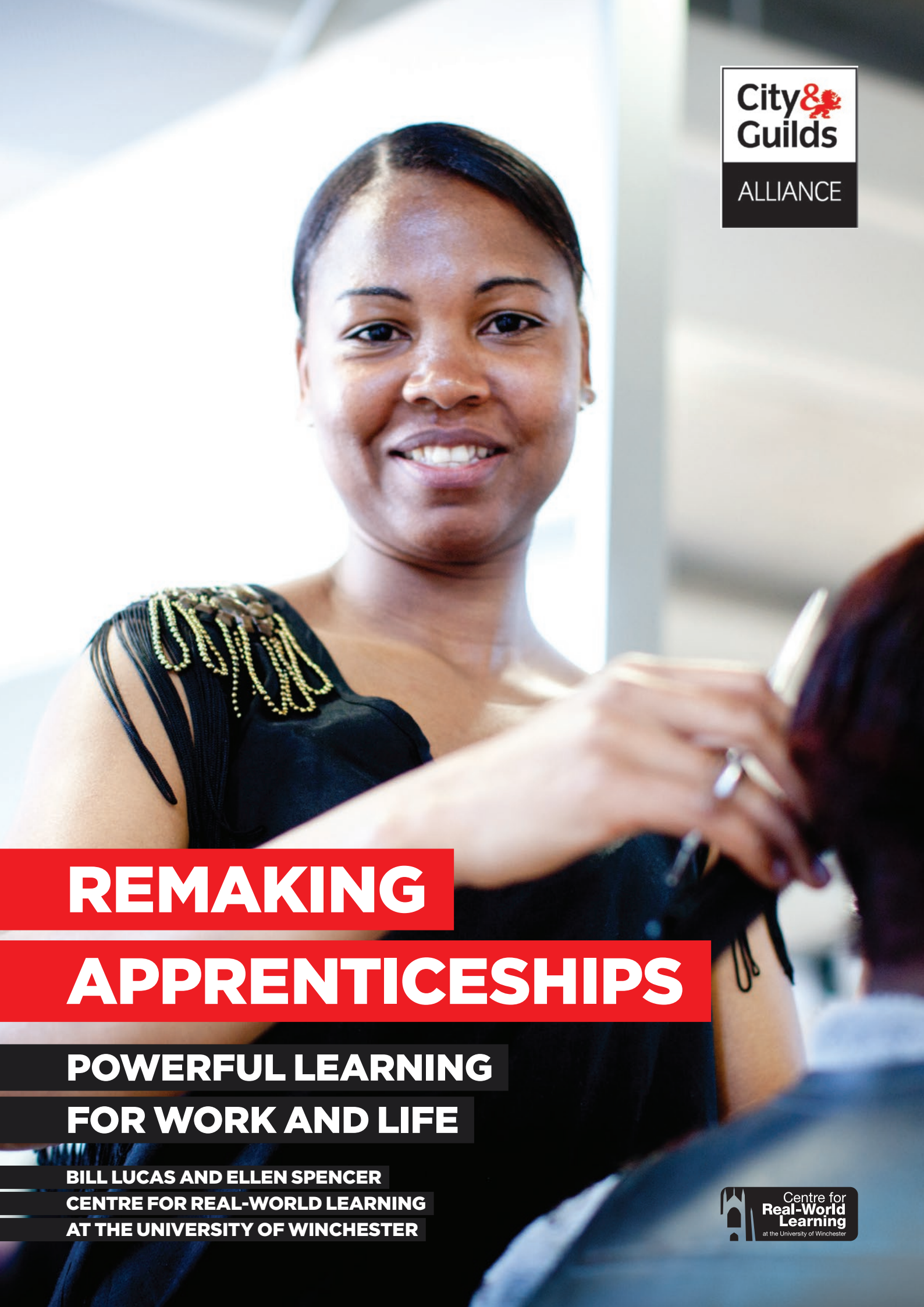

City & Guilds ALLIANCE

REMAKING APPRENTICESHIPS

POWERFUL LEARNING FOR WORK AND LIFE

BILL LUCAS AND ELLEN SPENCER
CENTRE FOR REAL-WORLD LEARNING
AT THE UNIVERSITY OF WINCHESTER

Centre for Real-World Learning at the University of Winchester

THE CITY & GUILDS ALLIANCE FOR VOCATIONAL EDUCATION

To underpin City & Guilds' thinking around training and skills issues, we have partnered with the Centre for Real-World Learning at the University of Winchester, the 157 Group of Colleges and the Association of Employment and Learning Providers (AELP) to work collaboratively to create a platform that will help the further education and skills sector to deliver world-class teaching and learning.

The alliance aims to establish an evidence base that builds up thinking about what needs to change in the sector which can then be turned from theory to reality both in the UK and internationally.

All partners in the alliance have committed to providing thought leadership in the sector, promoting best practices in teaching and learning, and designing, testing and delivering practical tools to support the learning and skills sector.

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CENTRE FOR REAL-WORLD LEARNING

Bill Lucas and Ellen Spencer, Centre for Real-World Learning at the University of Winchester

Bill Lucas and Ellen Spencer are thought leaders in the areas of vocational and expansive education whose work is widely cited and used across the world.

Established in 2008 by Professor Bill Lucas and Professor Guy Claxton, the Centre for Real-World Learning (CRL) is an applied research group with a focus on two main areas:

- the science of learnable intelligence, the implementation of expansive approaches to learning and the coordination of the Expansive Education Network of educators;
- the field of embodied cognition and implications for practical learning and vocational education.

Recent CRL publications include:

Thinking like an Engineer: implications for the education system (2014). London: Royal Academy of Engineering

Expansive Education: teaching learners for the real world (2013). Melbourne: Australian Council for Educational Research

Teaching vocational education: a theory of vocational pedagogy (2012). London: City & Guilds

www.winchester.ac.uk/realworldlearning

www.expansiveeducation.net

ISBN: 9780851933375. This report and a summary version of it can be downloaded at:
www.cityandguilds.com/remakingapprenticeships

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GLOSSARY OF ABBREVIATIONS AND TERMS

AELP	Association of Employment and Learning Providers
AGE	Apprenticeship Grant for Employers
AoC	Association of Colleges
AAN	Apprentice Ambassador Network
Apprenticeship starts	Number of individuals embarking on apprenticeships within a given year
ATA	Apprenticeship Training Agency
BIS	Department for Business, Innovation and Skills
CAVTL	Commission on Adult and Vocational Learning
Cedefop	European Centre for the Development of Vocational Training
CIPD	Chartered Institute of Personnel and Development
CBI	Confederation of British Industry
CDM	Competence Development Meter
CRL	Centre for Real-World Learning, University of Winchester
CUREE	Centre for the use of Research & Evidence in Education
DCSF	Department for Children, Schools and Families (abolished)
DfE	Department for Education
Edge	Independent foundation for practical, technical and vocational education
FE	Further Education
FISSS	Federation for Industry Sector Skills and Standards
FSB	Federation of Small Businesses
GLH	Guided Learning Hours
GTA	Group Training Association
HE	Higher Education
IfL	Institute for Learning
ILO	International Labour Organization
ILP	Individual Learning Plan
IoD	Institute of Directors
INAP	International Network on Innovative Apprenticeship
INNSO	International Skills Standards Organisation
ISSI	International Specialised Skills Institute
ITB	Industry Training Board
LSN	Learning and Skills Network
MOOC	Massive Open Online Course
NAS	National Apprenticeship Service
NEETs	Young People Not in Education, Employment or Training

NIACE	National Institute for Adult and Continuing Education
NUS	National Union of Students
NVQ	National Vocational Qualification
OECD	The Organisation for Economic Co-operation and Development
Ofsted	Office for Standards in Education, Children's Services and Skills
157 Group	One Five Seven – a membership organisation for Further Education colleges in England
QCA	Qualifications and Curriculum Authority
QCDA	Qualifications and Curriculum Development Agency (abolished)
SASE	Specification for Apprenticeship Standards for England
SPOC	Small Private Online Courses
SSC	Sector Skills Council
Trailblazers	Groups of employers working together to design new English apprenticeship standards for occupations in their sectors, and developing examples of the new system working in practice
TUC	Trades Union Congress
UKCES	UK Commission for Employment and Skills
UNEVOC	UNESCO's International Centre for Technical and Vocational Education
UVAC	University Vocational Awards Council
VET	Vocational Education and Training
VLE	Virtual Learning Environment

Foreword

The future of the UK economy is dependent upon our ability to meet the skills requirements of our industries, so it's deeply concerning that in recent years we have seen industry leaders up and down the country standing up to say that they desperately need more skilled people, and quickly. Indeed with the anticipated levels of skills shortage, full employment feels far away. However, we mustn't give up on fulfilling both employer and young people's aspirations but rather find new and better ways to solve the challenges we collectively face. That's why I am delighted that through the City & Guilds Alliance, with 157 Group, AELP and the Centre for Real-World Learning, we are publishing this report.

There is widespread agreement amongst government, industry and the education sector that apprenticeships should form a key part of the solution to addressing issues of skills shortages and unemployment whilst delivering on career aspirations. Although it's encouraging that there is a common recognition that there must be a strong focus on this area, and that recent government reforms are providing a platform for joined-up discussion, there still isn't complete alignment about how this should be achieved and implemented.

At City & Guilds, and amongst the Alliance, we believe that now is a time of true opportunity for apprenticeships. Everyone is listening and we have a chance to work together to create a world-class system. The rewards, if we get it right, are huge; high youth employment, a highly skilled workforce, productive industries and a high-yield economy.

To ensure that we have the best chance of capitalising on this opportunity, the City & Guilds Alliance commissioned acclaimed researchers Bill Lucas and Ellen Spencer to write this report. The result, *Remaking Apprenticeships*, is a significant review of the pedagogy of this area and considers the history of apprenticeships to the current day, making recommendations on how they should be delivered in the future and, most crucially, by whom.

Additionally, the report looks at the issues that have stopped apprenticeships from reaching their potential in the UK in recent decades, including the interference of successive governments, which have led this once well-respected training route to gain a poor reputation. It notes that apprenticeships now need to be clearly defined and rebranded so they once again become synonymous with the very highest quality.

Remaking Apprenticeships makes a compelling case for putting learning back into apprenticeships and concludes that everyone involved needs to work together towards one common goal with clearly defined roles and with employers leading the way.

At City & Guilds we firmly believe that now is the time to remake apprenticeships and that if we take the right approach we can ensure the UK's apprenticeship system will compete with the very best on the world stage. Our hope is that this report helps to galvanise the key players to drive the positive change that is needed and actively shape the potentially great future of apprenticeships.

Kirstie Donnelly, MBE – UK Managing Director, City & Guilds

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EXECUTIVE SUMMARY

This report – *Remaking Apprenticeships* – commissioned by City & Guilds, reviews the research into the pedagogy of apprenticeships. It makes an argument for putting learning back at the heart of apprenticeships in England and elsewhere.

Across the world apprenticeships are seen as an important and powerful way of developing individuals. Whether as a transition from school to work, as an alternative route to college or university, or as a pathway of choice later in life, apprenticeships are increasingly valued.

In England the number of apprentices has been growing rapidly overall, despite recent slight falls, and this has led to concerns about the quality of apprenticeships. The *Richard Review* (Richard, 2012) addressed many structural issues and gave employers a much greater role in specifying standards and organising training. But Richard did not address the most significant determinant of quality in apprenticeships of all – the quality of the learning received by apprentices.

Apprenticeships, like vocational education more generally, can either be positioned as a second class alternative to academic pathways, with a set of largely instrumental concerns about structures and systems dominating discussions, or they can be offered as an ambitious, expansive and powerful alternative to academic routes, suitable for a wide range of learners and with a well-articulated pedagogy of its own.

We argue that it is the second of these two routes which will enable England's system to be truly world class and that the focus now and over the coming years should be on really understanding how apprenticeship learning can lead to the kinds of accomplishments we all want to see in apprentices.

To enable this to occur we need to state unambiguously the broad range of desirable learning outcomes of apprenticeships. We suggest that there are six:

1. Routine expertise in an occupation.
2. Resourcefulness – the capacity to think and act in situations not previously encountered.
3. Craftsmanship – pride in a job well done and an ethic of excellence.
4. Functional literacies – literacy, numeracy, digital and graphical.
5. Business-like attitudes – customer- and client-focused, entrepreneurial and aware of value for money, whether in for profit, public sector or third sector roles.
6. Wider skills for growth – the dispositions and wider skills for a lifetime of learning and change.

All too often the focus defaults to the first and the fourth of these outcomes and the case for the effectiveness of apprenticeships is consequently diminished.

Remaking Apprenticeships traces the history of apprenticeships in order to make sure that knowledge of the past informs thinking today. It describes the elements of a pedagogy of apprenticeships. It explains why how an apprentice learns and who they learn with – the culture within which their vocational formation occurs – is at least as important as what they learn.

It identifies three core dimensions of apprenticeship learning:

1. That it has both on- and off-the-job learning;
2. The essentially social nature of apprenticeship learning as part of a specific vocational group;
3. The importance of learning processes being made very visible given that apprenticeships are a partnership between employers, colleges, higher education institutions, professional bodies and others and given that we know this will help to improve the quality of learning.

Remaking Apprenticeships identifies tried and tested learning methods such as those which involve:

- learning from experts;
- deliberate practising;
- hands-on learning;
- feedback which promotes learning;
- real-world problem-solving;
- one-to-one coaching and mentoring;
- competing against the clock;
- seamless blending of online and face-to-face learning.

We argue for nothing short of a remaking of apprenticeships to ensure that learning is at its heart.

NEXT STEPS

Remaking Apprenticeships makes a number of practical suggestions, including:

- ✓ a determined effort to put learning at the heart of apprenticeships, using the Trailblazer projects in England as a means of road-testing apprenticeship pedagogy in practice;
- ✓ a wider debate about the pedagogy of apprenticeships;
- ✓ the provision of and co-development of guidance for employers, colleges, training providers and others about the teaching and learning methods which are most suited to different apprenticeship standards;
- ✓ exploration of a more ambitious use of apprentices' Individual Learning Plans (ILPs);
- ✓ the creation of more international fora to facilitate learning from other countries and accelerate new thinking about how to remake apprentices for the next few decades of the 21st Century.

1. INTRODUCTION

'We want this to be a radical reform programme that will make Apprenticeships in England the best in the world.'

UK Department for Business, Innovation and Skills (BIS, 2013a)

Apprenticeships in England have a long and rich history stretching back to the Middle Ages. The term 'apprenticeship' has two related meanings. It is a paid route to a trade, craft or profession; a blend of on-the-job training in the workplace and learning in the 'classroom'. As such an 'apprentice' has a distinct meaning as does 'apprenticeship' with expectations as to skills learned, roles played and time taken.

But it can also be used in a more general sense referring to the tried-and-tested way of learning whereby a novice learns anything from someone who is more skilled than them. In this second sense it is virtually a synonym for 'learning'. One might, for example, refer to a 'political apprenticeship' meaning the period spent by a politician 'learning the ropes' on-the-job rather than using any formal process.

Over the years the popularity of apprenticeships (in its first meaning) has varied while our understanding of learning methods (the second meaning) continues to grow.

Currently interest in and support of the apprenticeship pathway is high from most political parties and across the world. The number of apprenticeships in England has been broadly increasing. In 2002/03 there were 167,000 apprentice starts and 42,000 were achieved. By 2013/14 this had risen to 510,000 starts and 255,800 completions (FE Data Library Apprenticeships, 2014). Of the 510,000 apprenticeship starts in England in 2012/13 a small majority (55%) were female (Mizra-Davies, 2014).

While in 2012/13 there was a slight fall of 10,000 starts from the previous year (2011/12), it was still 231,000 more than in 2009/10. Recent data suggests that there was a similar relatively small fall in apprenticeship starts in 2013/14, which may in part be due to changes in funding amongst certain age groups. Notwithstanding the general fluctuation in numbers, apprenticeship routes are still generally less valued than more academic ones in England, especially by many schools. The need to value apprenticeships was strongly argued in a recent speech on vocational education by Sir Michael Wilshaw, Chief Inspector of Ofsted:

> *Apprenticeships must have parity of esteem with A levels. They must be sold aggressively to schools, parents and young people.* (Wilshaw, 2014)

The *Richard Review* (2012) in England, commissioned by the Department for Business, Innovation & Skills (BIS), makes comprehensive proposals about how apprenticeships can be improved, encompassing:

> *...the redefining of an apprenticeship, the role of the employer in setting the standard, the simplification of the system to one standard or qualification per occupation, the freeing up of the curricula and of teaching methods, the robust testing of the accomplishment, the funding of apprenticeship training and the generation of demand and supply.*

Work led by BIS (2013a) is currently underway to implement the Richard recommendations. This includes:

- redefining apprenticeships through closer employer engagement;
- ensuring that assessment is outcome-based using industry-based standards and is independent;
- enhanced English and maths skills, with most apprentices being required to have a Level 2 qualification in both of them;
- a diverse and high-quality range of training providers;
- employers with the lead role in purchasing training;
- a planned awareness raising campaign among employers, schools, teachers, parents and learners.

To test out these ideas and act as prototypes, 'trailblazers' – groups of employers focusing on a specific occupation – have been invited to develop new employer-led standards. The intention is that, by 2017/18 all new apprenticeship starts will be using the new standards.

But nearly all of this pioneering work focuses on the process of developing content and documentation, on structures, on simplifying assessment and on the increasingly important role of employers. There is little or no thinking about the central issue of pedagogy – the teaching and learning methods at the core of the apprentice offer. Learners, like employers, are also 'customers' of apprenticeships.

Parallel developmental thinking about apprenticeship is taking place in Wales, Northern Ireland and Scotland (where they are called modern apprenticeships), but this is beyond the scope of our research in *Remaking Apprenticeships*.

The Labour Party's *Husbands Review* (2013a) explored options for policy and practice, especially with regard to a Technical Baccalaureate. The report is ambitious in scope, but, like Richard, it has virtually nothing to say on pedagogy or the quality of teaching and learning.

If we want apprentices who emerge with high-level, sector-relevant skills along with the best possible habits of mind for work and for life, then we will want to focus very carefully on the quality of their learning experiences. If learning engages them, then they will be more likely to complete their apprenticeship and urge others to follow a similar route. If it does not, then any increase in numbers will be met by a decrease in quality.

In this report we are going to try and put the learning back into apprenticeships from which, we believe, it is increasingly and worryingly absent.

We are, of course, building on earlier work by many other researchers.

In 2013 the Commission on Adult and Vocational Learning (CAVTL) raised expectations with regard to really understanding pedagogy in vocational education. It suggested some core principles, arguing that:

> *We need to strengthen and make more visible the distinctive pedagogies of vocational teaching and learning.* (McLoughlin, 2013)

Our own report, *How to Teach Vocational Education: A theory of vocational pedagogy* (Lucas et al., 2012), made an argument that, in order to improve the quality of teaching and learning, it is important to have a better and more nuanced understanding of pedagogy and of the choices which teachers take with the students they teach. We argued, fundamentally, that without a broad idea of what vocational education entailed and a clear set of desired outcomes, it was difficult to indicate what pedagogical approaches might or might not work. We suggested six desirable outcomes for vocational education which we believe apply equally to apprenticeships. Our line of thinking was commended by the CAVTL (McLoughlin, 2013) and by Parliament during a debate in the Grand Council of the House of Lords on 28 February 2013[1].

There is also much to consider in terms of assessment. Elsewhere in education attention is turning to the powerful learning gains to be achieved when certain kinds of feedback are used as part of the teaching process. These are broadly encompassed by the term 'assessment for learning' (DCSF, 2008) and are formative in nature.

Advances in technology mean that there are exciting developments for assessment and learning within apprenticeships. We are particularly interested in the potential for the use of motivational approaches to the development of competence being pioneered by those developing open badges (MozillaWiki, 2014). Just as with our earlier work on vocational pedagogy, we have the opportunity here to open up a rich seam of new thinking, sector leadership and professional/curriculum development.

1: http://www.parliamentlive.tv/Main/Player.aspx?meetingId=12655

For, apart from ground-breaking work by Yrjö Engeström (2001) regarding the notion of 'expansive apprenticeships', picked up and developed by Alison Fuller and Lorna Unwin (2008), there is a paucity of good research on apprenticeship learning and teaching in England currently.

Debates around apprenticeships can easily focus exclusively on the 'institution' of apprenticeships itself (as with Richard), or on the social learning model of which apprenticeships are such a good example, expertly developed by David Guile (Guile, 2011).

The major concerns for us are simple to articulate if not to deal with.

As numbers of apprentices are increased how do we:

- ensure that the concept of apprenticeship is powerful and rich enough to hold its own in a crowded field of post-16 education that includes colleges, training providers and universities? Specifically how do we ensure it is has both adequate breadth and reliable depth?;
- take what we know about vocational pedagogy and apply it reliably across sectors to ensure that apprenticeship learning is of the highest possible quality and that apprentices are developed to their full potential?

In this report we will try to:

- apply what we have learned from the way that the concept of apprenticeship has evolved over time and across the world to today's apprenticeships;
- make a clear case for a definition of apprenticeships which is broad and which is explicit about essential desired learning outcomes, and describe how these might best be delivered;
- draw on research into learning and teaching methods most suited to the development of apprentices and suggest ways in which these can be applied.

Using the evidence we have gathered we will then look at how better understanding of pedagogy can help us to respond to some of the issues we face today in England, and with other national systems in mind, too. Always we will seek to find ways of offering the highest quality of learning for apprentices, maintaining and developing a high reputation for the apprenticeship route to employment or employability, and supporting better progression within the education system.

As the Department for Business, Innovation and Skills (2014; p8) puts it:

> *Learners must demand high quality pedagogy which will necessitate that stronger links are built between employers, teachers and teaching.*

And putting learning at the centre of apprenticeships is precisely what this report seeks to achieve.

2. A TIMELESS WAY OF LEARNING

'The apprenticeship of difficulty is one which the greatest of men have had to serve.'

Samuel Smiles (Scottish author and reformer)

In this chapter we explore the concept of apprenticeship. We look at the history of apprenticeships, how they have been defined by others and why, as we remake apprenticeships, it is important to keep a broad and ambitious view of what apprenticeships can be.

