the craft entails and its routines to the would be apprentice. For example ground worker will have to work when it is raining this has to be made known to the apprentice early. Also impartial and independent careers advice should be administered so that parents and pupils are aware of all the available option to them through clear and open communication. This would ensure apprentices are properly matched with appropriate trade.

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Appendix A: Cover Page of a Research Output



Apprenticeship for Craftspeople in the Construction Industry: A state-of-the-art Review

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Education + Training

Apprenticeship for Craftspeople in the Construction Industry: A state-of-the-art Review ABSTRACT

Purpose

Ageing workforce is one of the factors responsible for low labour productivity observed in the construction sector. Apprenticeship programs are designed to provide young trainees with essential broad-based skills for replacing ageing workforce. However, the completion rates of apprenticeship training programs in the construction sector remains low in several countries across the globe. The purpose of the study is to review the published research on apprenticeship training specifically focused on the construction sector so as to determine the current status quo and suggest future research direction.

Design/methodology/approach

A systematic review approach was adopted. Based on a comprehensive search using SCOPUS databases, 33 relevant journal articles were identified and analysed.

Findings

It was found that monitoring and control is the most mentioned factor responsible for improvements in the completion rates of apprenticeship training. In contrast, the time required for conducting training is the most common factor responsible for low completion rates. Three research gaps were identified among which, is the dearth of studies that focused on apprenticeship training in developing countries.