While apprenticeships are a 'timeless' concept – relevant across the ages – they are also 'timely' in this day and age as we seek to improve our skills base and provide meaningful alternatives for young people who do not choose to go to university or college. But what makes apprenticeships uniquely important at this time in history is their combination of social, economic and moral benefits.

Socially and motivationally, learners benefit from the immediate extrinsic motivation of regular financial remuneration (Lodovici et al., 2013). According to *Apprenticeship Evaluation: Learners* (BIS 2013c), apprentices report a range of social benefits from their experiences. BIS (2013c) also reports that longer-term impacts include a boost to work-related responsibilities, and a notable increase in average take-home salary for many former apprentices. Alison Fuller and Lorna Unwin (2009) observe also that the perceived success and reputation of an employer can also influence:

> *...the extent to which the local community sees those apprentices as an important element of the community's infrastructure and social relations.* (p412)

Economically, unlike any other generalisable form of vocational learning, apprenticeships upskill individuals for instant productivity in the workplace, to the benefit of the organisation and the economy at large. The National Audit Office (2012) has estimated that apprenticeships produce an economic return of £18 for every £1 of public spending. Qualified apprentices will, according to widely cited research (Association of Accounting Technicians, 2013), earn £150,000 more than their peers who failed to take the workplace learning route. Debbie Andalo argues (no date) that:

> *People who come up through the apprentice route are more likely to stay in work throughout their life, contribute taxes to boost the economy, be active in their community and live longer.*

There are, arguably, other benefits, for it is morally important that a society provides opportunities for both education and work to all young people. From a national perspective apprenticeships are a key aspect of this provision. But this also resonates at the individual level, too. Apprentices learn not only how to become work-ready but, especially for those who are in the 16-19 age range, how to become decent members of society able to play their full role as a citizen.

Historically, in medieval and Tudor Britain, an apprentice would have lived as part of his master's family, with an explicit sense that he – they were all boys then – was developing his character and morality. Indeed, the expectations put upon apprentices, moral, social and economic, were integral parts of a system that saw apprentices being taught much that was beyond the scope of trade-related skills. Training included such important subjects as literacy, doctrine, book-keeping, and housekeeping (Dolphin and Lanning, 2011).

Today in Further Education (FE) the apprenticeship pathway offers learners the chance to take their training into the workplace immediately. What is more, much of their learning and productivity occurs simultaneously through on-the-job learning. In England the majority of apprentices are supported by training providers with colleges supporting the remainder, although in many cases a training provider may be a sub-contractor to a college or vice versa and in some cases apprenticeships are delivered directly by employers.

And we also have apprentices operating at the same level as conventional university undergraduates taking degrees. Arguably in Higher Education (HE), apprenticeships are more theory driven, although they can and should be practically grounded:

> *...the driver is the qualification which is largely based on the acquisition of knowledge and often less directly relevant to a particular vocation. This model does not discount the need for practical experience; however it generally functions on a theory-first basis.* (*Apprenticeships for the 21st Century Expert Panel,* 2011; p28)

Even the 'sandwich' element of a degree course cannot compare because there is no long-term contract with the degree student beyond their sandwich year.

Before suggesting our own contemporary definition of apprenticeships we will look back at how the concept has developed over the centuries.

2.1 AN EVOLVING CONCEPT

> *Like today, apprenticeship in the pre-modern world was about what economists call human capital, that is the set of skills and abilities that an individual possesses. Skills which they have invested time and effort to gain, and which they can hope for a return from – like a business expects to obtain a return from its investments in machinery, buildings or stock. But where pre-modern apprenticeship differs from today, and why it is so elegant, is that it allowed skills to survive and grow in a world where the government did not 'do' education, loans for training were unimaginable, and large firms with an interest in training their own workers did not exist.* (Wallis and Minns, 2012)

Although it is likely that apprenticeships were common before they were documented formally, the first time 'apprenticeships' were mentioned appears to be about 1230. According to *British History Online* (no date), apprenticeships were governed initially by private contract but regulation began in about 1260. The UK Parliament's own website (Parliament, 2012) identifies the 1563 *Elizabethan Statute of Artificers* as being one of the first documents to set out terms and conditions for training.

Apprenticeships began in the traditional trades of construction, paper-making and printing, but, by the late 1800s had spread beyond these to emerging sectors of engineering and shipbuilding. As sectors have emerged within the economy, so apprenticeships have expanded to reflect them (*Parliament*, 2012). The table below highlights some key developments in the history of apprenticeships (*British History Online*, no date; Gillard, 2011; *The National Archives*, no date; *Parliament*, 2012; Wallis and Minns, 2012).

TIME PERIOD	SOME KEY MILESTONES IN THE HISTORY OF APPRENTICESHIPS
1200s	Apprenticeship is first mentioned in certain statutes of the City (c1230)
1300s	Apprentices (or the term of apprenticeship at least) are viewed in the same way as chattels
1400s	Regulations as to the physical fitness of apprentices first appear
1500s	*Elizabethan Statute of Artificers* lays out terms and conditions for training (1563) Traders could only practise a trade or craft after serving a seven-year apprenticeship
1600s	Apprentices were typically 18 years old around 1600 (and by 1800 they were nearer 15)
1700s	Official records of apprentices were kept in England and Wales between 1710 and 1811, when stamp duty was payable on indenturing of apprenticeships The industrial revolution began to create demand for mass education (1775)
1800s	Apprenticeships expand beyond traditional trades to engineering and shipbuilding *Statute of Artificers* was repealed in 1814 so that technical training could meet the needs of new economies beyond the scope of the Guild Great Exhibition revealed a lack of facilities for technical education in England (1851) National system for technical education created by the City of London and 16 Livery Companies (1878) Technical Instruction Act (1889) aimed to improve provision of technical and industrial training Technical and Industrial Institutions Act (1892) laid out new rules to facilitate the expansion of technical and industrial training
1900s	The City of London and Livery Companies received their Royal Charter as the City and Guilds of London Institute (1900) Carr Report: employers overwhelmingly opposed to vocational instruction provided by schools (1958) Crowther Report 15-18: recommends raising the school leaving age to 16 and the provision of further education for 15-18 year olds, questions the value of day release provision for apprenticeships (1959) Industrial Training Act (1964 and revised in 1982): central government becomes directly involved in employers' training practices by creating industrial training boards Employment and Training Act (1982): removes trades unions from decisions about the cost of training to employers Industrial Training Act (1982): sets up a regulatory framework for industrial training boards enabling government to open and close them National Council for Vocational Qualifications (NCVQ) established (1986) Modern Apprenticeship scheme addresses skills shortages in the UK: pilot scheme announced (1994) Modern Apprenticeships introduced (1995) NCVQ abolished and replaced with Qualifications and Curriculum Authority (QCA) (1997) National Traineeships introduced (1997) Modern Apprenticeships expanded to 82,000 places (1999)

2000s	Learning and Skills Act establishes Learning and Skills Council for England (2000) Foundation Degrees introduced (2001) Sector Skills Councils created (2002) 14-19 Diplomas introduced (2008) and scrapped (2013) National Apprenticeship Service created (2008) Apprenticeships, Skills, Children and Learning Act (2009): created statutory framework for apprenticeships *Wolf Report* (2011): Review of Vocational Education Higher Apprenticeship Fund launched (2011) Reforms of apprenticeship set a minimum number of learning hours and seek to simplify their design, giving more responsibility to employers (2012) Revision to SASE to recognise apprenticeships at Level 6 and 7

TABLE 1 KEY DATES IN THE EVOLUTION OF APPRENTICESHIPS IN ENGLAND

2.1.1. MIDDLE AGES

Originally, in the Middle Ages, an apprentice was a 'learner of a craft'. But an 'apprenticeship' was more than a mere descriptive term. It implied certain rights, obligations and standards as to what constituted learning, and what performing that craft well meant. An apprentice had the right to be instructed by his employer, the obligation to obey his employer, and the need to pursue those standards which had been institutionalised by the Guild of that particular craft. These reciprocal relationships and obligations created something much more significant than mere technical training. They were imbued by a set of values to do with the quality of the apprentice's work and with loyalty to the Guild which protected those values. Usually the apprentice would live with the Master who was responsible for his moral development as well as his technical competence.

Craft by craft 'apprenticeship frameworks' – to use the modern term – were broadly similar. First there was a long training of some seven years supervised by the Master. Then there was the requirement that certain standards would be attained, assessed by the apprentice's best piece of work to date, the *chef d'oeuvre* or masterpiece. After this the apprentice would become a Journeyman, and, finally, when he had successfully produced his *chef d'oeuvre élève* to the satisfaction of the Guild, he would become a Master, entitled to employ and teach his own apprentices. No doubt, as the apprentice grew in competence and faced increasing technical problems (as in the case of the stonemason undertaking ambitious building work) he would attend evening classes (in mathematics, say) at the local craft Guild.

Apprenticeships in the Middle Ages were a social and business arrangement consisting of the development of a tradition of competencies systematically and practically acquired, the contract with and the teaching by a Master of the craft, and the final 'certification' by the formal group of employers who were satisfied that one was competent to proceed independently. But quite clearly it reflected a particular economic and social context, namely, the prominence of key trades and crafts (stonemasonry, carpentry, gold-smithing, hand-loom weaving) and the social status of Guild membership. To have won and completed an apprenticeship was a mark of considerable honour.

But that mark of honour was won because of the kind of knowledge, understanding and values which it represented, so well described by Sennett in *The Craftsman* (2009):

> *...the past life of craft and craftsmen also suggests ways of using tools, organising bodily movements, thinking about materials that remain alternative, viable proposals about how to conduct life with skill.* (p11)

Furthermore,

> *The carpenter, lab technician, and [musical] conductor are all craftsmen because they are dedicated to good work for its own sake. Theirs is practical activity but their labour is not simply a means to another end.* (ibid. p20)

Inevitably, as new industries developed and social structures changed, the practical relevance and institutional significance of apprenticeships declined. New trades and skills (for example, in engineering) fell outside the apprenticeship system as the Industrial Revolution developed.

2.1.2. 19TH CENTURY

The 19th Century saw the need for technical training to meet the requirements of the new economies and the scientific and technological developments in industry: a technical training which was not provided for within the Guilds, and could not have been within the traditional Guild framework. The *Statute of Apprentices* (also called *Statute of Artificers*), which regulated the ancient apprenticeship framework, was thus repealed in 1814.

In 1851, the Great Exhibition showed that the UK was lagging behind many of its international competitors in terms of technical competence. Exhibitions like this one were the favoured location for the launch of technological innovations and breakthroughs – the telephone, the water closet, and the first motion picture are just three examples.

Yet the Great Exhibition in 1851, notwithstanding the magnificence of the Crystal Palace, showed Britain the need to take technical training much more seriously if it was to maintain its lead amongst competitive countries. This anxiety was further confirmed at the Paris Exposition of 1867. It was in 1878, therefore, that the City of London and the 16 Livery Companies (the descendants of the medieval Guilds) created the national system of technical education to meet this changing need for craftsmen, technicians, technologists and engineers within the developing world of industry.

2.1.3. 20TH CENTURY

In the 20th Century a new breed of technical and engineering 'apprenticeships' were created, marking an interesting evolution of the idea. Young people (mainly men) were taken on as apprentices in engineering, contracted to an employer, paid while they learnt and acquiring the more theoretical understanding of the technical knowledge through evening classes and day release at Technical Colleges. Good grades at school were often required for starting the apprenticeships – for example, by the 1960s, good General Certificates of Education (GCEs) were a prerequisite for apprenticeships in the aircraft industry (Crowther, 1959; s.114).

As apprenticeships developed and expanded in scope, so it became necessary to rethink the way in which competency at the end of apprenticeships was assessed. The *chef d'oeuvre* would hardly suffice. There was clearly a need for assessing differently the theoretical underpinnings of the practical competencies displayed by the modern craftsman and the new technician class. In 1900 the City of London and Livery Companies received their Royal Charter as the City and Guilds of London Institute, offering qualifications for the very wide range of craft, technician and technological apprenticeships. The majority of apprentices would now need to get their 'City and Guilds'.

The *Crowther Report* of 1959 (s.685) highlighted the need for a great advance in Further Education in order to boost significantly the number of technicians and craftsmen. Crowther also strongly recommended an increase in the volume of day release for apprentices so that they could attend college. Already college attendance on day release was common in the engineering and business trades, but not necessarily part of the apprentice experience elsewhere. It also recommended a more regulated entry to and exit from

apprenticeships. Such had been the gradual changes in the concept that:

> *No test of competence is required either to enter apprenticeship or to graduate from it to the status of skilled worker.* (s. 490)

Moreover, there was a growing disconnection between the practical and on-the-job learning of the apprentice and the theoretical studies which were pursued in day release or in the evening at college. And there was the anomaly of apprenticeships being secured before the age of 16 if the five years required for an apprenticeship were to be completed by age 21.

Following this report, the Ministry of Labour's 1962 *Industrial Training White Paper* similarly emphasised the shortage of labour since the war, the growing importance of technical training and the responsibility of employers to provide this. Faced with growing competition in the export market, the White Paper attempted to provide remedy to the problem of standards of training, which were unsatisfactory in many cases. A primary cause for this was that while some firms invested in training, many did not because of a lack of incentive to bear the cost for increasingly mobile employees. Training at this time was the primary responsibility of individual firms, though government, Local Education Authorities, and agencies such as The City and Guilds of London Institute contributed.

The Industrial Training Council – set up in 1958 by the British Employers' Confederation, the Trades Union Congress (TUC), and the nationalised industries, with the purpose of assisting industry in training its workforce – also contributed to the push for a solution to the problem of skilled labour (Ministry of Labour, 1962).

The 1962 White Paper proposed that employers should contribute to a general training fund from which they were able to cover their costs if they provided the relevant training. This would 'enable the cost of training to be more equitably spread' (p188). Those who did not provide training lost the funds they had invested. Clearly this would be a boost for the provision of apprenticeships.

The 1962 White Paper was succeeded by the 1964 *Industrial Training Act.* It also responded to concerns expressed by Crowther. Some argue that it is at this time that the state (rather than Guilds and professional bodies) really began to take control of apprenticeships. According, for example, to Susan James (2004), that Act 'was the beginning of the state taking control of apprenticeships, specifically as an instrument of Government policy'.

Over time the concept of apprenticeships has been evolving further with:

1. An ever increasing separation of practice from theoretical considerations.
2. The deregulation of assessment for competence at the end of the apprenticeship.
3. The end to the graduation from apprentice to journeyman and thence to Master.
4. The regulation of apprenticeships, not by the Guilds or their equivalent, but by government.

Since the 1960s the fortune of apprenticeships in England has waxed and waned, with a shifting relationship between government and employers and a growing reliance on qualifications. In the 1970s and 1980s apprenticeships fell out of favour with numbers dropping. The decline of apprenticeships was the result of a number of factors. While diminishing commitment on the part of employers and policymakers may have played its part, other factors held influence. The rise in post-16 participation in full-time education and an expansion of higher education diverted potential recruits away from the apprenticeship route. Technical change had also rendered a number of traditional apprenticeship industries, such as printing, obsolete. Youth training programmes, with their reputation for low quality training, also held poor public images. Government policies did not step in to save apprenticeships through the 1970s and 1980s.

The Confederation of British Industry and the Trades Union Congress were in agreement that falling numbers of apprenticeship enrolments had contributed to a serious skills shortage. The TUC's senior training policy officer Bert Clough blamed the dismantling of all except two of the industry training boards in the 1980s

(*Management Today,* 1994). The recession, as well, may have led to a view among employers that they would rather wait and see whether they needed to make youngsters redundant rather than risk training them first.

In 1993 Kenneth Clarke, then Chancellor of the Exchequer, announced the creation of a new scheme in his November budget statement. Spurred on by the need to beat increasing international competition, Clarke claimed the scheme would:

> *...provide a major boost to work-based training and increase substantially the number of young people obtaining the technical and craft skills which not only employers but trade unions agree the country has been lacking.* (*House of Commons Hansard Debates*, 30 November 1993, cited in Mike Harris, 2003)

Apprenticeships were given a new lease of life and rebranded as 'Modern Apprenticeships'. In 1994 *Management Today* reported that this 'joint government-industry initiative on Modern Apprenticeships… is intended to breathe life into Britain's moribund system of industrial training'. Modern Apprenticeships involved a written agreement between employer and apprentice, underwritten by the local Training and Enterprise Council. The Apprentice would hold the status of 'employed' and be paid a wage.

The new Modern Apprenticeship scheme placed emphasis on standards and achievement rather than time served, as the traditional apprenticeships had done. It also included a range of core skills: communication, numeracy and problem-solving, for example. The scheme was devised in partnership between employers, government, industry training boards (ITBs) and Training and Enterprise Councils (TECs); its purpose, to equip young people with technician, craft, and supervisory skills at National Vocational Qualification (NVQ) Level 3 or above. This was in contrast to previous programmes, such as Youth Training, which led to a Level 2 NVQ (Harris, 2003).

This change in emphasis marked a significant shift for apprenticeships. But should we regret the decline, since the repeal of the legal regulations for craft apprenticeships in 1814, of the traditional form of apprenticeships and their route to 'master craftsman'? There was much positivity about the introduction of clear 'standards', because:

> *Setting targets which trainees must hit before becoming certified craftsmen is a vast improvement on having them sit next to someone and expecting some of the skill to rub off.* (*Management Today,* 1994)

Others, however, cautioned that the old system of time-based training actually yielded extremely high skill levels, and soft skills 'tacked-on' would only serve to dilute standards. For example, in his detailed account of the life of the Victorian head-gardener ('the master'), the sub-gardener and the apprentices, Robert Mattock (2013) argues that true craftsmanship developed only over time.

Mattock shows how knowledge of gardening was gradually accumulated by the apprentice; knowledge that was intimately connected with the hands-on experience and constant correction from experts. He singles out three key aspects of this process as being important:

- First, the social status of the head gardener, which no doubt reflected on the hierarchy down to the apprentices;
- Second, the head gardener would be self-educated in the growing number of books regarding the improvement of horticulture. He would come to know a huge variety of plants, learning the vocabulary by heart;
- Third, the apprentice would be required to keep a diary of what he did each day and no doubt be taught in evening classes from charts illustrating different techniques.

His argument is essentially that an emergent property of the traditional apprenticeship, with its years of training, study, and memorisation, was a 'much-esteemed' (p1) work ethic. It was this ethic that turned apprentices into craftsmen. The decline of this work ethic, a lack of skills on the part of teachers, and a perception that horticulture is unskilled, have contributed, Mattock argues, to a current shortage of good gardeners in the traditional sense.

We now have:

> *...perilously few craftsmen, head-gardeners in the true sense of the term, let alone under-gardeners, who are equipped with the skills necessary to maintain our historic gardens and cultural landscapes.* (Watkins, Head of Gardens and Landscape – English Heritage – cited in Mattock, 2013; p3)

Nevertheless, since the introduction of the Modern Apprenticeship, much has happened to address the perceived problems of skills training, not too dissimilar from those identified in the mid-19th Century. While 'achievement' in the original conception of apprenticeships was reflected in the completed work, modern solutions by and large have consisted of developing qualifications that would serve as the end product of training.

In his 2003 report for the Institute of Directors, Mike Harris outlines how Modern Apprenticeships did not compare favourably with their European counterparts. Following recommendations from the National Skills Task Force, the then Secretary of State for Education and Employment announced a series of reforms to improve Modern Apprenticeships in 2000 by raising standards, increasing retention and providing improved opportunities for progression. Changes included:

- a clearer structure;
- a more integrated approach to key skills;
- a requirement that Level 2 key skills in communication and application of number become mandatory (Sector Skills Councils maintained discretion for other key skill requirements);
- timed testing for key skills, rather than a portfolio approach, as used previously;
- technical certificates for off-the-job training;
- a proposal for the introduction of an Apprenticeship Diploma to mark completion of the framework, incorporating NVQ, key skills, and a Technical Certificate;
- nationally agreed payment structure.

Nevertheless, the programme still continued to attract criticism for lack of rigour. Harris (2003) claimed the Modern Apprenticeship was best viewed as a labour market programme rather than an institution, because it had gradually evolved through a series of interventions designed to improve its rigour and public perception.

The government had committed to bring young people into the Modern Apprenticeship programme, and this required more employer involvement than was happening. A National Modern Apprenticeship Task Force was created and launched in 2003 to sell the benefits to the employer community.

The promotion of employer involvement has continued to be an important policy goal, with a number of initiatives trialled or introduced (Gambin, 2012; p22) including:

- the Apprenticeships Vacancies System: facilitating improved matching between employers and potential apprentices;
- the Apprentice Grant for Employers (AGE): a financial incentive for employers taking on new 16- to 17-year old apprentices;
- the Apprenticeship Training Agency (ATA) and Group Training Association (GTA) pilots providing alternatives to direct employment of apprentices in order to mitigate risks and enhance training for apprentices.

Gambin notes, however, that financial incentives for employers will only work to a point. Ultimately, employers must see a sound business case for the recruiting of apprentices.

During the first decade of this century there were a number of other initiatives which sought to improve employer engagement. Two examples were the creation of Centres of Vocational Excellence, announced in 2000, and the launch of Sector Skills Councils (SSCs) in 2002. SSCs were designed specifically to give employers greater influence over training policy, not just for apprenticeships but also more widely. During

this period there was a continued move away from supply- to demand-led provision. In 2004, Modern Apprenticeships were rebranded to Apprenticeships (National Apprenticeship Service, 2014b).

The weaknesses of the Modern Apprenticeship system were essentially:

- shortcomings of training providers;
- low levels of attainment by participants;
- complexity, cost and bureaucracy of the NVQ (which were nevertheless strongly supported by business);
- supply rather than demand driven: rather than being determined by employers, recruitment was orchestrated by the Department for Education and Skills, the Learning and Skills Council, and supported by a network of training providers;
- progression: only a minority of apprentices went on to study at higher education level (Harris, 2003).

In 2009 the Apprenticeships, Skills, Children and Learning Act established the Qualifications and Curriculum Development Agency (QCDA) – since abolished – as the new independent qualifications regulator. The Specification for Apprenticeship Standards for England (SASE) was published by BIS and the National Apprenticeship Service (NAS) in 2011 (UNESCO-IBE, 2012; p5, BIS, 2011). An updated SASE was published in March 2013 (BIS, 2013e), which sets out the minimum requirements for frameworks to be recognised and to comply with the 2009 legislation.

Supporting this new SASE, and those organisations involved in developing the new frameworks – employers, training providers, awarding organisations (National Apprenticeship Service, 2014b) – NAS and the Federation for Industry Sector Skills and Standards produced two sets of guidance: one for intermediate and advanced; the other for higher apprenticeships (National Apprenticeship Service, 2014a).

In terms of guided learning hours (GLH), all apprentices in England are now entitled to receive 280 hours of guided learning annually. At least 30% (or 100 hours, if greater) of this must be off-the-job. Between ages 16-18 an apprenticeship must last at least 12 months. For those over 19, the same is true unless prior learning is recorded, in which case, the apprenticeship must be no less than six months and include new skills and learning (National Apprenticeship Service and Federation for Industry Sector Skills and Standards, 2013). This remains lower than the European average. According to European Commission (2013; p8) apprenticeships in Europe are 'usually up to four years'. For Higher Apprenticeships there are minimum credit levels (90 at Level 4/5 and 120 at Level 6/7) rather than GLH.

Each SASE compliant framework will contain details of on- and off-the-job learning requirements (National Apprenticeship Service, 2014b), and so these will be standard across each industry sector, and as considered appropriate by developers of the frameworks. Apprentices will be required to declare compliance with the requirements for purposes of certification.

2.2. DEFINING APPRENTICESHIPS

We have seen how the concept of apprenticeships has evolved over the years and how this is continuing currently. Today it continues to be both a brand and an approach to learning. And depending what you think the respective roles of government, employer, college or training provider and learner/employee are, so you will get a different answer as to the essential ingredients of apprenticeships. Just as universities, colleges and schools have increasingly blurred roles, so too the distinction between university or college student and apprentice is lessening. It is no accident that the National Union of Students (NUS) launched a new service for apprentices in 2014, a National Society for Apprentices (NUS, 2014). The NUS has effectively recognised and legitimated parallel tracks in both university and college routes for students.

For many the term apprenticeship is becoming overused. Robert Mattock (2013) argues that it has become 'bastardised' (p5) so that it no longer retains its strong identity. There is some truth in this. If the word can be used to describe short training courses for low-level jobs, this is a long-way from becoming an expert

furniture-maker or skilled carer. In recent years the age of apprentices has been rising too, further stretching the definition beyond its original sense of transition from youth into adulthood in the workplace.

The *Richard Review* (2012; p38) defines apprenticeships in two ways. The first is functional, and the second defines it by what it isn't, perhaps in an attempt to counter the overuse of the term:

> *An apprenticeship is a form of education, based in the workplace. It must be attached to a real job and deliver broad and transferable skills that are recognised and valued across the sector. An apprentice must be new to a job or job role and the job must involve substantial and high levels of skill. Suitable candidates should have the potential to acquire new skills to do the job well, even if they are starting from a low base.*
>
> *An apprenticeship is not a programme for any training needed for any job. An apprenticeship should not be about upskilling or accreditation for those that already have the skills to do the job. And it should not be primarily a vehicle for addressing employability skills for those entering low skilled jobs.*

With any definition of apprenticeships, we argue, it is important to be specific about the 'learning' aspect rather than the functional, structural, assessment-driven or institutional aspects. Alison Fuller and Lorna Unwin (2011) have consistently argued that we must take a step back, if we are to reflect usefully:

> *Given the continued importance of apprenticeships in national VET systems, it is also necessary to find ways to research the evolving nature of apprenticeships over time without becoming trapped in the technical minutiae of apprenticeships as an institution. In Britain, for example, a researcher could easily become disheartened if they tried to capture the constant policy churn surrounding VET provision.*

More than this, Fuller and Unwin (2009) argue that 'the State's growing appropriation of apprenticeships as an instrument of policy is undermining it as a model of learning' (p415). This echoes our earlier comment from Mike Harris (2003), who suggested apprenticeships in the modern sense are best understood as a labour market programme; no longer an institution. While the traditional approach to apprenticeships was seen as a journey in which young people developed as citizens as well as experts, Fuller and Unwin argue that apprenticeships in their more contemporary form (since the 1970s) have been designed by government policy to serve the purpose of maintaining young people in education or training to the age of 18. The key drivers have been the twin problems of the so-called NEETs (young people not in education, employment or training) and the skills gap. In attempting to solve these problems over time, successive governments have created distance between the apprentice and the place of employment by making training providers the focal point for apprentices, and by funding schemes that have sometimes diluted the meaning of apprenticeships and potentially damaged the reputation of VET.

Apprenticeships remain appealing to many employers as a model of skill formation, but one that is not independent of government influence; influence that would see it used to meet ends other than those it once served for the employer and apprentice. Selena Chan (2013), for example, explains how an apprenticeship does more than prepare young people for work:

> *...it provides them with a particular identity and positions them in a world where occupations may also be shorthand statements of their individuality.* (p369)

2.2.1. IN THE DICTIONARY

The Oxford English Dictionary (2014) defines the term 'apprenticeship' in a number of ways, giving examples from a range of dates spanning the 16th and 19th Centuries (1592 and 1855).

It appears as a noun in three ways:

- The position of an apprentice; service in the capacity of an apprentice; initiatory training, under legal agreement, in a trade, etc.; especially in the phrase to serve an apprenticeship. For example:

During the continuance of the apprenticeship, the whole labour of the apprentice belongs to his master. (Adam Smith's 1776 *An inquiry into the nature and causes of the wealth of nations*)

- The period for which an apprentice is bound (examples given from 1667, 1759, and 1827). For example:

That long apprenticeship of sorrow. (Benjamin Disraeli's 1826 *Vivian Grey*)

- A period of seven years. For example:

Three 'prenticeships have past away..Since I was bound to life! (Thomas Hood's 1833 *The Comic Annual: Thomas Hood, esq*)

It is also used in a transferred or figurative sense, for example:

On whose banks the Romans have performed the Apprentiships of their rare victories. (Sir Richard Baker's 1638 *Letters of Monsieur Balzac*)

The term 'apprentice' (albeit with different spelling) was first recorded in 1362. The Oxford English Dictionary's definition of 'apprentice' is helpful in that – when used as a noun – it implies apprenticeships are a model of learning. Indeed, in terms of etymology, 'apprendre' is the French for 'to learn', from which we also take our word 'to apprehend': to lay hold upon; to seize. An apprentice is:

- As a noun: A learner of a craft; one who is bound by legal agreement to serve an employer in the exercise of some handicraft, art, trade, or profession, for a certain number of years, with a view to learn its details and duties, in which the employer is reciprocally bound to instruct him. Also, by extension: one who is only learning the rudiments; an unskilled novice.
- As an adjective: A description of being skilled, for example:

He tried his apprentice hand on an inferior institution. (Sir David Brewster's 1855 *Memoirs of the Life of Sir Isaac Newton*)

- As a verb: To bind as an apprentice; to indenture. For example:

...when they are apprenticed, this provision will cease. (Edmund Burke's 1769 *Observations on a Late State of the Nation*)

In 1438 Caxton was apprenticed to Robert Large. (William Blades's 1882 *The Life and Typography of W. Caxton*)

2.2.2. FROM AN EMPLOYER'S PERSPECTIVE

In today's world apprenticeships essentially involve a relationship between employer and employee; the latter taking on the role of apprentice. The notion of apprenticeships as a route to work highlights the significant role of the employer, however. The International Labour Organization (ILO) (2012) conceives of apprenticeships as being primarily about the development of skills in order to benefit 'companies, their employees and the wider economy'. We must recognise the centrality of the employer role, because apprenticeships would not exist without the need for skilled labour within organisations of production. In 1939 the ILO defined 'the expression apprenticeship' as:

...any system by which an employer undertakes by contract to employ a young person and to train him [or her] or have him [or her] trained systematically for a trade for a period the duration of which has been fixed in advance and in the course of which the apprentice is bound to work in the employer's service.

The more current ILO report in which this definition is cited (2012) notes a number of key features incorporated by this definition:

1. Based in the workplace supervised by an employer.
2. Intended for young people.
3. Fundamental aim is learning a trade/acquiring a skill.
4. Training is 'systematic' i.e. follows a predefined plan.
5. Governed by a contract between apprentice and employer.

While in subsequent years, the ILO's definition has expanded to incorporate notions of standards and off-the-job training, note the absence of any reference to the *pedagogy* of apprenticeships in this definition. The means by which skills are acquired is left unspoken.

The Canadian government (Employment and Social Development Canada, 2013) uses a more egalitarian definition, which places the employer and employee on a more equal footing:

> *Apprenticeships are an agreement between a person (an apprentice) who wants to learn a skill and an employer who needs a skilled worker. Apprenticeships combine on-the-job experience with technical classroom training.*

2.2.3. IN THE LEARNER'S MIND

Where once apprenticeships were a pathway of choice – the only sensible way to learn a craft or trade – today they compete with many other kinds of routes into education, training and work, especially the so-called 'gold standard' of A levels. It is worth noting that the government in England continues to incentivise the degree pathway through student loans.

From the different responses to questions about why they chose to undertake an apprenticeship (BIS, 2013c), it is possible to describe what motivates today's apprentices. Descriptions include:

- gaining a qualification;
- developing work-related skills;
- making progress in a specific career;
- getting paid whilst in training;
- being more secure in a job;
- believing it will lead to an increase in pay;
- gaining understanding necessary for the job;
- fulfilling the requirements of their employer.

It is immediately clear from this list the degree to which the idea of an apprenticeship has moved from its original pure conception – the best and most reliable way of learning deep practical expertise in a chosen vocation, craft or profession.

2.2.4. MEANING DILUTED

There is no doubt that in recent years the word 'apprenticeship' has become used much more broadly such that it says very little about the depth of learning required, whilst at the same time, trading on the reputation which the word once conjured up. For example, in 2009 Fuller and Unwin noted that the majority of apprentices in England could be classified as 'conversions' from existing employees. In effect, they were being provided with some on-the-job training to broaden their skills which, stressed the authors, 'is not the same as following an apprenticeship' (p411).

In response to successive governments' promotion of more skills and vocational training, especially following the *Wolf Report* (2011; p6), which identified apprenticeships as 'a key route to skilled employment and national prosperity', numbers of apprenticeships have increased considerably, with continued funding support from government. While this increase is a success story of a kind, in the longer-term it may damage the reputation of apprenticeships. For, as Robert Mattock (2013) argues, the extension of the commonly understood definition of apprenticeships 'that is, hands-on learning towards becoming a craftsman – into any workplace learning, even up to graduate and professional levels' has resulted in an increase of financial support to the upper levels of 'apprenticeships' at the expense of the lower levels. Conversely, an expansion of apprenticeships into the very low skilled areas has a potentially negative impact upon the reputation of the apprenticeship 'brand'. Many of these lower skill 'apprenticeships' do not qualify as genuine apprenticeships in the sense most people understand them.

We need to ask whether the training received in one year in which an individual learns to be competent in relatively simple tasks (e.g. 'deal with the arrival of customers', 'serve food at table', 'maintain housekeeping supplies') should be seen as apprenticeships as they have traditionally been understood. This is a far cry from the apprenticeship through which, over several years, the young apprentice acquired a complex practical skill, involving the relevant and tacit theoretical understanding and the wider social context connected with a trade, combined with a sense of excellence in the doing of it.

In his (2012) review of apprenticeships, Doug Richard attempted to counter this lack of focus. He argued that the term 'apprenticeship' is used far too broadly in the UK. Apprenticeships, he proposed:

- Should be linked to a real job. Irrespective of whether or not the promise of employment exists at the end of the period of an apprenticeship, the apprentice is 'actually doing the job – at the level they are being trained for – during the apprenticeship' (p31).
- Must deliver transferable skills. Firm specific training should not be funded by government. An apprenticeship must deliver broad, transferable skills so that upon completion, an apprentice is 'qualified to do the job well in a range of situations and across different companies within a sector, not just within one particular firm' (p32).
- Must be for jobs that require sustained and substantial skills. Apprenticeships 'should offer an effective pathway for highly skilled work, including professional and senior job roles' (p34), rather than for low skilled jobs that require minimal training that the employer would do routinely for new starters.
- Involve a new job role, so that 'the learner must be new to the job or role' (p32).

We agree with these reasonable assertions.

But they do not go sufficiently far in defining what apprenticeships should be. What is needed is a definition that brings into focus both the element of routine expertise central to apprenticeship learning, and also a broader set of learning outcomes that the pedagogy of apprenticeships should endeavour to develop. What we propose is to make the required learning much more visible. It is in this area that we aim to make our contribution to the body of knowledge about apprenticeships.

2.2.5. LESS FOCUS ON THE INSTITUTION AND MORE FOCUS ON LEARNING

An apprenticeship is, at its heart, a model of learning suitable for a range of pathways, from lawyers and doctors, to journalists, plumbers, chefs, furniture-makers and musicians.

Various respected authors and researchers have described this role using slightly different language, much of which is helpful for us to develop a breadth of understanding.

As a model of learning, an apprenticeship is:

- a vehicle for transmitting the knowledge required for expert practice in fields from painting and sculpting, to medicine and law; the natural way to learn (Collins et al., 1991);
- an age-old and trusted means of transmission of tacit knowledge by way of modelling (Gamble, 2001);
- the main formal method of skill formation for manual workers in the 20 years following the Second World War (Harris, 2003);
- a model for both teaching technical skills, and providing grounding for personal formation (Marchand, 2008) and a form of 'embodied learning… that connects theories of knowing to practical doing' (Marchand, 2008; p246);
- a multi-dimensional model. Fuller and Unwin (2011) see the dimensions as:
    - pedagogical: the learning process involves a range of pedagogical approaches including instruction and feedback;
    - occupational;
    - locational;
    - social: it is a social theory of learning that should lead ultimately to the development of the required levels of vocational knowledge, practice and expertise in a given vocation;
- a means of transmission of bodily and tacit competences from expert to novice (Nielsen and Pedersen, 2011);
- a social learning process whereby more skilled participants in a learning community help the apprentice to find their way either by direct guidance, or by being observed by them (Jaarsma et al., 2011);
- learning by peripheral material participation (as well as peripheral social participation) – for example in a car repair workshop in Ghana, Thomas Jaarsma and colleagues (2011) observed that 'the closer to the engine, the closer to mastery';
- a process for learning both skill and work ethic through supervision and tutelage by an expert in the field (Mattock, 2013);
- a rite of passage; a form of induction into working life and adult responsibilities. It is accompanied by the formation of occupational identity through belonging to a workplace, becoming, and then being. (Chan, 2013)

At the heart of apprenticeships are various core processes:

> *Coaching is the thread running through the entire apprenticeship experience. The master coaches the apprentice through a wide range of activities: choosing tasks, providing hints and scaffolding, evaluating the activities of apprentices and diagnosing the kinds of problems they are having, challenging them and offering encouragement, giving feedback, structuring the ways to do things, working on particular weaknesses.* (Collins et al., 1991)

A key theme in some of the literature that we have uncovered – and some authors state this more explicitly than others – is the way in which policy has (to take an extreme view) re-branded an 'entirely different mode of pedagogy' as apprenticeships in order to serve other functions. Jeanne Gamble (2001) asks whether this has happened to the point where:

> *...[w]e have to ask ourselves... whether "apprenticeship" is not fast becoming a stand-in for a socially and pedagogically empty practice, divorced from its original social function and purpose as a transmitter of identity based on mastery.* (p198)

Gamble questions whether an 'apprenticeship' is truly an apprenticeship without the role of the expert 'master', and if 'acquisition' (competence-based achievement of standards) replaces 'transmission' over time.

2.2.6. OUR DEFINITION OF APPRENTICESHIPS

We acknowledge the dual meaning of an 'apprenticeship'; as both an established pathway through education, and a means of learning. The focus of this report is firmly on the latter, however.

Our working definition of apprenticeships is:

> *An apprenticeship is a mutually beneficial relationship between a learner and an employer in which an individual, through a blend of on- and off-the-job methods and by working with other more skilled people, becomes competent in a chosen occupation. By competence we include both routine and non-routine expertise.*
>
> *Apprenticeships, in addition, equip potential employees with the habits of mind of someone who has a deep pride in the vocational activity for which they are being formed, while at the same time being coached into having the wider skills for a lifetime of learning. While the learning will focus on the demands of a contemporary workplace, it will also unambiguously seek to prepare the apprentice morally and socially for active citizenship throughout their lifetime.*

Or more simply still:

> *An apprenticeship is a job with significant inbuilt learning designed to prepare the apprentice for future employment, employability and active citizenship of a high quality.*

3. THE THEORIES AND PRACTICES OF APPRENTICESHIPS

'Apprenticeship is the means of imparting specialised knowledge to a new generation of practitioners. It is the rite of passage that transforms novices into experts. It is a means of learning things that cannot be easily communicated by conventional means. Apprenticeship is employed where there is implicit knowledge to be acquired through long-term observation and experience.'

Michael Coy (1989; pxi)

Given the rich history of apprenticeships it is important that we try and understand the bodies of knowledge and practices which have underpinned their development. We have already seen how apprenticeships have existed in England for more than 850 years. But up until the beginning of the 20th Century there was little or no theorisation about apprenticeships. They were simply the default way in which young people learned their chosen trade, craft or vocation. From time to time legislation was passed regulating practices or recognising the changes resulting from the industrial revolution.

But, by the beginning of the 20th Century, there begins to be a more explicit exploration of the educational underpinning of the apprenticeship experience. We begin with influential American thinker, psychologist and educational reformer John Dewey and end with contemporary discussions from the UK and from across the world.

Through each body of thought we examine – always with an eye on putting the learning back into apprenticeships – how such thinking has influenced the concept of apprenticeships.

3.1. A DEMOCRATIC VIEW OF EDUCATION

Dewey was, arguably, one of the most influential philosophers of education in the 20th Century. He made a case for a focus on 'vocation' as one's true calling. His 1916 *Democracy and Education: An introduction to the philosophy of education* argued for a departure from the industrial regime, which, even here and now in the UK, maintains a division of labour by splitting the education system so that those 'less fortunately situated' are given an education 'conceived mainly as specific trade preparation' (p372). Dewey took a humanistic approach; countering arguments of pure economic rationality. He believed that education must engage with, and expand, the experience of the learner.

Democracy and Education includes an important conceptualisation of vocational learning; one which influences our thinking about apprenticeships today. Harking back to Plato's notion that the business of education was to discover what each person is good for, and to train him to master it, Dewey saw vocational education as finding out:

> *...what one is fitted to do and to secure an opportunity to do it is the key to happiness. Nothing is more tragic than failure to discover one's true business in life, or to find that one has drifted or been forced by circumstance into an uncongenial calling. A right occupation means simply that the aptitudes of a person are in adequate play, working with the minimum of friction and the maximum of satisfaction.* (p360)

This statement speaks right to the heart of what an apprenticeship is designed ultimately to facilitate – fashioning expert individuals from novices. Thus, apprenticeships are not merely 'continuing professional development' but a complete immersion into a way of life.

This view of vocation as a calling and fulfilment is echoed in Ken Robinson's thinking a century later in *The Element (2009)*, in which he encourages readers to recognise and pursue an area in their own life where their natural aptitude meets personal passion. By pursuing this passion, individuals can spend their life doing what they were 'born to do' rather than working in a job that sees them 'living for the weekend'.

Indeed, Dewey himself aimed for education to become a means of societal transformation; the transformed society being one in which, among other things, 'the interest of each in his work is un-coerced and intelligent: based on its congeniality to his own aptitudes' (p370). He foresaw, however, that vocational education (positioned as 'vocational training') risked becoming an instrumental means of getting people into the workplace, and a narrow technical trade education for the masses:

> *Put in concrete terms, there is a danger that vocational education will be interpreted in theory and practice as trade education; as a means of securing technical efficiency in specialized future pursuits.* (p369)

Dewey's ideas found more radical expression in the writings of Paulo Freire. Freire (1970) was particularly concerned to counter the 'banking' model of education which:

> *...transforms students into receiving objects. It attempts to control thinking and action, leads men and women to adjust to the world, and inhibits their creative power.* (p77)

While Freire was not specifically writing about apprenticeships, his concerns mirror Dewey's and act as a reminder that, as well as developing expertise, we also need to be considering the wider needs of all learners and employees.

3.2. WORK-BASED LEARNING

Apprenticeships are a kind of learning geared to proficiency at work. There are three commonly used terms to describe the main and overlapping fields of study exploring this area: workplace learning; work-based learning; and work integrated learning.

Work integrated learning is less relevant for our purposes because it tends to focus on workplace learning programmes implemented as a formal aspect of higher education curricula (Cooper et al., 2010). For example, it might refer to the intersection of the theoretical and practical that occurs within the 'sandwich' element of a Bachelor's degree.

Workplace learning is an area of study developed as a reaction to a number of societal changes that render new workplace contexts, knowledge, and workers from those of the past including:

> *...advances in technology, the demise of manufacturing industries and the growth of service sector industries, changes in the meaning of the 'workplace' (for example, home-working...), 'flexible' working... and the shift (in many cases) towards new, post-Fordist style workplace structures and practices.* (Lee et al., 2004; p2)

It relates to a number of similar (although not quite synonymous) terms, including 'work-based learning', 'work integrated learning', 'practice-based learning', and even 'workplace-based learning'.

The broad variety of terms reflect the many influences upon it from 'psychological theories, sociological, situated, and postmodern thinking on the possible theories of how people learn and respond in and through workplace activity' (Malloch and Cairns, 2010; p1). Because of this breadth of influence, however, it is not easy to find a unifying definition of what constitutes 'workplace learning'.

We prefer the term *work-based learning* because it most accurately describes what apprenticeships are. The European Commission's own glossary of terms associates apprenticeships heavily with *training for work* – both in and outside of work. This makes work-based learning a very useful concept for debating apprenticeship pedagogy:

> *Acquisition of knowledge and skills through carrying out – and reflecting on – tasks in a vocational context, either at the workplace… or in a VET institution.*

As well as:

> *[P]rograms [sic] for both secondary and post-secondary students which provide opportunities to achieve employment-related competencies in the workplace. Work-based learning is often undertaken in conjunction with classroom or related learning and may take the form of work placements, work experience, workplace mentoring, instruction in general workplace competencies and broad instruction in all aspects of industry.*

Similarly, Lesley Cooper and colleagues (2010) define work-based learning as referring to learning programmes *instigated by* a workplace. Thus as well as learning in the workplace (for example, on the factory floor), it incorporates all elements of learning outside of the workplace *that relate to the workplace* (for example, in the college workshop).

3.3. FORMAL VERSUS INFORMAL LEARNING

Much of the learning that takes place in a workplace is informal rather than formal. Education and training are important but so is the messy, on-the-fly learning that take place in workplaces (and in life). In the original conception of apprenticeships, where an apprentice was physically living with his master's family the distinction between formal and informal would have been much more blurred.

Some like Michael Eraut prefer the description 'non-formal' to the term 'informal'. Eraut (2000; p114) gives formal learning the following characteristics:

- a prescribed learning framework;
- an organised learning event or package;
- the presence of a qualified teacher or trainer;
- the award of a qualification or credit;
- the external specification of outcomes.

Eraut has a helpful typology of non-formal learning where he contrasts the timing of a learning situation against the degree to which the learning is consciously planned or not. Three non-formal 'learning modes' span from the 'implicit', which is unintentional and may go unrecognised, to the 'deliberative', where time is set aside for learning. Reactive learning, between the two extremes, is 'explicit' (although may be hard to articulate) but more or less spontaneous and unplanned.

While the distinction between 'formal' and 'informal' learning might help us to consider all elements of learning through apprenticeships, it is not always a helpful one. Indeed, some experts dislike the binary nature of contrasts between 'formal' or 'informal', suggesting that these are false opposites that imply clear boundaries that don't always exist in reality. Dichotomous approaches can be unhelpful because they frame thinking in such a way that determines the outcome of debates (Malloch and Cairns, 2010), and a number of other pairs of approaches might be similarly dismissed.

BINARIES THAT BIND (AND SHOULD BE DISCOUNTED)	
Informal	Formal
Experimental	Theoretical
Education	Training
Physical	Intellectual
Explicit	Implicit
Tacit	Explicit
Pure	Applied
Action	Theory
The Academy	The Factory
Lived	Studied
Classroom	Workplace

TABLE 2 FALSE OPPOSITES IN PEDAGOGY (MALLOCH AND CAIRNS, 2010)

Stephen Billet (2002a) similarly provides a number of arguments against describing workplaces as 'informal' learning environments:

1. Describing a phenomenon by what it is not is unhelpful because it does not help the reader understand its characteristics.
2. By directly contrasting workplace learning (through labelling it as 'informal') with the 'formal' (i.e. formalised educational institutions with all the structural implications they entail, including qualified teachers, didactic instruction, curriculum documents) the 'informal' is immediately assumed to be inferior and ad hoc.
3. Assumptions based on practices in formal educational institutions may not be wholly useful in considering learning and pedagogy in the workplace. Learning in the workplace should instead be seen as a consequence of engagement in goal-directed activities.
4. The 'informal' label is often highly inaccurate.

Billet (2002a) suggests that, rather than reflecting on degrees of informality or formality, learning in the workplace can be better conceptualised in terms of *participatory practices,* which include such things as:

> *Engaging in work activities that are novel and thereby extending individuals' capacities, securing appropriate guidance from experienced co-workers, and being able to access practice in prized tasks.* (Billet, 2002b: 29)

In *Toward a Workplace Pedagogy* Billet (2002b) argues that when thinking about workplace learning it is not enough to consider everyday participation plus intentional guided learning strategies. Participatory practices are also central and ultimately underpin Billet's pedagogy. Billet considers the following three practices:

1. Intentional and indirect guidance: knowledge at work is learned through a number of everyday activities.
2. How workplaces themselves afford opportunities for individuals to participate in work activities, and to access guidance – 'the workplace shapes learning through the kinds of access provided for learners to engage in particular kinds of activities' (p36). Work may be restricted to the routine; availability and quality of access to guidance may be poor.
3. How individuals elect to engage with workplace practices – their 'agency'. Participatory practices are themselves 'reciprocally constructed' because it is ultimately up to each individual worker/learner how they engage in and learn from the situations that the workplace offers them. The role of individuals' 'agency' is, thus, a key mediator of their level of engagement and learning.

TYPE OF GUIDANCE	EXAMPLE
Everyday participation at work	Learning through undertaking everyday work activities
	Sequencing of tasks (from low to high accountability: peripheral to full participation)
	Opportunities to participate, observe and listen
	Opportunities to access goals required for performance
Guided learning at work	Close guidance by experienced workers
	Use of modelling, coaching and scaffolding
	Use of techniques to engage workers in learning for themselves
	Use of techniques to develop understanding
Guided learning for transfer	Use of questioning, problem-solving and scenario-building to extend learners' knowledge of novel situations

TABLE 3 THREE PLANES OF WORKPLACE PEDAGOGIC PRACTICES (BILLET, 2002B)

These ideas have an important contribution to make to a pedagogy of apprenticeships. The social aspect of participatory practices within apprenticeships is an area that can be further illuminated with a look at 'social learning' theory.

3.4. SOCIAL LEARNING

That we learn predominantly from others has long been understood. When studying learning in the workplace there is a long-held approach which Tracey Lee and colleagues (2004) refer to as the 'standard' paradigm of learning. This paradigm considers learning as 'acquisition'. More important to a pedagogy of apprenticeships is an alternative, which they call the 'emerging' paradigm. Encompassing Billet's (2002b) notion of participatory practices, this paradigm considers learning as 'participation'. The two schools of thought are compared below.

APPROACH TO LEARNING	APPROACH ROOTED IN	FOCUS
Standard paradigm of learning and learning as acquisition	Traditional understanding of learning inspired by cognitive psychology and behaviourism	How individuals acquire knowledge within and across different psychological processes and levels, and in relation to various stimuli
Emerging paradigm of learning and learning as participation	Social understanding of learning where this is seen to occur through the social relations and participatory practices of individuals within communities of practice	The process of learning as collectively generated

TABLE 4 KEY APPROACHES TO WORKPLACE LEARNING THEORY, BASED ON LEE AND COLLEAGUES (2004)

Learning from and with others is a key feature of apprenticeship learning. In the workplace this has a number of different dimensions. Individuals will learn from more experienced others when they work together – watching, imitating, trying out new ways of doing something, for example. Or they may work on a shared problem together with others, and so learn new skills. The social aspect of learning, as an important part of the process by which apprentices might learn their vocation, has been considered for as long as learning itself has been studied. Theories of learning that include the social element are key supports to our line of argument.

A hundred years ago Edward Thorndike suggested, in *Intelligence and its Uses* (1920), that 'social intelligence' is 'the ability to understand and manage men and women, boys and girls, to act wisely in human relations'. But it is Lev Vygotsky, whose theories about social learning have probably had most influence on workplace practices, who is most relevant to our focus on apprenticeships.

Vygotsky helped us understand that we learn from more knowledgeable or skilled others. Indeed we construct knowledge with them by trying our things together. His concept of the *zone of proximal development* (ZPD) is helpful in understanding the idea of a zone or gap between what a learner actually knows or can do and what she or he is likely to be capable of with support. The ZPD is:

> *...the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers.* (John-Steiner and Souberman, 1978; p86)

This gap between current performance and enhanced performance with the help of skilled others provides the focus for conversation, coaching, reflection and so on.

The social theory of learning was further developed in the USA by Albert Bandura (1977) who explored in more detail the way people learn by interacting with others:

> *Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behaviour is learned observationally through modelling: from observing others one forms an idea of how new behaviours are performed, and on later occasions this coded information serves as a guide for action.* (p22)

By creating structured opportunities for apprentices to learn from others more skilled than them and with the desired habits of mind, so Bandura's theories can be put into practice. Those in the workplace or in the college can consciously seek to model what it is they want to see in their learners.

Bandura helpfully breaks the modelling process down into four key stages. Not all observed behaviours are learned effectively. In apprenticeship learning, the environment as well as the learner will play a role in influencing the quality of learning taking place.

Step 1: Attention Being aware of learning opportunities as they arise, and attending to the lesson in hand, is vital for learning. For the pedagogue; considering use of novelty, interest, or other attention-drawing features of a learning experience can help the apprentice to dedicate full focus.

Step 2: Retention The learning process requires the ability to retain information in memory. There are many ways teachers can facilitate improved retention through development of memory. These might include use of memory techniques such as mnemonics, or visual prompts, such as process maps.

Step 3: Reproduction Apprentices need opportunities to perform observed behaviours so that skills can be refined through practice.

Step 4: Motivation Experiencing, or witnessing, reinforcement or punishment in action serves as a motivator for apprentices. The apprentice who sees their peers praised for good learning, or perhaps experiences more efficient working when they put a new skill into practice themself, is more likely to be motivated to persist with the behaviour reproduction stage.

The importance of motivation is also identified by Cindy Poortman, Knud Illeris and Loek Nieuwenhuis (2011) in their development of a comprehensive workplace learning theory. Theirs takes social learning into account, but is broader; comprising cognitive (content), social (interaction) and emotional (incentive) dimensions by building on a broad range of well-established learning theories.

Important for apprenticeship pedagogy is their observation that formal education and training is often oriented strongly towards the content element. Pedagogy must take account of the social element as well as the emotional. Incentivisation is important, for example.

Poortman and colleagues' (2011) theory built on the earlier work of Knud Illeris. Illeris identified six main types of social interaction between the learner and the learning environment; each stage requiring more initiative and activity from the learner than the last. His list of forms of interaction demonstrates that imitation (or modelling) is but one form of interaction:

- Perception: when information is registered passively through observation or hearing.
- Transmission: when the learner is a more active participant through active listening, reading or note-taking, for example. Or when the teacher, mentor or colleague is passing on information.
- Experience: when the learner is trying out performance under the mentor, teacher, instructor or colleague's guidance. Or when the teacher feeds back, instructs, explains or corrects.
- Imitation: when the learner is copying activities from the mentor who is demonstrating the procedure.
- Activity: when the learner is working independently, with background supervision.
- Participation: when the learner is working autonomously and in co-operation with colleagues.

Apprenticeship pedagogy needs to account for a range of learning experiences, from the didactic teaching involving 'perception', to the more facilitative – on the part of teachers – creation of learner involvement at 'participation' level.

3.5. SITUATED LEARNING

In the late 1980s and early 1990s, Jean Lave and Etienne Wenger significantly advanced our understanding of the situated nature of learning when they developed the idea of communities of practice. Learning, they have shown us, is not only a social process, it is also situated within a particular context and embedded within a specific environment.

Situated learning is a concept that takes the idea of social learning and considers it in more detail. It turns out that learning, as well as being social, is deeply influenced by context. Who we are, how we behave and how we approach our learning depends on where we are and who we are with. We may be able to articulate a clear argument in a team meeting at work, for example, but find it very difficult to persuade a teenage son or daughter to adopt a particular course of action. Tailors, nurses, bakers, carpenters, accountants, care workers and plumbers – to take just a small selection of possible jobs – all evolve characteristic ways of thinking and behaving. As an example of this line of thought we have recently undertaken research to identify the characteristic habits of mind of engineers (Lucas et al., 2014), in a deliberate attempt to be explicit about what these are and so make it more likely that they can be cultivated.

A community of practice is identified by its unique combination of:

- A shared **domain** of interest and commitment.
- A **community** of individuals who interact with one another, sharing information and engaging in joint activities to pursue interest in their domain.
- Shared **practice** where individuals develop a shared repertoire of resources, experience, stories, tools and ways of addressing recurring problems. (Wenger and Trayner, c2007)

Lave and Wenger (1991) argue that the notion of learning through apprenticeships is a matter of *legitimate peripheral participation*; a concept they first understood and developed through research into apprenticeship tailors in Liberia, and also Yucatec midwives, naval quartermasters, meat cutters, and non-drinking alcoholics. Legitimate peripheral participation describes how newcomers become experienced members of a community. Learners learn by engaging in a real, productive process, yet risk is mitigated because tasks are simple and potential errors less serious. Over time, and as the apprentice gains in knowledge, skill and confidence, participation becomes more central to the functioning of the community.

Communities of practice, legitimate peripheral participation and situated learning are all fundamentally important concepts for apprenticeship learning. They enable us to see a connection back to the medieval guilds which were early examples of communities of practice.

3.6. LEARNING TRANSFER

In life as in work we learn things in one context and then find ourselves having to apply what we have learned in another. Any apprentice has to learn how to do just this from an early stage in their learning. In understanding apprenticeship learning, transfer is a key concept. David Perkins has arguably done more than most researchers to help us to understand how learning transfer takes place through his writing in a number of publications, sometimes with his collaborator Gavriel Salomon (e.g. Perkins and Salomon, 1989). As Perkins explains (1993), albeit in the context of school learners but equally applicable in all spheres of learning including apprenticeships:

> *Research shows that very often pupils do not carry over the facts, principles and skills they acquire in one context to other contexts. Knowledge tends to get glued to the narrow circumstances of its initial acquisition. If we want pupils to transfer their learning we need to teach explicitly for transfer, helping pupils to make the connections they otherwise might not make and helping them to cultivate the mental habits of making links and connections.* (p8)

The importance – and trouble with – acquisition is as significant for apprenticeships as for all other types of learning. Effective transfer does not happen by accident. While apprentices may find it relatively easy to transfer knowledge from similar experiences to new situations, it is important that their teachers give due consideration to how valuable habits, thinking processes, skills and knowledge can be transferred to less familiar situations.

Perkins and Salomon are helpful here. They distinguish between two types of transfer, which they call 'high road' and 'low road'. Low road transfer occurs when a situation reminds the learner of a prior experience. For example, an apprentice domestic heating systems installer is able to carry out installation of an unfamiliar model of system boiler with some minor adjustments because, having installed other brands' models, sufficient cues from the structure and features of the boiler itself prompt the apprentice to determine the correct course of action.

High road transfer involves a much more conscious effort to remember and apply prior learning to situations that may only loosely resemble past experience, if at all. This might be the case when the apprentice in the previous example comes to practise fitting a more complicated conventional boiler. While many of the components that were built into the system boiler are not inbuilt in the conventional boiler, the apprentice has learned enough about the internal workings of the system boiler, and about heating systems in general, to attempt to transfer and apply knowledge directly to a larger system.

A number of helpful teaching tools for transfer have been identified by Robin Fogarty and colleagues (1992) and are summarised and adapted here for an apprenticeship context.

LOW ROAD	HIGH ROAD
Hugging: Design tasks for apprentices to do that 'feel' like a close resemblance to the ultimate application.	**Bridging:** Make time for apprentices to reflect and generalise from a task they have just seen or carried out to different possible applications.
1. Setting expectations: Flag up when an apprentice is carrying out a learning task that they will need to apply directly, as learned. *This might include tools they will need or a certain order for carrying out an assembly.*	**6. Anticipating applications:** Question apprentices to see whether they are able to predict potential applications beyond the scope of the immediate learning context. *When they practise a skill, ask them to be creative and list and discuss ideas for when they might use or adapt it.*
2. Matching: Plan a learning experience to bring it in line with a real scenario. *An apprentice kitchen assistant might be given the opportunity to prepare a complete meal or to plan and order a complete delivery.*	**7. Generalising concepts:** Apprentices consider a learning experience and generalise principles and rules of thumb from it. *A creative service apprentice might attempt to generalise some rules about how to market a particular product based on experience of a market research trial.*
3. Simulating: Provide opportunities for apprentices to use simulation or role play to understand how to behave in real-life scenarios. *A website administrator may be trained using a dummy website so that they can see changes before they go live.*	**8. Using analogies:** Engage apprentices in finding and elaborating an analogy between a skill area under study and something rather different from it. *An engineering apprentice is invited to consider how the engineering design process is like the creative act of rehearsing and putting on a play.*
4. Modelling: Teach apprentices by demonstration and not just describing. *An apprentice forest worker might be talked through the strategic decision process about which trees to coppice through the teacher 'thinking aloud'.*	**9. Parallel problem-solving:** Give opportunities for apprentices to solve similar problems in contrasting areas to gain an appreciation for the similarities/contrasts. *A tunnelling operative apprentice might be helped to draw out the parallels and differences between the requirements for building tunnels in different rock formations.*
5. Problem-based learning: Engage apprentices to learn content through solving similar kinds of problems. *A fitness instructor apprentice might learn how to ensure clients are exercised optimally by planning an exercise programme for a child, an adult, a new mother and a person recovering from an injury. He finds out the content he needs as he plans for each scenario.*	**10. Metacognitive reflection:** Prompt and support students in planning, monitoring and evaluating their own thinking. *After an activity have students ask themselves "What went well, what was hard, and how could I handle what was hard better next time?"*

TABLE 5 IDEAS ON LEARNING TRANSFER DRAWN FROM FOGARTY AND COLLEAGUES (1992)

Poortman and colleagues (2011) help us to understand how learning is acquired into the learner's collection of *mental schemes*. This understanding provides teachers with a number of principles for planning how they can maximise transfer in apprenticeship learning.

A schema is an organised pattern of thought or behaviour that organises categories of information and the relationships among them. Each type of acquisition requires increasingly more mental energy from the learner.

1. Cumulative	There is no existing mental schema to tell the learner what to do with a stimulus.
2. Assimilative	New information is integrated into the learner's established mental schemas.
3. Accommodative	Previous mental structures within a mental schema are broken down to fit a new understanding within them. Critical reflection is required.
4. Transformative	A more thorough re-structuring of schemas is required.

TABLE 6 FOUR PROCESSES OF ACQUISITION OF LEARNING (POORTMAN ET AL., 2011)

Some principles they suggest are:

1. In order to avoid an overload in energy consumption by the learner, a balance of *assimilative* and *accommodative* processes is needed.
2. In order for learners to begin questioning how the theory or method being learned can be applied in this, and other, situations, learners need to understand the underlying principles of what they are learning.
3. Teaching should be directed towards the learning processes so that demonstration, explanation, answering of questions and provision of feedback happen both in relation to the task at hand, but also in relation to the learning process.

3.7. EXPANSIVE LEARNING

Two researchers – Alison Fuller and Lorna Unwin – have consistently and powerfully argued for an approach to apprenticeship learning which is expansive rather than restrictive. Their work has been concerned with how, in workplaces, it is all too easy for the learning to be squeezed out in favour of productive labour.

Finnish educator and cognitive scientist, Yrjö Engeström, first developed the notion of expansive learning. He defined this as learning that was more like it is in the real world with discovery at its core. Engeström wrote both about schools and about workplaces.

Engeström challenged the notion that a piece of knowledge or skill is stable and well-defined; and that there is a 'competent' teacher who knows what is to be learned. He argued that much of 'the most intriguing kinds of learning in work organisations violates this presupposition' (2009; p58). Expansive learning occurs because of internal contradictions and tensions in 'activity systems' that drive change and development:

> *The object of expansive learning activity is the entire activity system in which the learners are engaged. Expansive learning activity produces culturally new patterns of activity. Expansive learning at work produces new forms of work activity.* (2001; p139)

Fuller and Unwin's 'expansive-restrictive framework' builds on these ideas to focus on the development of a workforce. Their framework highlights the opportunities for rich learning environments to be present in apprenticeships characterised by expansive features. These features include opportunities for employees to:

> *…engage in multiple communities of practice; gain broad experience across the organisation; pursue knowledge-based as well as competence-based qualifications; learn off-the-job as well as on-the-job; have a recognised status as a learner; and have access to career progression and extended job roles.* (2004; p35)

Fuller and Unwin's later *Towards Expansive Apprenticeships* (2008) distinguishes between notions of *expansive* and *restrictive apprenticeships*.

EXPANSIVE APPRENTICESHIP	RESTRICTIVE APPRENTICESHIP
Dual status as learner and employee: explicit institutional recognition and support for apprentice's status as learner.	Status as employee dominates: ambivalent institutional recognition and support for apprentice's status as learner.
Participation in multiple communities of practice inside and outside the workplace.	Restricted participation in multiple communities of practice.
Primary community of practice has shared 'participative memory': cultural inheritance of apprenticeship.	Primary community of practice has little or no 'participative memory': no or little tradition of apprenticeship.
Broad: access to learning fostered by cross-company experiences built in to programme.	Narrow: access to learning restricted in terms of tasks, knowledge and location.
Access to range of qualifications including knowledge-based vocational qualification.	Access to competence-based qualification only.
Planned time off-the-job including for college attendance and for reflection.	Virtually all on job: limited opportunities for reflection.
Gradual transition to full participation.	Fast – transition as quick as possible.
Apprenticeship aim: rounded expert who is full participant.	Apprenticeship aim: partial expert but full participant.
Post-apprenticeship vision: progression for career.	Post-apprenticeship vision: static for job.
Apprenticeship is used as a vehicle for aligning the goals of developing the individual and organisational capability.	Apprenticeship is used to tailor individual capability to organisational need.
Apprenticeship design fosters opportunities to extend identity through boundary crossing.	Apprenticeship design limits opportunity to extend identity: little boundary crossing experienced.
Apprentices have full access to their workplace's curriculum, values and goals.	Apprentices have limited and restricted access to the range of skills and knowledge of their workplace.

TABLE 7 THE EXPANSIVE/RESTRICTIVE CONTINUUM (FULLER AND UNWIN, 2008)

In our work in schools and colleges (Lucas et al., 2013), we have defined an approach to teaching and learning that develops lifelong learners prepared to meet the challenges of life and work. We have called this 'expansive education'. It has four aspects, each of which has resonance for apprenticeship learning. Under each, we pose questions that teachers might ask when examining their own practice:

1. Expanded goals for education: teaching subject area content and teaching 'visible', positive learning dispositions;

How can I develop inquisitive, questioning apprentices? Could I post challenges around the workshop as I find tricky tasks for apprentices to grapple with?

2. Expanded capability of learners to meet these goals: the belief that intelligence is expandable and all learners can be taught to become better at whatever they are trying to learn;

How can I ensure that all apprentices develop growth mindsets? Could I share real-life examples – through posters or visiting speakers – of individuals in our trade or profession who have struggled with a problem in order to succeed?

3. Expanded vision of what constitutes 'education': learning beyond school or college and into the home, community and workplace;

How can I offer opportunities for apprentices to become more immersed in a wider community? Could we participate in an industry event or competition?

4. Expanded capacity of teachers to research their own professional practice and develop positive attributes and dispositions in learners – as well as in themselves as they recognise the importance of teaching by modelling their own learning mindset;

How can I ensure that the process of learning is made explicit to apprentices, and that I am using the right language about learning? Can I try out new methods – such as peer coaching, an extended project or virtual modelling – to teach established lessons, and learn ways of evaluating the impact on apprentices?

3.8. DEVELOPMENT OF EXPERTISE

At the heart of apprenticeships is the development of various levels of expertise. For centuries our collective intuition suggested that this was most effectively acquired through the immersion of novices with experts. So we created situations in which apprentices could live with and learn from those who were more expert than themselves, overseen by a 'master'. It turns out from the research that we were roughly right in our gut feel. But it is also clear that there is much more to it than this.

In 1980, brothers Stuart and Hubert Dreyfus developed the Dreyfus model of skill acquisition, which demonstrates how learners acquire skill through formal instruction. The model's five stages of development are: 'novice', 'competence', 'proficiency', 'expertise', and 'mastery'. The model holds obvious relevance for apprenticeship learning; popularly conceptualised as a path from novice to expert. They dispute the Piagetian view that proficiency increases as one moves from the concrete to the abstract, arguing instead that:

> *…skill in its minimal form is produced by following abstract formal rules, but that only experience with concrete cases can account for higher levels of performance.* (p5)

The model itself can assist in development of training programmes by prompting consideration of the developmental stage of learners. Training aids should be matched to the learner's level to ensure advancement to the next stage and prevent detrimental impacts of aids too 'intricate and sophisticated' (p16) for the current level.

Although it is desirable for some degree of natural aptitude to come into play in apprenticeship learning (per Dewey and Robinson's ideas of 'vocation' and 'element' respectively), the journey to expertise involves significant amounts of time spent engaged in 'deliberate practice'. According to Anders Ericsson and colleagues (1993) '[m]any characteristics once believed to reflect innate talent are actually the result of intense practice extended for a minimum of 10 years' (p363).

The degree of influence of deliberate practice has also been subject to scrutiny. A 2014 meta-analysis (Macnamara et al.) has attempted to quantify the impacts by comparing studies that measured accumulated practice and performance. It concludes that other obvious candidates such as innate ability, commitment and opportunity also hold sway, but that deliberate practice is undoubtedly important.

Deliberate practice involves not just time spent on task, but targeted, strategic engagement in a process. 'Good' practice in music, for example, rarely involves playing through an entire piece of music repeatedly in the hope that the difficult parts will spontaneously come together. A good musician knows what time of day she is at her peak to practise. She knows what length of practice is optimum, before tiredness means only diminishing returns are achieved. She knows when to switch to another piece, or to a different type of practice (scales, for instance). She gives more time to the difficult parts, but focuses also on blending them in to the rest of the piece. If she wants inspiration on interpretation, she knows whose performance to search for and listen to. She listens to a recording of herself practising; she may ask for feedback. She knows at what stage she needs to play with others.

High road transfer may even come into her practice: she may notice interesting features of the music, or find new ways of practising particular phrases, and consciously 'bank' ideas for the future; be it for practice or composition.

The notion of a community of practice also implies that learning within a community involves practising alongside others; learning from those who are further along the learning journey as they also practise their skill.

Interestingly, in 2004, Alison Fuller and Lorna Unwin questioned the assumption 'that all novices proceed on a linear journey from 'newcomer' to 'old-timer', with their progress dependent on the extent to which their participation is facilitated by the 'experts'' (p32). Their research indicated that the concept of 'expert' meant different things in different organisational contexts. In some contexts, for example, the expert fitted 'a very narrow and bounded interpretation of what constitutes an expert'; perhaps more so when apprenticeships were less formalised. Evidence from their study found the pedagogical relationship between apprentice and 'expert' is not all one-way. Apprentices reported often that they themselves were helping others to learn.

3.9. PRACTICAL LEARNING AND EMBODIED COGNITION

Central to a traditional view of apprenticeships is the role of practical learning. Whether 'physical materials', 'people' or 'symbols' oriented, the on-the-job element of work-based learning places practical learning in the foreground. Although undervalued in education, practical learning can be understood more clearly through the lens of a rich body of theory encompassed in the title 'embodied cognition'.

Embodiment is about the science of physical intelligence, which tells us that perception is underpinned by physical interactions with the world; that mind and body are closely interlinked; that much thinking is not conscious. These ideas formed the basis of our discussion about the established methods of learning and teaching that are widely used in apprenticeship training (Lucas et al., 2012).

Handling materials and 'getting to grips' with problems allows learners to see things and inform their understanding in ways that simply looking and thinking do not. When discussing apprenticeships it is important to remember that many who choose this route have been mistakenly operating in the belief that they are doing an apprenticeship because they are not deemed bright enough for 'academic' study. But in fact, careful thinking complements practical learning. It does not replace it or count for more necessarily.

3.10. GROWTH MINDSETS

To become expert in anything we need to spend time with experts and learn from the ways they think and act. In short we need to put all of the theories we have described in this chapter into practice. But if we are to do this we need to believe that our effort will be worthwhile. We need truly to believe that it will be in our interest.

In the last few decades research into the characteristics of the kinds of mindsets which will produce sustained effort has dramatically advanced our understanding. It is of direct relevance to apprenticeship learning and, specifically, to the ways in which apprentices receive feedback.

Research has shown that what learners believe about themselves bears a powerful influence on the way they act when faced with challenges and, therefore, the success they experience in overcoming them. Carol Dweck (2006) reports the findings of a series of experimental studies conducted with colleagues at Stanford University in her book *Mindset*. She discusses two types of mindset: 'fixed' and 'growth'. Some people conceptualise their mental faculties as having a fixed capacity. Perhaps they lack optimism. Or perhaps they spent their formative years labelled as 'low ability' or 'bottom set'. Others take a less static view and, while aware that others may have more innate intelligence than they possess themselves, these individuals believe in the power of practice (and other habits of mind, such as thinking strategically, visualising a problem or asking for advice) for improving their success.

It is this sort of behaviour that equates to intelligence. On this subject, Lauren Resnick (1999) said:

> *Intelligence is the habit of persistently trying to understand things and make them function better. Intelligence is working to figure things out, varying strategies until a workable solution is found…*

Thus, those learners who have a 'growth' mindset, can actually enhance their own intelligence.

For those who see their mental abilities as increasing the more they use them, mental challenge is viewed in a positive light as an opportunity to grow. These individuals will push themselves; maybe spurred on by competition, but not threatened by it. They generally see mistakes as learning opportunities rather than proof of inability. And, ultimately, they get better at overcoming the design challenge, solving the programming problem, remembering the workflow process, maintaining business-like composure in front of the irate customer or shaping the perfect pastry.

Why is this important for apprentices? On the one hand, the apprentice may have more of a growth mindset than the professional. Sharon Almougy (2013) contrasts the 'apprentice mindset' with a 'professional mindset' and asks:

> *What happens when we become a professional at something? We're skilled and are supposed to know right? We have a natural tendency to think we should have known when we make a mistake and when mistakes occur we take it to a more severe degree of self judgment don't we? Our self expectations benchmark is automatically raised when we have a professional mindset.*

An 'apprentice mindset', on the other hand, is when:

> *We're in training to learn to become skilled at something. We're open to learning and growth yet also allowing ourselves to make mistakes because [our] mindset is one of learning a skill that we don't know as opposed to a professional. We tend to be less judgmental of our results because we understand that we're on a learning curve and our self expectations are lowered.*

Yet these 'types' may bear little resemblance to reality. Learners within Further Education in this country, as well as others, have typically experienced a system that pushes the less 'able' away from academia and into the practical. Indeed:

> *A gifted young person who chooses to become a mechanic rather than to accumulate academic credentials is viewed as eccentric, if not self-destructive. There is a pervasive anxiety among parents that there is only one track to success for their children. It runs through a series of gates controlled by prestigious institutions.* (Crawford, 2009b)

Without wishing to generalise overmuch, one can see the importance in a vocational context of being explicit about expandable intelligence. The apprentice plumber needs to develop, if he or she does not have it already, the belief that it is worth putting in effort to learn because it will be fruitful. Even if present already, this belief must be reinforced and its flames fanned into full strength through repeated experience. The language and expectations of teachers are of critical importance here.

To quote Lauren Resnick (1999) in summary:

> *Students who, over an extended period of time are treated as if they are intelligent, actually become more so. If they are taught demanding content, and are expected to explain and find connections… they learn more and learn more quickly. They [learn to] think of themselves as learners. They are [more] able to bounce back in the face of short-term failures.*

Just as good parents praise effort and not ability if they want to develop persistence and a 'can-do' attitude in their children, so good coaches, mentors and teachers encourage learners to try again when experiencing a setback, praise achievement over attainment and avoid labelling learners in ways that suggest ability is immovable.

4. APPRENTICESHIPS FIT FOR THE 21ST CENTURY

'I passionately believe that in the twenty-first century it is possible to think differently about apprenticeships, to act differently in how they are implemented, and ultimately to make them as ubiquitous as the iPod.'

Tom Bewick (2014)

As England, in common with most countries across the world, seeks to develop more apprentices, it may be helpful to remember a number of important things:

- While an increase in quantity may be desirable in the short term
  unless apprenticeships as a concept and a brand are associated with quality, then they will never become a pathway of choice.
- While it is encouraging that employers are embracing apprenticeships across both white and blue collar industries,
  we wish to create a better understanding of the key aspects of an apprenticeship in terms of input, content, level and length. This must also value other pathways, routes and training programmes which feed into apprenticeships leading to valued skills acquisition and creation of jobs.
- While simplifying structures and putting employers in the driving seat is essential
  organising an apprentice's learning is a complex activity which requires an understanding of vocational pedagogy.
- While it is helpful to think of different levels of apprenticeships, perhaps even to 'package' them differently
  it is most important that there is good progression throughout the apprenticeship system.
- While rigorous assessment is important for the external validity of apprenticeships
  many of the capabilities valued by employers are not readily susceptible to end of apprenticeship testing.
- While knowledge and skills are both important
  so too are a broader set of employability attributes or habits of mind. Knowledge is easier to assess than skills, which in turn are easier to assess than dispositions. Yet too much emphasis on the easiest of these three to assess – knowledge – leads to apprentices who cannot perform in the real world of work.
- While some apprenticeships are beginning to embrace technology
  not enough are; something particularly true with regard to e-assessment and, for example, the growing open badges movement.
- While it is an attraction of apprenticeships to individual learners that they are paid, albeit low-paid, workers
  the pay itself is not a motivator. The broader learning and working environment needs to be geared to provide them real learning with skilled teachers/coaches/mentors/guides/trainers.
- While all apprenticeships offer apprentices some learning
  too many offer a small amount over a relatively short length of time. They run the risk of both tarnishing the brand and making England look poor in international comparisons. It is only recently that minimum hours and a minimum timescale for apprentices have been established in England.

In this report we are seeking to put the learning back into apprenticeships and invite employers, providers, apprentices and policy-makers to consider the ways in which such an attempt might help improve the quality of apprenticeships.

4.1. SIX DESIRABLE OUTCOMES OF APPRENTICESHIPS

In *How to teach vocational education: a theory of vocational pedagogy* (Lucas et al., 2012) we argued that, for vocational education to be seen as the complex, worthwhile and well-regarded topic we believe it to be, it needs to broaden its horizons and its aspirations. Rather than just seeing its goal as the development of routine expertise or skill or competence – desirable as this is – it also needs to be ensuring that learners acquire other attributes which will help them thrive at work and in life. We described six desirable outcomes for vocational education:

1. Routine expertise – skilled routines and the ability to carry out skilful activities to a satisfactory standard.
2. Resourcefulness – the capacity to think and act through a situation not previously encountered.
3. Craftsmanship – pride in a job well done, the highest possible standards of work.
4. Functional literacies – literacy, numeracy, digital and graphical.
5. Business-like attitudes – customer- and client-focused, entrepreneurial and aware of value for money, whether in for profit, public sector or third sector roles.
6. Wider skills for growth – the dispositions and wider skills for a lifetime of learning and change.

We need a similarly broad approach to apprenticeships. In defining this breadth we take our six outcomes, summarise research relevant to apprenticeships and explore ways in which each of the six is relevant to apprenticeship learning. In some cases, our six desirable outcomes are well-theorised in terms of how they might be developed and assessed. In others we believe that a richer understanding of pedagogy and assessment will be useful for consideration of both policy and practice.

In the six sections that follow; we **define** each of our desirable outcomes and articulate some of the **challenges** each poses in apprenticeship learning. In section 4.3 on 'Assessment issues' we further present ideas on their **assessment.**

We look more closely at teaching and learning methods in section 5 – The Pedagogy of Apprenticeships.

4.1.1. ROUTINE EXPERTISE

Learning how to become routinely expert at something is at the heart of apprenticeships. As Philipp Grollman and Felix Rauner (2007; p443) rightly stress, one of the indicators of quality apprenticeship learning is the apprenticeship's ultimate goal of 'professional competence'. As a result of their training, apprentices need to demonstrate a degree of ability – or 'working competence' – that allows them to perform their job well. It requires a learner to acquire skilled routines and have the ability to carry out activities to a satisfactory standard.

At the time of writing, there are 233 current frameworks in England (*Apprenticeship Frameworks Online*, 2014). Each has many different aspects of routine expertise or skill, and frameworks include 'knowledge' and 'competence'. Here are examples of some of the competences required for a Level 2, 3, and 4 in three different sectors, and taken from the Federation for Industry Sector Skills and Standards' *Apprenticeship Frameworks Online* library.

LEVEL 2 INTERMEDIATE LEVEL APPRENTICESHIP (NVQ DIPLOMA) IN DOMESTIC HEATING	LEVEL 3 ADVANCED LEVEL APPRENTICESHIP IN JOURNALISM	LEVEL 4 HIGHER APPRENTICESHIP IN INTEGRATIVE DESIGN AND DEVELOPMENT
Apply safe working practices in building services engineering working environments. Install and maintain domestic heating systems. Understand and carry out safe working practices in building services engineering. Understand and carry out site preparation and pipework fabrication techniques for domestic plumbing and heating systems. Understand and apply domestic cold water system installation and maintenance techniques.	Use Teeline Shorthand for Journalists. Understand how government works at central and local government levels. Understand all aspects of court reporting from magistrates' to crown court. Understand multi-platform reporting, finding and telling stories, accuracy and use of English, basic editing skills and how the industry works.	Design user interfaces for interactive media products. Plan content for interactive media products. Write and edit copy for interactive media products. Obtain assets for use in interactive media products. Prepare assets for use in interactive media products. Create animated assets for interactive media products. Create sound effects for interactive media products.

TABLE 8 EXAMPLES OF COMPETENCES REQUIRED AT THREE LEVELS IN THREE SECTORS

Barbara Brandt and colleagues (1993) further define the notion of working competence by distinguishing three main goals of apprenticeship learning:

1. To discover what works.
2. To recognise tasks, problems or situations and know how to handle them.
3. To perform at an acceptable level.

These claims all speak of the desirability of an apprentice possessing the ability to do the job they have been trained for; to demonstrate what we might call 'routine expertise'. This is an outcome that apprenticeship programmes must, therefore, be designed specifically to develop. An apprentice draws on routine expertise when carrying out regular day-to-day tasks that do not require additional levels of thinking beyond standard, learnable performance.

Challenges to developing routine expertise in the workplace include:

- adequate opportunities to practise;
- the motivation of the learner to keep practising until the skill has become routine, especially when it is not particularly interesting;
- the availability of an 'expert' teacher/coach;
- the skill of the expert as a teacher, especially their ability to articulate the important steps of a process and make the tacit processes visible;
- the relevance of the standards against which the learner is being measured;
- the development of craftsmanship while becoming more skilful.

4.1.2. RESOURCEFULNESS

This desirable outcome is about being able to deal with the non-routine and unexpected. While reliable skill is essential, in most workplace situations things happen which are beyond the routine. A resourceful apprentice will need to stop and think when they are in situations beyond that with which they are familiar, and for which normal 'routines' are of little help.

As apprentices progress, so they will need to develop more resourcefulness, to be able to stop to think and draw on resources other than their own knowledge of the routine. The knowledge necessary to solve a problem may be embedded deep in the memory, or accessible through a skilled colleague or other source of information. Wherever it comes from, this knowledge is brought to bear by the 'resourceful' practitioner, who has identified a scenario not 'immediately susceptible to familiar routines' (Lucas et al., 2012; p49) and uses that knowledge to enable him or her 'to construct a non-routine way forward that will eventually lead to a satisfactory solution'.

Resourcefulness has another aspect. In a paper on 'learned resourcefulness', Serap Akgun and Joseph Ciarrochi (2003; p288) cite Rosenbaum's (1990) definition:

> *...an acquired repertoire of behavioural and cognitive skills with which the person is able to regulate internal events such as emotions and cognitions that might otherwise interfere with the smooth execution of a target behaviour.*

Resourcefulness is thus as much to do with managing unwanted emotions and behaviours as it is concerned with finding new ways around problems. Akgun and Ciarrochi give a number of examples of studies demonstrating the importance of learned resourcefulness. One study found that when learners were subjected to repeated failures on a training task, 'low resourceful subjects exhibited performance deficits on the subsequent task, whereas high resourceful subjects exhibited reassertion' (p289). In a situation where an apprentice has made a potentially serious error, panicked solutions – however resourceful and creative – may compound the error. Rather than his performance being hindered by anxiety, a resourceful learner may use their self-control skills to minimise this effect.

In a very real sense, 'resourcefulness is more crucial than resources' (Twigg, 2006). As important as knowing where to seek help and having the necessary external resources to hand, is being able to take a step back emotionally, remain calm, take responsibility, give a sense of assurance to the client or customer or supervisor that the situation is not beyond one's control but will be rectified, and think calmly through possible options.

Cindy Poortman and colleagues (2011) argue that apprenticeships (as a form of initial vocational education and training) must prepare workers 'by providing a basis for lifelong learning in developing both routine and flexible competence' (p267). Workers face two scenarios that call for resourcefulness. Firstly, new problems can arise in their current job. Secondly, they will have to respond to the 'continuously changing circumstances in society in general and work in particular' (Poortman et al., 2011; p267).

Challenges to developing resourcefulness in the workplace include:

- having adequate opportunities to practise skills in unfamiliar settings;
- having sufficient time available for practice;
- being allowed to develop such a higher-order capability when there is an emphasis on productivity;
- having an expert teacher to suggest resourcefulness strategies.

In *Pedagogic Leadership: Creating cultures and practices for outstanding vocational learning*, Bill Lucas and Guy Claxton (2013) propose that development of resourcefulness is a particular challenge in vocational settings requiring real pedagogic leadership because of the kinds of issues listed above.

4.1.3. CRAFTSMANSHIP

Craftsmanship involves an unambiguous aspiration in a worker or learner for excellence. With it comes the sense of pride in a job well done. The idea of craftsmanship is central to apprenticeships. Alan Cooper (2008), speaking to software engineers, describes this desirable outcome of apprenticeships powerfully:

> *The goal of craftsmanship is to get it right, not to get it fast. The ultimate measurement of craft is not speed. It's quality. How good is it. It's a pure measurement. And a delightful measurement. Craftsmen – craftspeople – do it over and over, until they get it correct. And in their training, in their apprenticeship, they build things over and over, learning how to do things correctly, so they can bring enormous expertise to create successful products, and thus the training of craftsmen is a long and drawn out personal process.*

Interestingly the software movement has been vocal in stressing the importance of craftsmanship as detailed in its 2009 Manifesto for Software Craftsmanship, *Raising the Bar*:

> *As aspiring Software Craftsmen we are raising the bar of professional software development by practicing [sic] it and helping others learn the craft. Through this work we have come to value:*
>
> *Not only working software, but also well-crafted software.*
>
> *Not only responding to change, but also steadily adding value.*
>
> *Not only individuals and interactions, but also a community of professionals.*
>
> *Not only customer collaboration, but also productive partnerships.*
>
> *That is, in pursuit of the items on the left we have found the items on the right to be indispensable.*

Of course craftsmanship was at the heart of the medieval forms of apprenticeships in England and is alive today in Germany, for example, in the term *'meister'* which signifies extensive knowledge of the theory of a specific craft as well as the highest levels of practical skills.

Craftsmanship is, nevertheless, a highly desirable attribute in many vocations and, we would argue, one that could be useful in all vocations in some form. The Guild of Master Craftsmen, for example, recognises and promotes the importance of excellence in workmanship for tradespeople. Craftsmanship is an asset that can set tradespeople apart in securing business from members of the public. Unlike employers, for whom qualifications are key (provided they are representative of a real ability to do the job), members of the public are drawn more to recommendation, which rests upon the reputation of tradespeople. Status as a worker with 'craftsmanship' can provide a key identifier.

According to the Federation of Small Businesses (FSB), SMEs (those with 10-249 employees) accounted for 99.9% of all private sector businesses in the UK at the start of 2013. While the large employers are leading the way in development of new industry standards for apprenticeships it is, arguably, in the micro-, small- and medium-sized enterprises where much of the employment of apprentices will take place. Trades are typically micro- or small-sized businesses, and their need for recognised craftsmanship will influence what they look for in an apprentice. For example, the Guild of Master Craftsmen assists businesses to develop through apprenticeships.

For the last decade there has been a growing interest in the concept of craftsmanship of which the writings of Richard Sennett, Matthew Crawford and Mike Rose are good examples.

For Richard Sennett, author of *The Craftsman* (2009), the desire to do a job well for its own sake is a basic human impulse. Thinking about craftsmanship, he argues, should not be limited to the traditional realm of skilled manual labour. Rather, everyone – the computer programmer, the doctor, the parent and the citizen – can put into practice the values of craftsmanship.

Matthew Crawford's (2009a) *The Case for Working With Your Hands: or Why Office Work is Bad for Us and Fixing Things Feels Good* and Mike Rose's (2004) *The Mind at Work: Valuing the intelligence of the American worker* speak similarly to the false separation of the hand and brain in common understandings of intelligence. Both explore the intricate mental demands of daily work on manual workers, and the satisfaction and pleasure individuals derive from the cognitive aspects of a job well done.

The Case for Working With Your Hands is an observation about the nature of fulfilment at work and, in particular, when 'thinking' and 'doing' are not separated as they so often are in the office. Crawford argues that skilled manual work provides one of the few and most rewarding paths to a secure living. He describes how mechanical work (fixing motorcycles) forced him to cultivate different intellectual habits. As an observation on manual work, *The Case for Working With Your Hands* recognises and puts into words the level of cognitive (as well as ethical, moral and physical) complexity involved. *The Mind at Work* similarly illuminates the level of intellectual demand required on the 'blue collar' worker to get the job done right.

Christopher Frayling (2011; p14), suggests some of the reasons why craftsmanship is so neglected today:

> *Craftsmanship is assailed on all sides by – among other tendencies – flexible working, portfolio careers, multi-tasking, short-terminism, quick-fix training, suspicion of expertise, confusion between elites and elitism, the downgrading of dedication, quantitative targets and box-ticking, the value attached to presentation skills and the rise of semiotic man, outsourcing off-shore, 'we'll write it, they'll print it', casino capitalism, the 'look at me!' culture, fifteen minutes of fame, branding, one size fits all, the remote society….*

It is a long list and, even if you do not understand or agree with all of its items, the argument is certainly both plausible and persuasive.

In terms of apprenticeship learning, there are three particularly relevant strands of thinking.

The first concerns our growing understanding of the way that expertise is developed, already introduced in section 3.8. To become an expert or a craftsman requires many hours of practice of a kind described as 'deliberative' (Ericsson et al., 1993; Dreyfus and Dreyfus, 1980).

The second, also mentioned earlier, relates to the way learners see themselves and the degree to which they have a growth mindset. It is easy to see how someone who believes that with effort they can get better, and who is determined to push themselves and to learn from their mistakes, is also the same someone who is likely to be driven by the idea of pride in a job well done.

The third strand places the development of craftsmanship in a teaching context. Ron Berger's *An Ethic of Excellence: Building a culture of craftsmanship with students* describes some of the ways in which craftsmanship, especially skilled physical work of the highest standard, can be developed.

Berger (2003) reminds us that:

> *In carpentry there is no higher compliment builders give to each other than this: That guy is a craftsman. This one word says it all. It connotes someone who has integrity and knowledge, who is dedicated to his work and how is proud of what he does and who he is. Someone who thinks carefully and does things well.*

In section 5 we explore the implications for pedagogy and the development of craftsmanship.

Implicit in the idea of craftsmanship is the idea of a certain *attitude* towards work. Novices can – and should – be trained to think and perform with 'craftsman-like' dispositions. Indeed, David Corson (1985; p295) suggests that work itself can become 'a vocation or a calling' when students are brought to see their work as a craft. Such students:

> *…say of themselves: 'I intend making this work activity part of myself. I am going to live it because while I am doing this work others identify me by it and I measure myself against it.'*

Craftsmanship goes beyond technical proficiency. It means carrying out the job, skill or craft:

> *…in such a way that the technique is combined with, even subservient to, a sensibility, a feeling for the materials, a sense of interpretation, or a sense of 'style'.* (Atkinson et al., 2013; p499)

This is seen, for example, in musicians or singers as possessing a certain 'musicality':

> *This means being attentive to more than just the notes. It means the ability – and, more importantly the willingness – to shape a vocal line, by matching the music and the words, by extending a note, by using one's breathing expressively, or by giving the voice 'colour'… the performer brings to bear an interpretive framework, which depends upon technique for its realisation but is not itself captured by vocal technique alone.* (ibid.)

A sense of craftsmanship is not, of course, unique to the physical crafts or manual trades. Neither is it something that can only be taught through vocational training or an apprenticeship. John Pardy and Terri Seddon (2011) argue that both VET and Higher Education:

> *…offer opportunities for navigating into craft and craftsmanship in ways that are about crafting a workable life for now and about building the resources of self that sustain a life when social conditions shift and change.*

Craftsmanship thus goes beyond technical proficiency to include a set of attitudes that make the learner undergoing 'formation' both self-sufficient and constantly striving.

This view of an apprenticeship as trainee craftsperson sits slightly at odds with the 'official' understanding of what it means to be an apprentice. While apprenticeships are a vehicle for developing individuals – and 'a key beneficiary is the apprentice' (Richard, 2012; p3) – it cannot be forgotten that they are fundamentally about training them for *work* for an *employer*; one with an economic rationality for employing them. Craftsmanship may be a 'nice-to-have', but not necessarily something that employers aim to train for. In the *Richard Review* (2012) Doug Richard considered the issue of what an apprenticeship means now, and what it should mean in the future. Desirable outcomes were primarily about fitness for the role and flexibility to fit into new roles. What was noticeable by its absence was any mention of excellence in workmanship. If fitness for the purpose of immediate employment is the overriding goal of apprenticeships it is easy to see how an all-important attribute such as 'pride' can seem nebulous to an employer looking for a quick return on their investment.

Craftsmanship is also bound tightly with the notion of identity. It reflects not just who an individual is and what they can do, but their beliefs about themself as a practitioner. In *The Craftsman* (2009) Richard Sennett proposes that:

> *The emotional rewards craftsmanship holds out for attaining skill are twofold: people are anchored in tangible reality, and they can take pride in their work.* (p21)

In her exploratory study of apprentice bakers, Selena Chan observed that externally imposed 'way-markers' such as occupational titles were conferred upon apprentices by other workers as they progressed up the ranks and were allocated increasing and differential responsibilities. Yet only when apprentices came to acknowledge these roles for themselves did they experience self-acceptance of the job role as their own. Chan argues that 'achievement on a personal, internalised level is perhaps more important than certification conferred through completion of a qualification' (p368). It is our argument that craftsmanship must be similarly internalised.

Skill acquisition is a main objective of apprenticeship learning (Chan, 2013) and yet there are other aspects of the job 'that are not readily described or easily quantifiable in formal qualifications' (Chan, 2013; p370). Her apprentices, for example, grew to become 'independent and effective craft bakers' (p380), yet anatomising what makes an 'effective' craft baker might be difficult to do because of the 'non-quantifiable and difficult-to-describe

aspects' (p380) of the occupation. Indeed, much of the knowledge craftsmen hold is *tacit,* so that the inability to describe a process or technique does not indicate a lack of intelligence because 'what we can say in words may be more limited than what we can do with things' (Sennett, 2009; p95).

Although an outcome of the *Richard Review* is a focus on simplifying qualifications, there are clearly elements of apprenticeship learning that do not align easily with certificate-based content:

> *Many of the senses bakers use to evaluate fine and nuanced distinctions relating to the quality and type of ingredients, dough characteristics, finished products quality, bakery machinery operation and the baking environment (i.e. temperature, humidity) are only inferred in national qualifications. Yet the ability to utilise these sense-related skills is an important indicator of how well bakers perform their occupational tasks.* (Chan, 2013; p371)

Learning to be a baker is, thus, about more than learning the information and skills of the trade, it is about developing a combination of capacities and identity 'associated with practising the occupation of a baker' (ibid.).

Selena Chan's (2013) study of apprenticeship learning in a bakery concept identified how, for some apprentices, work changed its meaning over time to become a genuine vocation. Note how the following excerpt from one of her interviews demonstrates what we might think of as a craftsman-like attitude:

> *For me, it's still every day trying to make a consistent product, no matter what size and just trying to everyday make what looks like a quality product. Consistent and of a high quality is what we are after. So I still find it a challenge, every day to get it done better, to get more done. Simply to make better bread with the other guys.* (p377)

Chan makes the point that apprentices' training – with its specific occupational requirements and use of particular stock in trade (bakery products) – instils in them a certain disposition; one that combines a 'duty of care', a sense of responsibility, the practice of reflection and attention to quality. It does this by 'acculturating apprentices to specialised approaches to work as epitomised in their workplaces' (p377).

More than with any of the other five desirable outcomes of apprenticeships, developing and assessing craftsmanship in the workplace brings some real challenges requiring real pedagogic leadership (Lucas and Claxton, 2013). These challenges include:

- the perceived opportunity/cost trade-off of doing a job fit for purpose, and doing a job perfectly;
- deadlines/sufficient time to perfect a piece of work;
- peer pressure from other apprentices for learners not to appear too 'pedantic';
- the availability of a craftsman-like role model;
- pressure of other work-in-progress that requires attention;
- quantitative targets;
- distraction of multi-tasking;
- lack of accountability (and perhaps recognition) on the part of the learner where they are involved in production of only part of a larger product or service;
- employers who may be less concerned with quality;
- temptation to do a 'good enough' job;
- pressure of completing a job in a short enough time to ensure it remains profitable;
- wastage of material if something isn't 'quite right';
- the need to practise other skills;
- motivation of the learner to exert effort where a task is difficult and also repetitive, or of low perceived value.

4.1.4. FUNCTIONAL LITERACIES

As well as being functionally literate in numeracy, literacy and ICT, apprentices, we believe, need a level of graphical and digital literacy which is beyond the scope of the ICT component. This might include, for example, being able to interpret the meaning of computer-generated results of calculations (ACME, 2011).

In October 2012, Functional Skills became a mandatory part of all apprenticeship frameworks, replacing what were known as Key Skills. This change was in part a response to the *Wolf Report* (2011), but also reflected the sense of unease that many have about low levels of basic skills. Functional Skills are seen as being foundational for employability (BIS, 2013b; p19) and essential for success in modern society (Richard, 2012).

The role of Functional Skills has been further complicated by the latest requirement for all 16-19 learners to study towards GCSE/Level 2 maths and English if they have not already achieved a GCSE A*-C in these subjects. Completion of Level 2 will be a prerequisite for sitting the Advanced and Higher Apprenticeships, although Intermediate apprentices 'will continue to be supported to achieve Level 2 English and maths where possible should they sit the end test prior to their attainment' (BIS, 2013d; p14). Concurrently, from 2015 the government plans to bring in a set of new core maths qualifications at Level 3 'for learners who want to progress with maths, but for whom an AS/A level in mathematics would be inappropriate' (AELP, 2014a; p6).

Embedding Functional Skills into apprenticeship learning is not straightforward. Graham Hasting-Evans, in *FE Week* (2012) summarised this well:

> *Functional Skills have to be taught. They are not course-specific, they are totally generic. And they are not portfolio-based either. They are taken under controlled conditions and competency cannot be demonstrated through activities related to students' day-to-day vocational experiences.*
>
> *They are particularly challenging to fit into apprenticeships, especially if a student only has one day a week at college, and during that time is learning the technical and underpinning knowledge to support their apprenticeship. Now they have to study maths and English too.*

The research evidence supports the journalistic observation. You cannot easily separate out Functional Skills from the situation in which they are normally used. Functional Skills are themselves contextual. For example, literacy practices in different contexts such as college and the workplace are heavily influenced by the values, knowledge and expectations that are ascribed to them, and that shape the identities of those who participate in them (Edwards and Smith, 2005). Take a very straightforward example such as delivering presentations and contributing effectively to discussions. A 17-year-old apprentice might be able to do one of but not necessarily all of these:

- using PowerPoint to present ideas for a new product;
- reflecting on the performances of different team members in a recent football match;
- taking part in a discussion about music they enjoy listening to;
- taking part in a mixed-age group discussion about how to talk to old people in a care home.

Each carries with it a context. And the same would be true for numeracy and some of the broader ICT-related competences.

By making the teaching of Functional Skills or GCSE English or maths mandatory there is an assumption that it must be simple. But it is not. Keiko Yasukawa and colleagues (2013) give an example of how production workers used a variety of strategies to overcome problems in the workplace when they could not read instructions, or questioned the calculations necessary for completing their tasks. They were skilled in the routine task of the job, operating a computer modelling system for making 3D images of hearing aids for printing in silicon. When non-routine problems presented, they demonstrated resourcefulness in using

strategies to complete the task, such as asking more experienced fellow workers or drawing on their prior knowledge of doing the same job with different equipment. The workplace culture supported teamworking where individuals helped each other with both technical aspects and literacy or numeracy demands, to the extent that they did not perceive themselves to have low levels of literacy or numeracy, even downplaying their mental processing expertise on the computer as 'a bit like playing on a video game'. As the authors note (Yasukawa et al, 2013):

> *Some of the skills that are exercised by the workers in their modelling work would be difficult to recognise in the ways literacy and numeracy are described in some of the conventional, skills based frameworks of literacy and numeracy.* (p381)

Indeed, a challenge to teachers attempting to make Functional Skills explicit in their teaching is that literacies are not always used in a visible fashion, or in a way that is easy to label. Their success in problem-solving may be a result of a combination of both mathematical thinking and technological thinking or, more likely, less mathematical thinking and more speaking the language of a computer to obtain mathematical results. Keiko Yasukawa and colleagues (2013) refer to this use of the computer (or other 'technological artefact' such as charts and graphs) as 'techno-mathematical' literacy.

This lack of recognition is reflected back in FE teaching also. For example, a report by Sally Faraday and colleagues (2011) looked at real-life instances of effective teaching and learning in vocational education as identified by Ofsted. It observed that teachers rarely mentioned seeking to promote Functional Skills, and when aspects of Functional Skills were taught, teachers were 'perhaps not recognising them as such' (p62). The report suggests that further guidance is needed on how to embed Functional Skills.

While it is important that literacy being taught truly is a 'functional' literacy, it is not enough to teach a series of techniques or commonly-used calculations. Content and practices must be taught in a way that is ultimately transferable to the vocational area (both in terms of 'high road' and 'low road' transfer, as discussed in section 3.6). Progression to more advanced Further Education, or even to Higher Education, must be considered, however. Teachers need to be aware of issues of progression so that they do not deprioritise literacy practices required by the subject they deem to be 'higher than those required in the vocation for which the students are being prepared' (p56).

More than being able to use functional literacies for direct application at work, or even for advanced vocational studies, there is also an argument – which comes from employers – that says some Functional Skills are important for their own sake. Mathematics, for example, is a logical language whose use translates beyond immediate application in to a discipline of the mind. The Advisory Committee on Mathematics Education (2011) positions their argument thus:

> *It is sometimes suggested that all that is needed is to teach students how to carry out the particular calculations that are common in their intended field of employment. Many of the employers we interviewed provided a different perspective, recognising that mathematics is a subject of intellectual power and that the best interests of their companies would not be served by an education system restricting young people to a diet of particular techniques they were likely to use in their day-to-day work… there is an increasing awareness… that developing a sound understanding of key mathematical ideas is an essential element in a good modern education.* (p2)

There is clearly a balance to achieve in the teaching of apprentices. Functional Skills must serve the function of being immediately accessible to apprentices needing them on-the-job, appropriate for progression and useful for a broad and transferable understanding into the workplace and beyond.

We have switched between Functional Skills and our own phrase 'functional literacies' in this section. Our argument is that both are important and teaching them requires considerable skill. By broadening this category beyond the current definition of Functional Skills we realise that we are further complicating

matters. In the next chapter we will explore the pedagogic implications in more detail, considering such issues as whether functional literacies should be developed in context or separately, by 'functional' experts or by vocational teachers, or by some combination of all of these. How best can they be learned in a busy workplace?

Developing and assessing functional literacies in the workplace brings some real challenges including:

- the small amount of day release time and guided learning hours available to apprentices;
- the availability of appropriately skilled staff in the workplace to support the development of Functional Skills;
- co-ordination of Functional Skills teachers and subject specialists, where co-operation is required;
- the ability of off-the-job trainers to make Functional Skills training relevant;
- the ability of workplace staff to identify and articulate the Functional Skills they are using;
- having the foresight and imagination to identify the areas young people should be taught that are necessary beyond the 'diet of particular skills' they need to apply day-to-day.

4.1.5. BUSINESS-LIKE ATTITUDES

This desirable outcome is about dealing with clients, suppliers and customers appropriately. Another word for it might be 'professionalism', a way of behaving, whatever your occupation. To 'act appropriately' in the world of business, whether for- or not-for-profit, is an essential requirement of any apprenticeship. This broad phrase might encompasses both the day-to-day and more strategic running of the organisation, and it should certainly include 'softer' skills needed to communicate with all stakeholders professionally, effectively, but also with empathy.

In *How to Teach Vocational Education* (Lucas et al., 2012) we laid out a number of ways in which a business-like attitude might manifest itself. For example, through behaviours such as:

> *...punctuality, orderliness, willingness to put in necessary time and effort, and displays of customer service that exceed customer expectation.* (p53)

In terms of management processes, behaviours would include:

> *...ability to manage peers, subordinates, and even superiors, and to motivate the team into giving their best for the business and working effectively together* (ibid.).

Further, we suggested that organisations' 'codes of conduct' provide strong clues as to the sorts of business-like attitudes they deem essential. For example, being ethically-minded, customer-focused or efficient are values that might feature on such charters.

Given the time that apprentices spend in the workplace they are well-positioned to be able to develop business-like attitudes. But it is also the case that employers differ considerably in what they see business-like meaning in practice. Some stress basic self-organisation, punctuality and appropriate dress-sense while others prefer to explore nous, flexibility and loyalty. Some will need to stress routine, safety and line management, while others may see more value in creativity, flair and entrepreneurial activity. The culture of the workplace will hugely influence the kinds of skills which are valued or not.

While not a direct synonym for business-like, the list of seven employability skills proposed by the Confederation of British Industry (CBI, 2007) is worth considering. They define employability skills as:

- positive attitude;
- self-management;
- teamworking;
- business and customer awareness;
- problem-solving;
- communication and literacy;
- application of numeracy; and
- application of information technology.

Developing and assessing business-like skills in the workplace brings some real challenges including:

- ensuring that the definition of business is set expansively to include both basic self-organisation and higher level communication and work skills;
- being clear about the differences between Functional Skills, business-like attitudes and wider skills for growth and how best each can be cultivated;
- deciding which sorts of business-like attitudes and skills count as important;
- provision of opportunities for learners to develop if they are rarely client-facing;
- the difficulty for assessors of not always being able to state, objectively, what an 'appropriate' or 'professional' response is in a given situation;
- the difficulty of noticing a quality like 'attitude' when this might be easier to observe when it is not professional;
- a bias due to the tendency of clients to feed back when expectations have not been met, but not when they have been exceeded.

In Appendix 1 we include some examples of apprenticeship charters which indicate some of the kinds of business-like attitudes we have been describing here.

4.1.6. WIDER SKILLS FOR GROWTH

Wider skills are known by a number of different names such as 'dispositions', 'attributes', 'capabilities' and so on. Each reflects a variation on what is considered important depending on the stakeholder group concerned. The two key words in this phrase are 'wider' as in generic or broad and 'growth' which deliberately implies both personal and economic development.

In our review *Wider Skills for Learning* (Lucas and Claxton, 2009) for NESTA we made a case for talking about 'dispositions' and 'habits of mind' rather than 'skills'. By focusing on, for example, habits of mind, it is more likely that we identify skills that are really used in practice as opposed to ones held by an individual who is technically qualified but does not actually apply skills when they are needed. In a review of literature we identified a growing consensus as to which wider skills were valuable, whether approaching this subject from an international, a European or a national perspective, or from a perspective of employment or education.

The outcome of delivering wider skills for growth is, above all, about developing in apprentices the dispositions of an effective lifelong learner able to thrive at work, home and in the community.

As part of a consideration of apprenticeship pedagogy, what is vitally important is that there is no gap between the skills expected of a 'good' learner and the skills required of a successful employee.

Thus, so-called wider skills should not really be 'wider' at all. If they are important for success in and beyond the workplace, they should be important for the apprenticeship. Wider skills for growth go beyond the more routinely assessed tests of knowledge and they go beyond those concerned with physical control, manual dexterity or mental facility.

Within apprenticeships the closest currently to our category of wider skills for growth are the Personal, Learning and Thinking Skills (PLTS). According to the *Specification of Apprenticeships Standards for England* (BIS, 2013e; p10) apprentices must demonstrate the following skills:

a. ***Independent enquiry*** *– apprentices can process and evaluate information in their investigations, planning what to do and how to go about it. They take informed and well-reasoned decisions, recognising that others have different beliefs and attitudes.*

b. ***Creative thinking*** *– apprentices think creatively by generating and exploring ideas, making original connections. They try different ways to tackle a problem, working with others to find imaginative solutions and outcomes that are of value.*

c. ***Reflective learning*** *– apprentices evaluate their strengths and limitations, setting themselves realistic goals with criteria for success. They monitor their own performance and progress, inviting feedback from others and making changes to further their learning.*

d. ***Teamworking*** *– apprentices work confidently with others, adapting to different contexts and taking responsibility for their own part. They listen to and take account of different views. They form collaborative relationships, resolving issues to reach agreed outcomes.*

e. ***Self-management*** *– apprentices organise themselves, showing personal responsibility, initiative, creativity and enterprise with a commitment to learning and self-improvement. They actively embrace change, responding positively to new priorities, coping with challenges and looking for opportunities.*

f. ***Effective participation*** *– apprentices actively engage with issues that affect them and those around them. They play a full part in the life of their school, college, workplace or wider community by taking responsible action to bring improvements for others as well as themselves.*

On the face of it this set of six wider skills is excellent. Indeed some providers have carefully mapped them across the content of their apprenticeships and thoughtfully considered such things as how apprentices might first encounter them in their induction. See, for example, apprenticeship training organisation Skills CFA (2013). Another challenge emerges in the form of the government's priorities for education.

Whilst the current government's priorities for school education have seen the downgrading of the value of Personal, Learning and Thinking Skills from the secondary curriculum (reference to PLTS can now be found only in the National Archives (2011)), the guidance on apprenticeship standards makes a requirement of PLTS and that they are expanded upon by employers.

Allowing employers to decide upon the standards for their own industry risks oversight of the need to ensure apprentices are developed with an eye on their long term employability across, and not just within, sectors. This transferability is something that government, in line with the recommendations from Richard (2012), is keen to ensure happens, and the SASE document (BIS, 2013e) states clearly the six PLTS that apprentices must demonstrate and, as such, that apprenticeship frameworks must specify.

The Confederation of British Industry (CBI, 2012) has recommended that the country should clarify what the wider skills to be developed by schools should be. By extension this would appear to apply equally to the apprenticeship pathway. It recommends the creation of:

> *...a clear, widely-owned and stable statement of the outcome that all schools are asked to deliver. This should go beyond the merely academic, into the behaviours and attitudes schools should foster in everything they do. It should be the basis on which we judge all new policy.* (p8)

Some of the wider skills we imagine as being included in such a statement will relate to the development of character and others to the cultivation of attributes which are more generally useful for learners. We have produced an indicative list of what these dispositions might be in schools.

PRO-SOCIAL	EPISTEMIC
Kind (not callous)	Inquisitive (not passive)
Generous (not greedy)	Resilient (not easily defeated)
Forgiving (not vindictive)	Imaginative (not literal)
Tolerant (not bigoted)	Craftsman-like (not slapdash)
Trustworthy (not deceitful)	Sceptical (not credulous)
Morally brave (not apathetic)	Collaborative (not selfish)
Convivial (not egotistical)	Thoughtful (not impulsive)
Ecological (not rapacious)	Practical (not only 'academic')

TABLE 9 COMMONLY DESIRED OUTCOMES OF EDUCATION (CLAXTON AND LUCAS, 2013)

Pro-social refers to desirable personal qualities or character at work. Epistemic might more simply be termed 'pro-learning'. The pro-social dispositions are those that express the attributes of a 'good' employee. And the pro-learning ones express the habits of mind of a good learner: one 'who is able to meet difficulty and uncertainty with confidence, capability and enthusiasm' (Lucas and Claxton, 2013). While craftsmanship is also one of our six key desirable outcomes, a craftsman-like disposition also reflects a way of thinking that is pro-learning and, thus, it is shown here too.

Reconsidered specifically for apprenticeships, rather than for school learning, our table might look like the one below.

PRO-EMPLOYMENT	PRO-LEARNING
Considerate (of the needs of colleagues and all organisational stakeholders)	Inquisitive (willing and keen to question the status quo, and to find answers to problems)
Committed (with time and effort)	Resilient (will keep trying in the face of failure and difficulty)
Forgiving (prepared to cooperate with colleagues)	Imaginative (thinking of new ways to solve problems)
Tolerant (overlooking perceived 'flaws' in colleagues)	Craftsman-like (aims to produce work to the best of own – expanding – ability)
Trustworthy (delivers what is promised or expected on time)	Sceptical (withholding acceptance of a truth claim until demonstrated adequately)
Morally brave (upholds the truth; demonstrates integrity at all times)	Collaborative (willing and able to share time and knowledge with – as well as to learn from – others)
Convivial (supports camaraderie, mutual trust and relationship building)	Thoughtful (gives due time and consideration to decisions)
Economical (uses resources efficiently and effectively)	Practical (able to apply ideas to objects, people or symbols in the workplace)

TABLE 10 'PRO-EMPLOYMENT' AND 'PRO-LEARNING' WIDER SKILLS FOR GROWTH

Developing and assessing wider skills for growth in the workplace brings some real challenges including:

- balancing the needs of the apprentice as a learner and the requirement for him/her to be productive as a worker;
- interpreting each of the skills with reference to particular sectors and organisations;
- finding ways of assessing skills that go beyond the more routinely assessed tests of knowledge, physical control, manual dexterity or mental facility;
- ensuring that qualified and experienced employees and teachers model the skills required.

4.2. *RICHARD REVIEW* (2012) MAPPED ONTO THE SIX OUTCOMES

Although Richard does not set out a single list of deliverables that any apprenticeship should be expected to produce, he does summarise the criteria for a good qualification (p59). This list has a different emphasis to our own because, for example 'widespread buy-in from employers', while a desirable outcome of apprenticeship, is not our particular focus whereas, for example, 'transferable skills' are. Similarly, Richard spends much of his *Review* staking out what should and should not constitute an apprenticeship.

For example, 'it is most meaningful for jobs which require substantial training and high levels of skill' (p33). Many statements like this one imply, rather than state, important outcomes.

Nevertheless we have assembled his various claims into a list to map onto our own because he refers throughout the *Review* to outcomes he considers important for apprenticeships to deliver. We sit these emergent themes alongside our six for comparison:

OUR SPECIFICATION OF THE BROAD OUTCOMES WHICH APPRENTICESHIPS SHOULD DELIVER	EMERGING THEMES FROM RICHARD (2012) CONCERNING OUTCOMES HE BELIEVES APPRENTICESHIPS SHOULD DELIVER
Routine expertise	"… the skills to do the job… final competency" (p4) Training that is "specific to an individual firm's needs… alongside the broader skills that are relevant across the sector" (p32) "… the knowledge, experience and competency for doing a skilled job well" (p32) Skills that are current and relevant to organisations: "apprenticeships are able to respond flexibly to changing technology and market needs, to ensure that they remained relevant and allowed business to grow the skills it would need in the future… [F]lexibility… to allow…for rapid inclusion of new techniques or procedures" (p47) "… reached the standard expected of members of that occupation. As such, they are capable of doing their job well, confident to operate in within their sector, and attractive to employers beyond their immediate job… a recognised set of skills and capabilities, and can be expected to operate competently within a new work environment" (p48) "…[employer determined] qualifications, which define what an apprentice should be capable of doing upon completion…" (p49) "meet the standards for professional registration in sectors where they exist and are well-recognised" (p59)
Resourcefulness	"… to be ready and able to apply their skills in new jobs and new sectors… skills which enable them to be competent and confident beyond the confines of their current job, both in their sector as a whole, and beyond it" (p4) "…be qualified to do the job well in a range of situations and across different companies within a sector" (p32) "include transferable skills that are relevant and valuable outside a narrow group of occupations – i.e. not limited to training for a narrow job role" (p59)
Craftsmanship	
Functional literacies	"… a good 'level 2' in maths and English at a minimum" (p61) "… can use English and maths skills independently to deal with real-life tasks and solve problems, and who can select for themselves which techniques and approaches to apply in each case" (p62)

Business-like attitudes	Skills that are current and relevant to organisations: "apprenticeships are able to respond flexibly to changing technology and market needs, to ensure that they remained relevant and allowed business to grow the skills it would need in the future… [F]lexibility… to allow… for rapid inclusion of new techniques or procedures" (p47)
Wider skills for growth	"…broad and transferable skills…" (p32) "skills which enable them to be competent and confident beyond the confines of their current job, both in their sector as a whole, and beyond it" (p4)

TABLE 11 A COMPARISON OF OUR DESIRABLE OUTCOMES WITH RICHARD (2012)

The comparison table highlights some similarities – particularly regarding the need for development of basic working competence, Functional Skills and the more transferable, 'wider skills' needed for success in and beyond the site of initial training.

But we also believe that it indicates some areas of opportunity, where we are currently not being bold, ambitious or expansive enough in terms of the learning elements of apprenticeships. A major omission in Richard's thinking is in respect of craftsmanship. Developing apprentices with an ethic of excellence who are both hard-working and intensely proud of the job they are doing is of very great importance to them and to employers.

Too often Richard is silent on just how the learning which is the core of what apprentices do is actually to be provided.

By developing our six outcomes and describing a pedagogy of apprenticeships, we aim to build upon Richard's ideas and contribute to the development of the highest possible quality of apprenticeships.

4.3. ASSESSMENT ISSUES

There is, of course, no qualification called an 'apprenticeship'. The name or brand represents a number of different approaches to learning and qualifications designed to give employers confidence about the competence of new starters they wish to employ. It is also the means by which learners and providers can chart their progress and progression through the system, as well as giving both teachers and learners formative feedback on which they can act.

Assessment of the broad range of subjects, sectors, perspectives and interest groups is, naturally, highly complex.

Most importantly whenever we think about assessment we need to ask a bigger question – assessment for what? In this chapter so far we have laid out six desirable outcomes of apprenticeships and our answer to the question 'assessment for what?' may, therefore have six different strands to it.

4.3.1. ASSESSMENT OF APPRENTICES: CURRENT

The *Richard Review* (2012) proposes that apprentices must be declared 'competent' and discusses how this might be done on a system-wide macro level. Key to the assessment process's utility to employers is its trustworthiness at demonstrating that a learner is able to do his or her job. With this in mind, the *Review* promotes independence of assessors and a reduction in continuous and paper-based forms of evidencing.

The typical process for assessment of apprentices in the UK involves:

> *...on-the-job observation and questioning, along with assessment of a portfolio of documentary evidence, and assessors 'sign off' each unit as they judge the candidate to be competent in it.* (Colley and Jarvis, 2007; p297)

Colley and Jarvis also highlight the 'considerable' amount of discussion in the academic apprenticeship literature concerning the conflict between the assessor also as mentor and the assessor as attempting to provide objective summative assessment. Summative assessment is that which is designed with validity, or shared meaning, in mind to accredit a level of accomplishment achieved. By contrast, formative assessment is designed to generate action and guide learning (Spencer et al., 2012). Formal, summative apprenticeship assessment already makes much use of competence-based approaches, which emphasise 'transparency, clarity of criteria and technical quality of assessment' (Colley and Jarvis, 2007; p300). Formative assessment may be more informal, conversational and subjective although 'attributes of formality and informality are invariably intertwined in learning situations' (p299).

Colley and Jarvis observe the use of portfolio data in the context of advanced apprenticeships in Motor Vehicle Engineering as part of the summative assessment process. Portfolios collate evidence of competence cross-referenced to the formal performance criteria. In addition, witness testimonies from customers and employers, work observations and questioning around the knowledge underpinning their work are used in the assessment process.

Anne Khaled and colleagues (2014) talk of measuring competence development using the CDM (Competence Development Meter):

> *...a validated self-report questionnaire for robust cross-educational level evaluation of a broad range of competencies in vocational and higher education settings through assessing multiple indicators per competency.* (p9)

They also propose the use of 'integrated approaches of assessing competence that include self-reports as well as performance observation of complex skills in real-world situations' (p19).

4.3.2. ASSESSMENT OF APPRENTICES: PROPOSED CHANGES

There remain a number of contested issues with regard to the assessment of apprenticeships. The *Richard Review* (2012) championed:

1. A move towards more (independent) end assessment.
2. The grading of apprenticeships.

Both of these proposals raise questions. AELP's (2013) response to the government's 2013 paper *The Future of Apprenticeships in England: Implementation Plan* (BIS, 2013d) mentions this issue in particular, questioning the implementation of whole-scale change to a system that is currently 'regulated and therefore robust and rigorous… [as well as being] well respected by employers' (p8). AELP suggests that such a move would risk the established credibility of the apprenticeship brand (p5).

In relation to the first point, AELP questions how the start of the 'end' point of apprenticeship training might be defined consistently, particularly for end of course projects.

In relation to the second, the proposal to grade apprenticeships with Pass, Merit or Distinction (BIS, 2013b) brings with it a number of issues. AELP cite:

1. The need to increase entry requirements in order to ensure good outcomes, and the impact this might have upon uptake of apprenticeships among young people who may already have limited career options.
2. The cost of implementing a grading system.
3. The difficulty of grading fairly and the potential for conflict over grades awarded, particularly if linked to pay. Further, ensuring judgments are aligned with employer expectation, when employers do not always value the employee who has done better in a standardised test over another.

We might further add that the idea of grading begs the question of how to identify a candidate at each grade. What distinguishes a Merit-worthy candidate from a Distinction-worthy one? How do we decide what evidence to use, and how changes in technology and technique impact upon the difficulty of attaining each grade, and so whether and when the grade requirements should be altered, or moderated?

In a work context, a Chartered Accountant, for example, is either Chartered – and thus qualified to give advice as a member of their institution – or he is not. A pilot can either land a plane, or she cannot. Although professional bodies often hand out prizes each year for outstanding exam performance, this is a bonus rather than something that a future employer might start asking for, or that clients and customers might come to rely upon as an assurance of confidence. In employing individuals who have taken the apprenticeship route, many employers may start asking for a 'Merit' grade, for example. Alternatively, they might not see the value in the grading at all, and value the apprentice's experience more than anything else. If this is the case, we must question the value of the grading system in the first place.

Richard (2012) argues for end testing because on-going tests of a large number of competencies take 'the focus away from genuine learning' (p55). Rather than receiving genuine training, Richard argues that apprentices spend much of their time 'with their assessor providing evidence of their ability to meet competency requirements' (p87). This may undoubtedly be true in many cases. The school curriculum, with its repeated end of phase testing (SATS, now new tests at the end of Key Stage 2, followed shortly thereafter by GCSEs), is frequently criticised for the pressure it generates for teachers to 'teach to the test' rather than to teach real thinking and deep subject understanding that a postponement of testing might achieve. But Richard's assertion is perhaps simplistic. Richard acknowledges that the research on modular testing is inconclusive. It is hard to pinpoint the degree to which current apprenticeship assessment takes place at the end of the course in any case (AELP, 2013; p5).

A concern with limiting assessment to end assessment is the likely loss of portfolio- or project-type evidence, built up over time and demonstrating developments in an apprentice's thinking and reasoning, as well as their ability to evaluate and learn from prior experience.

Indeed, the collection of assessment data is more complex than the notion of end assessment would suggest, and the role of formative assessment is not even mentioned by name, although Richard talks of on-going progress monitoring (p55).

Indeed, on-going assessment that serves the purpose of identifying progress, strengths and weaknesses for the learners, and for informing future action, is an essential part of the learning process. The expansion of digital technology may allow for storage and processing of more information than ever before – gathered from non-testing situations – that learners might use to recommend their own future activity. Kristen DiCerbo and John Behrens (2014; pi) propose that this ability suggests a paradigm shift in assessment that involves the following ideas:

- a focus on a broad range of attributes instead of measuring narrowly defined knowledge and skills;
- assessment in the context of *in vivo* naturalistic tasks rather than through pre-defined tests;
- integration of data across activities and timespans instead of captured at single events;
- the detailed tracking of context outside of testing situations;

- the dissolution of current distinctions such as 'informal' and 'formal' learning (see our earlier reference to the debate on this issue in section 3.3);
- the collection and permanence of learner profile data to make on-going, intelligent recommendations.

End assessment is not necessarily more or less rigorous. But it is likely to put more emphasis on knowledge rather than competence.

4.3.3. ASSESSMENT OF APPRENTICES: THEMES

In a paper aiming to bring ideas from apprenticeship assessment into the school educational system, Lene Tanggaard and Claus Elmholdt (2008) argue that assessment practices 'should focus on contextually-anchored reviews of the core competencies of the person' (p97). *Core competencies* are used to denote learning outcomes and, thus, could incorporate all six of our 'desirable outcomes'; not just those we might refer to as demonstrating 'routine expertise'. Tangaard and Elmholdt speak of assessment of those competencies in terms of a number of themes:

1. Assessment based on products (made by apprentices), customers, and tools and equipment.

In apprenticeships, the 'the product may also "speak for itself"' say Tanggaard and Elmholdt (p101). In this sense, assessment can be transparent: relying on clear evidence such as when 'the dough fails to rise in the first place or the customer does not buy the bread' (p101) and immediate: such as through tools that give instant feedback like 'the electrical instruments applied in trouble-shooting' (p104).

2. Assessment through increased responsibility.

When a job is done well, assessment is demonstrated by assigning an apprentice tasks that demand greater responsibility.

3. Consequential assessment.

Within organisations there may be an informal system of assessment, carried out by communities of practice who 'unofficially' set the tone, make demands and hold expectations about the performance of apprentices. These comprise workers who do not have a 'master' or 'journeyman' role but, nevertheless, hold power over the apprentice.

4. Peer assessment.

The apprentice evaluates his or her own work in light of the work of others.

5. Assessment as recognition.

Subtle forms of assessment such as simple gestures of appreciation and affirmation are recognised by the apprentice and impact upon motivation and performance.

6. Instruction as assessment.

The 'journeyman' or the 'expert' assess the apprentice's mistakes through a daily, formative process of providing professional explanations coupled with an analysis of how the apprentice should have carried out a particular task.

4.3.4. ASSESSMENT OF APPRENTICES: ONLINE OPPORTUNITIES

Just as the Internet has opened up opportunities for innovation in teaching and learning, the same is true for assessment opportunities. Online assessment is one such innovation being used. Online training provider Virtual College, for example, has observed a rapid increase in the number of learners using its online apprenticeship tools (Virtual College, 2014). Its online assessment tools have adaptive learning functions to allow learners to access the most appropriate learning material. Mike Sharples and colleagues (2012) mention opportunities such as online diagnostic tools for assessment for learning and virtual 'badges' to accredit learning.

One step beyond online assessment for a single qualification is to make on-going records of achievements permanent and verifiable, as well as compatible with the systems of multiple potential stakeholders. The Open Badges project (MozillaWiki, 2014), run by open source software community Mozilla, aims to bring together the records of an individual's achievements and skills in a cohesive way that can be useful throughout any number of job, or even career, moves. The traditional means of doing this, through curriculum vitae, does not provide a prospective employer with immediately certifiable – or necessarily legitimate – credentials on which to base hiring decisions.

Such an online portfolio programme can potentially allow for the certification and compilation of records of a broad range of skills and achievements. These can include both technical skills and '21st Century' or 'soft' skills, with priorities dependent upon the needs of each badge-issuing organisation. Open Badges are portable and so can be utilised in a variety of ways by individuals; including on social networking sites, job finding websites, or on a person's own website.

An ambitious project, Open Badges is under open source development, with a small but growing number of badge-issuing organisations taking part (Mozilla OpenBadges, a). Becoming a badge-issuing organisation requires technical set-up, including the ability to Web host, although it is free to join and has an open technical standard.

Examples of technical skills might be computer programming, recording, editing, interviewing or social media creation. Collaboration is an example of a 'soft' skill. As we know, however, the validation of soft skill constructs is not straightforward. One organisation's idea of a 'creative' individual may not be another's, for example. And neither idea may compare to how a psychometrician would define creativity based upon its distinct constructs defined through complex factor analysis. Open Badges sidesteps this problem through transparency: the badges themselves are collections of metadata that explain each badge in depth. Yet if these skills cannot truly be validated in the same way that their more 'hard' counterparts can, can such methods of assessment ever be more than formative and motivational?

4.3.5. ASSESSMENT OF APPRENTICES: ENGAGING APPRENTICES AS THEIR OWN ASSESSORS

Ron Berger and colleagues have shown unequivocally (Berger et al., 2014) how 'student-engaged assessment' can increase performance at school, at the same time as cultivating craftsmanship. Berger suggests that when learners act as each other's assessors they are helping to build a 'mindset of continuous improvement':

> *Critique and descriptive feedback help students understand that all work, learning, and performance can be improved.* (Berger, 2014; p136)

Ellen Huffman (1998; p64) provides another classroom example from which we can imagine apprenticeship practices. As a teacher of Art, Huffman recognised the need for clarity over assessment criteria and for students to take an active role in creating the assessment process in order to establish commitment to it, and confidence in it. Citing architect Alan Sandler's quote 'good assessment is like good architecture. It directs people's attention and their activity in worthwhile ways', she made use of clear learner co-created 'rubrics':

> *...a series of descriptors referring to a single criterion and arranged in a descending scale. Each descriptor specifies what is expected at that level... The rubric arranges these ideas in descending order from the most demanding, most challenging, and most rigorous to the less rigorous and more broadly defined.*

In Huffman's example, students were able to self-evaluate on completion of a piece of work. The rubric could also be used to record communications with the teacher as well as risks taken that were not successful. It is feasible that similarly clear rubrics could be developed for apprenticeships, distinguishing between aspects of the job that involved routine expertise, and those that demanded more resourceful, or craftsman-like approaches.

4.3.6. ASSESSMENT OF THE SIX OUTCOMES

In the current and proposed apprenticeship system, some of our six outcomes are, or will be, assessed. Inevitably, those that are assessed will be valued more by employers and apprentices. But, not only does assessment demonstrate to the employer, or potential employer, what an individual can do, it is critically important to the learning process itself. What learners learn is, in large part, influenced by their perceptions of how they will be assessed (Tanggaard and Elmholdt, 2008). If assessment does not truly measure expertise (or craftsmanship, attitudes etc.), learners focus on other things such as the grade itself. Assessment must thus be aligned towards learning goals. But if our ultimate learning goals are the six broad 'desirable outcomes', how might these be assessed?

Routine expertise	Routine expertise is perhaps one of the desirable outcomes of apprenticeships most routinely and readily assessed. Apprentices are observed in the act of demonstrating routine expertise, and can be questioned to further probe their understanding either during or outside of this time. Portfolios provide collations of evidence built up over a period of time or through a piece of work, perhaps annotated with the thoughts of the apprentice as well as his or her instructor. Produced artefacts themselves can evidence expertise. Distinguishing to what degree artefacts represent routine expertise rather than resourcefulness, or even craftsmanship, poses a challenge to assessors, however. This is perhaps where more qualitative forms of assessment involving narrative and explanation may come into play.
Resourcefulness	The challenge for assessing resourcefulness is in noticing the retrieval and use of knowledge in real-time, real-life situations. Opportunities need to be taken or created to make use of 'real' scenarios. It is not sufficient to assess comprehension of knowledge, or even to ask for demonstration of specific skills. There are psychometric-type assessments that measure resourcefulness in various settings. For example (in the context of female caregivers to those with serious mental illness), Jaclene Zauszniewski and Abir Bekhet (2011) found that an eight-item self-report measure of resourcefulness can be useful for evaluating the teaching of specific personal and social resourcefulness skills. The 'resourcefulness skills scale' measures the frequency of use of: 1. Help-seeking or social resourcefulness skills (relying on family or friends, seeking professional help and social exchange) 2. Self-help or personal resourcefulness skills (use of positive self-statements, cognitive reframing, exploring ideas, behavioural change and organisation).
Craftsmanship	Ilkin Ersal and colleagues (2011; p129) define craftsmanship as 'the perception of quality experienced by a customer'. This is by its nature a subjective judgment. In assessing whether craftsmanship is demonstrated, it is necessary to develop a list of attributes with clear definitions to ensure that assessors are consistent. In the context of vehicle interior design in the automobile industry, for example, craftsmanship can be assessed by having experienced designers evaluate the vehicle interior against a set of vehicle craftsmanship characteristics. In Ilkin Ersal and colleagues' (2011) paper, a list of perceived attributes of craftsmanship is developed and tested to the point where consensus is seen across evaluators.

Functional literacies	Richard (2012) points out two potential issues with insisting on Functional Skills development as a criterion for awarding any qualification associated with an apprenticeship: 1. Some learners and employers will be deterred from the apprenticeship programme. 2. Some employers or training providers will 'cherry pick' those learners who already have Level 2 (p64). Some of the functional literacies (English and maths) are assessed either by Functional Skills examination or GCSEs. By 2017 it is intended that GCSE will take over.
Business-like attitudes	A 'professional' attitude is easily detectable (whether the work is truly 'professional' in nature, or not), and more so by its absence. In the same way that a number of approaches may suit the measurement of wider skills for growth, there may be various indicators that could be used to quantify or qualify apprentices' attitudes. These might include self-reports or the sort of 360° assessment common at performance appraisals. The sorts of characteristics required of professionals (for example, in medicine) may serve as a proxy.
Wider skills for growth	Lucas and Claxton (2009; p25) explored the issue of assessment of wider skills in their report for NESTA *Wider Skills for Learning,* concluding that we still have a long way to go despite many noble attempts by a number of countries and organisations. They summarise a range of methods that have been trialled or proposed, which include: • self-report questionnaires; • evaluation of students' learning portfolios, diaries or other written reflections; • structured teacher observations in terms of various quasi-objective 'ladders of progression' for each skill; • 'learning stories': short vignettes and visual media that capture a series of increasingly accomplished 'leading edge moments' in individual students' learning careers; • periodic 360° assessments of student progress drawing on testimony from teachers, coaches and others, as well as documentary evidence of various kinds; • dynamic assessment of young people's performance in novel, demanding learning situations. N.B. While written with schools in mind, these methods are readily adaptable to the workplace.

TABLE 12 ASSESSMENT OF THE SIX OUTCOMES

5. THE PEDAGOGY OF APPRENTICESHIPS

'Learners must demand high quality pedagogy which will necessitate that stronger links are built between employers, teachers and teaching.'

Department for Business, Innovation and Skills (2014; p8)

There is a well-known saying that 'the quality of an education system cannot exceed the quality of its teachers'. Often attributed to Michael Barber and Mona Mourshed (2007; p16) it has taken various commentators to point out that this is not technically true (Husbands, 2013b). For while individual teachers are important, it is teaching even more than teachers that is critical in terms of the quality of outcomes. It will be particularly important to focus on the quality of teaching first if we are to improve the quality of all apprenticeships. As well as teaching we will, of course, need to look at learning and that brings us to the subject of this chapter, pedagogy – the science, art, craft and 'nous' of teaching and learning.

In this chapter, we develop our argument that, to understand the pedagogy of apprenticeships, we need also to consider:

- that how you learn what you learn shapes what you value and who you become and that there are certain habits of mind which we may want to cultivate in apprentices;
- the degree to which the processes of apprenticeship learning can and need to be made visible;
- whether there is a 'signature pedagogy' of apprenticeships;
- the key features of apprenticeship learning;
- which learning methods work best for apprentices and which methods can be used to develop each of our six desirable outcomes of apprenticeships;
- some issues which merit further thinking.

For apprenticeships are not just a brand but a way of learning.

5.1. EPISTEMIC APPRENTICESHIP

Few colleges or training providers and fewer employers are likely to put the word 'epistemic' in front of 'apprenticeship'!

But whether the word is known or not, the ideas underpinning 'epistemic apprenticeship' are, we believe, crucial to a deep understanding of apprenticeships.

'Epistemic' is the adjective relating to the noun 'epistemology'. Both words refer to the way we deal with knowledge – what we know, how we know it and the value we attach to what we know. So, for example, a piano player might get to 'know' a piece of music by reading from music and then practising with the notes in front of her. Another might intuitively improvise a composition with no recourse to written notes. Both are making music but each values their approach differently. The former might be thought of as a classical approach, while the latter is more in line with how a jazz player might approach things.

The epistemic apprenticeship that these two imaginary musicians might have gone through as they were learning to play the piano are likely to have been very different. The first might have involved scales, arpeggios, musical theory and much exploration of piano pieces by a range of composers. The second is likely to have involved little formal theory and lots of improvisation, much watching, listening and imitating of important key and rhythmic options and opportunities to play with others by ear not using musical manuscripts.

Both our imaginary musicians have gone through an apprenticeship, both have the potential to emerge as expert pianists but each will see the musical world differently and will value certain ways of thinking and acting differently. Their epistemic apprenticeships were different and so the outcomes of that learning led them to think and act differently.

We could equally well have chosen apprenticeships in plumbing or furniture making or hairdressing or engineering or accountancy or social care to make a similar point about the way in which different epistemic approaches to apprenticeships lead to very different results.

Guy Claxton has written about the ways in which the epistemic apprenticeship school students receive dramatically shapes them as learners in *School as an Epistemic Apprenticeship: The Case of Building Learning Power* (2012). He stresses that learning outcomes are strongly influenced by the way the learning is organised, specifically looking at:

> *...the skills of and attitudes towards learning students are cultivating by the way they are taught and assessed.* (p4)

Claxton's thinking translates really well to apprenticeships. To understand the nature of the epistemic experiences of an apprentice we have to look more closely at a number of elements: the apprentice, the nature of the learning activities, the workplace experts and teachers, the location, the assessment process and the organisational culture(s). Let's explore each of these in turn.

5.1.1. THE APPRENTICE

Apprentices are both employees *and* learners explicitly seeking to develop certain knowledge, skills and – we will argue in a moment – habits of mind. We know a certain amount about who they are according to the type of apprentice framework, both in terms of age, gender and level.

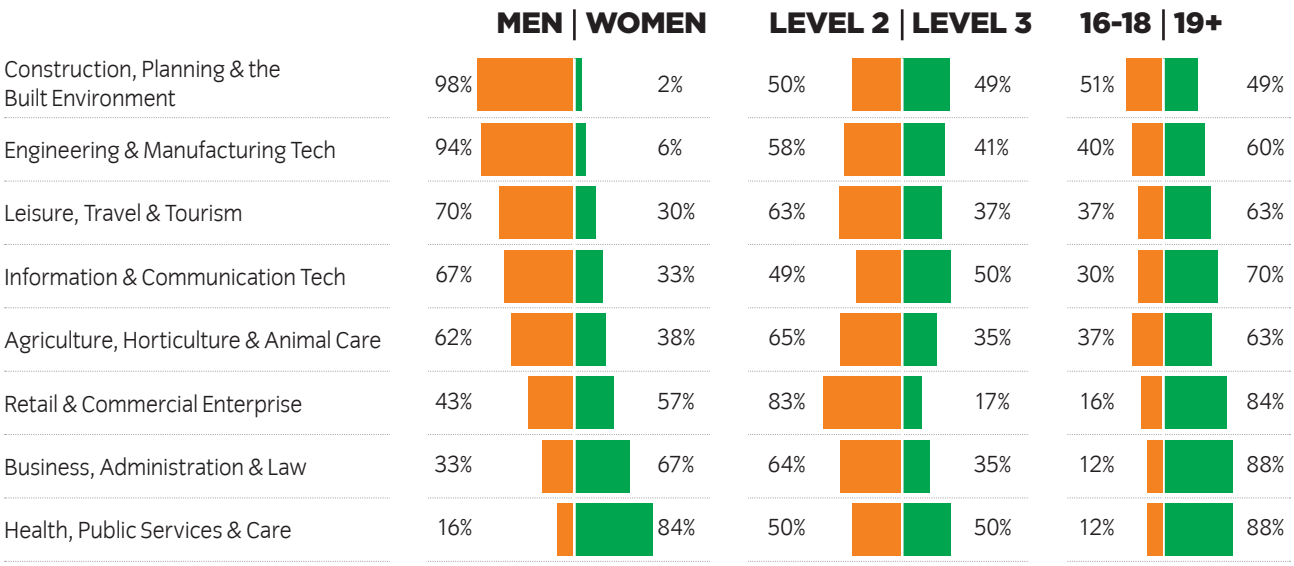


FIGURE 1 DEMOGRAPHIC DIFFERENCES IN THE PROFILE OF APPRENTICES BY FRAMEWORK TYPE. SOURCE: BIS (2013)

The BIS Research Paper (2013c) from which the figure above is taken is full of other fascinating data about levels of satisfaction with training, impact on skills and on job prospects, along with insights into the advice the apprentices got before they started and their intentions for work after they finish.

But interesting as such data are, they do not even begin to tell us about them as learners – how they think and act, what they value and so on. It does not begin to answer the epistemic question – how are apprentices socialised into their chosen vocation? What habits of mind are being encouraged? What are they learning to value and not to value?

In case the phrase 'habits of mind' is not clear, let us explain. The phrase is associated with work over several decades initiated by Art Costa and Bena Kallick (for an overview, see Costa and Kallick, 2002). Costa and Kallick wanted to describe what human beings do when they behave intelligently in the real world, and then explore the kinds of actions which teachers might take to encourage these. They came up with 16 useful habits of mind which, taken together, describe what smart people do as they go about their lives successfully dealing with whatever unexpected problems are thrown at them.

In too many workplaces it is not clear which habits of mind are being valued.

Take engineering as an example. While we may know that most engineers like making and fixing things, sometimes mechanical, electrical, structural and so on, that is not a detailed enough description of how engineers think and act. In partnership with the Royal Academy of Engineering (Lucas et al, 2014) we worked with engineers to see if we could agree and then describe the ways in which they think. Here's what we found.

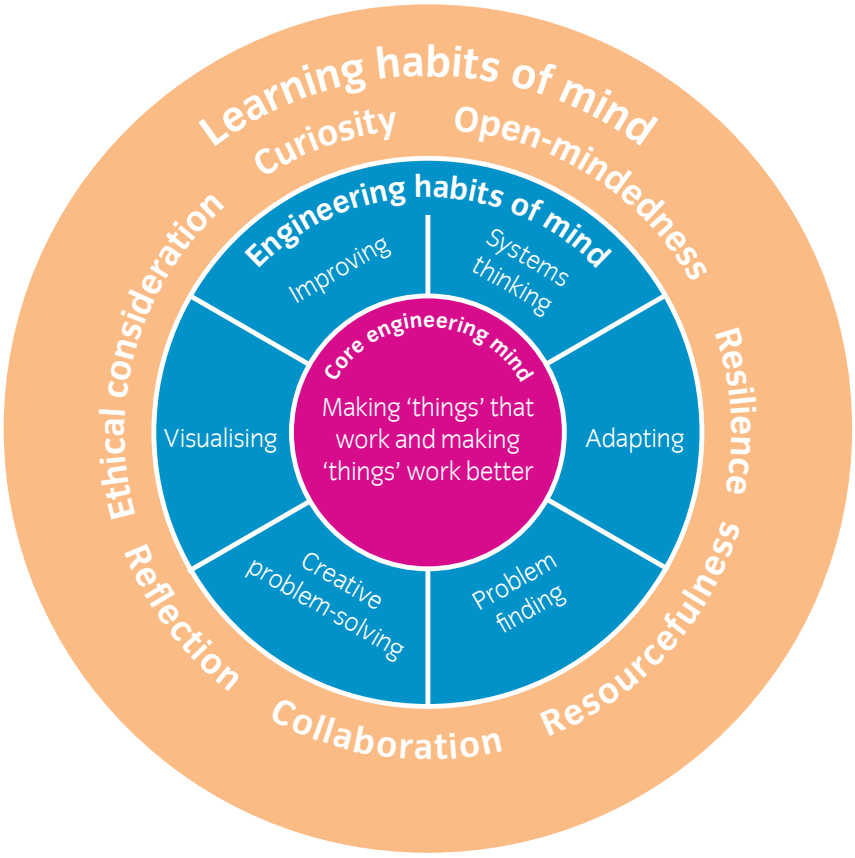


FIGURE 2 ENGINEERING HABITS OF MIND. SOURCE: ROYAL ACADEMY OF ENGINEERING

In the middle ring you can see six suggested engineering habits of mind and, without a great deal of work, it is possible to consider how best you can create the epistemic climate for each to be cultivated.

This is an engineering example and the middle ring would be different for other occupations. Interestingly, we suspect that the outer ring might be pretty similar for all vocations, for these are more generally useful dispositions for learning.

In terms of our six desirable outcomes of apprenticeships we could also ask various questions from the learner's point of view:

- To what extent are they effectively being taught the acquisition of *routine expertise?*
- How is their *resourcefulness* being developed? Are, they for example, invited to practise in different contexts, try new things out, being given problems to solve which are just beyond their current level of skill?
- How is their *craftsmanship* being established? How are they spoken to by their 'teachers'? To what degree does the business encourage pride in jobs well done, rewarding those who go beyond the minimum? Are apprentices taught how to critique each other's work?
- Are the *functional literacies* valued or seen as distractions from the main part of the apprentices' learning?
- Is it a genuinely *business-like* environment? How are customers and clients spoken to and how are apprentices encouraged to view them?
- To what extent are their *wider skills for growth* actively encouraged? Are they being encouraged to see their apprenticeship both as part of a bigger journey which will take them to higher levels and, at the same time, to think of themselves as lifelong learners?

5.1.2. THE NATURE OF THE LEARNING ACTIVITIES

In our earlier research into vocational pedagogy we suggested that there might be implications for pedagogy depending on whether the subject being learned was predominantly dealing with physical materials (much of Engineering and Manufacturing Technologies, for example) or mainly working with people (as is the case in many Health and Public Services apprenticeships) or more concerned with symbols – letters, numbers, computer code and so forth (such as in Business, Administration and Law). It is an over-simplification, of course, to suggest that any one vocational pathway is concerned only with one of these three elements.

We saw it was more complex when we mapped a sample of vocational courses that you might find in a general FE college (Lucas et al., 2012).

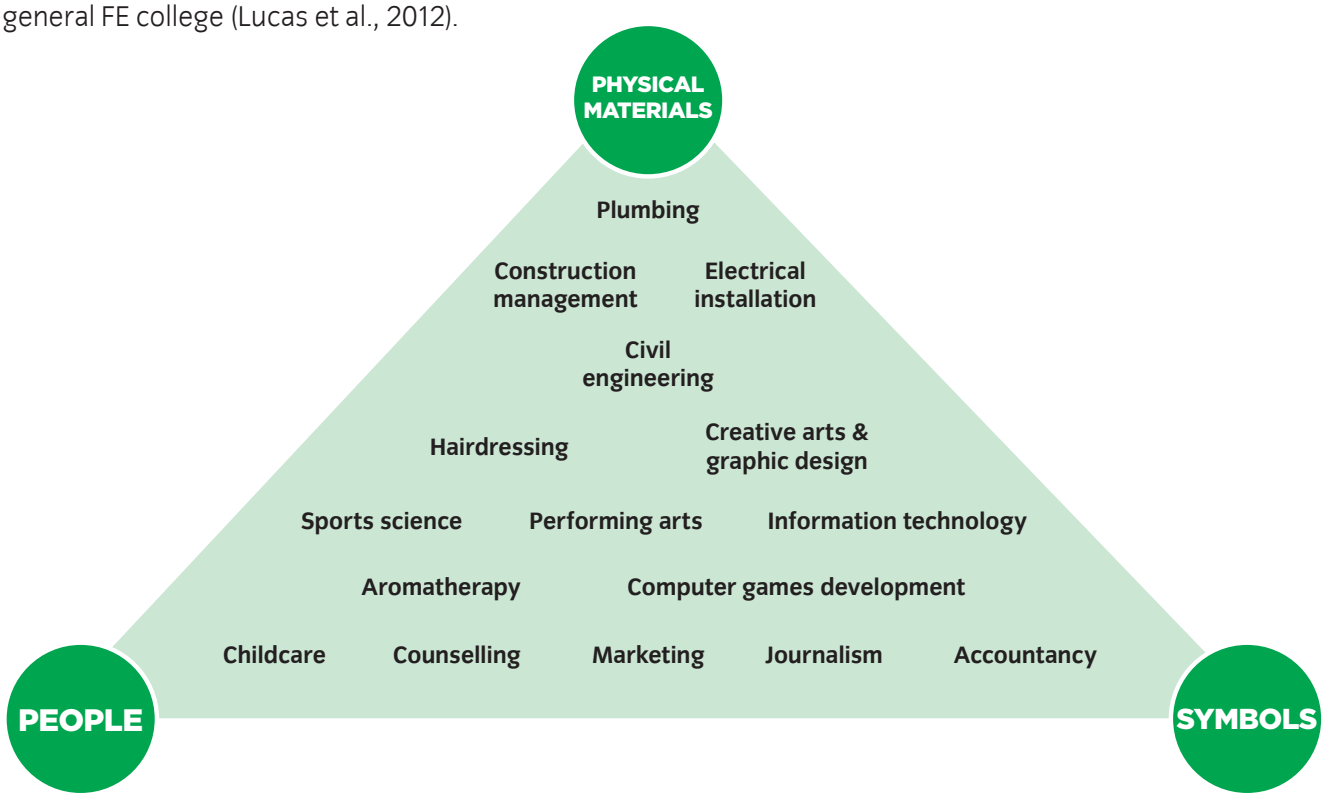


FIGURE 3 COMMON FE COURSES MAPPED AGAINST 'MATERIALS', 'PEOPLE' AND 'SYMBOLS' FRAMEWORK

In terms of our epistemic discussion, it is clear that what is valued by, say, a plumber or a care worker or an accountant may be very different and the methods they might choose for the learning will also be different. It is equally clear that many vocational subjects deal with all three aspects. But there is a deeper level to this which transcends the relatively obvious difference between someone who works with their hands as opposed to one mainly dealing with people.

This focuses on the design of all learning activities. To what extent do such activities actively encourage each of our six outcomes? Are learners passively or actively involved? Do they help each other? If so how? Irrespective of the medium, how are the six outcomes built in to the design of activities?

5.1.3. THE WORKPLACE EXPERTS AND TEACHERS

Apprentices/learners pick up cues from the way they are dealt with. They learn to do things in certain ways depending on how activities are structured. Teachers and experts in the workplace can make epistemic choices as to how they deal with apprentices and which activities they select to develop which knowledge, skills and habits of mind.

But the most powerful way in which skilled experts and skilled teachers do or do not create an epistemic apprenticeship which is conducive to our six broad outcomes is through the role they set. To take just two examples: if teachers are slap-dash role models, however senior they are, it is unlikely that craftsmanship will be inculcated. And if they talk about the necessity for apprentices to go beyond what is required for the level at which they are being assessed and to undertake some wider learning but, in their own conversation, never talk about their own learning, then the development of wider skills for growth will have a very low status.

5.1.4. THE LOCATION

Physical spaces – whether workplace or college space – afford and suggest different kinds of learning. Environments in which work in progress is displayed from all apprentices and in which there are many posters depicting graphically complex processes demonstrate how attention to the processes of learning matter. Workshops and studios and learning restaurants which model the target workplace in every detail invite greater levels of respect and professionalism.

5.1.5. THE ASSESSMENT PROCESS

The formal assessment processes chosen for the apprenticeship will inevitably give a strong indication of what counts most. Indeed, in terms of the epistemic apprenticeship issue we are exploring, many teachers tell us it one of the most powerful influences on the way that learning is perceived and different kinds of knowledge and skill are valued.

While the teachers who say this have a point, it is only part of a more complex picture. For it is in other processes such as the way that feedback and critique are organised that apprentices will be learning what counts on a daily basis. Ofsted's (2010b) survey highlighted what worked well, and less well, in assessment practice. Based on its findings, Ofsted suggests that best practice involves:

- flexibility to capture discussions and targets;
- training the staff who would conduct reviews so that they understood their purpose fully;
- covering the purpose and value of reviews at induction for apprentices and employers;
- updating individual learning plans so that everyone was aware of changes to planned completion dates;

- booking progress reviews in advance to ensure that all parties who should be involved could be involved (closer to the time of the review, using phone calls, texts, emails or postcards to remind apprentices and employers of review meetings);
- holding reviews more frequently for apprentices who needed learning or additional support (and checking the effectiveness in the reviews);
- scheduling time in the visit to complete review activities;
- having a reporting structure, so that monitoring reviews covered the full performance of the apprentice at the provider. This enabled a well-informed review to take place and kept the employer informed of all progress;
- in construction, assigning each apprentice an apprenticeship officer who was responsible for completing review documentation and providing support;
- giving apprentices an overview of how far they had progressed through the apprenticeship framework, using a rough percentage – otherwise, when learners had completed parts of several units, they often felt that their progress was slower than it actually was;
- updating employers on the telephone or by email if they missed a review.

Those who get regular specific comments with helpful actionable suggestions will progress more. As well as these very practical suggestions, those who are taught to believe that they can get better and that making mistakes is a sign of progress to be learned from – as we saw in section 3.10 on growth mindsets – increasingly see their discretionary effort as very much something they want to expend.

5.1.6. THE ORGANISATIONAL CULTURE(S)

The culture or cultures of the workplace or college – it is possible to have very different ones in the same organisation – is ultimately the medium by which all these elements are brought together. Alison Fuller and Lorna Unwin have captured many of the desirable features of epistemic apprenticeships that is expansive and we summarised these in section 3.7.

Although the word 'epistemic' may not be the right one to use in the context of either work or college – it may seem unnecessarily academic – understanding its meaning is, we argue, essential if we are to improve the quality of apprenticeship learning to deliver the outcomes for today's complex world. Different employers in the same sector can create very different kinds of apprentices by the degree to which they attend to the kinds of questions we have been asking in the last few pages.

Whatever the context, using epistemic apprenticeships as a way of framing a discussion about pedagogy helps us to focus on three core elements:

1. The skills and habits of learning that are being cultivated.
2. The way in which apprentices are being positioned as learners – their 'role' in the process.
3. The implied conception of knowledge – of what is important – on the basis of the ways the learning environments are organised.

5.2. COGNITIVE APPRENTICESHIP

The idea of 'cognitive apprenticeship' is closely allied to 'epistemic apprenticeship' but importantly different. Literally a cognitive apprenticeship is the process by which anyone learns to use their 'cognition'. And the word 'cognition' describes the mental actions or processes by which knowledge and understanding is acquired, whether by thinking, experiencing or doing. So 'cognitive apprenticeship' focuses on the process of learning how to learn.

The term 'cognitive apprenticeship' was first coined by Allan Collins, John Seely Brown and Susan Newman (1987) with others subsequently adding to their thinking. With regard to our broader topic of apprenticeships it is particularly interesting that what the three researchers were trying to do was to take the essence of traditional craft apprenticeship models and apply it to school learning, especially to literacy and numeracy. A good definition of cognitive apprenticeship is provided in a later paper:

> *Cognitive apprenticeship is a model of instruction that works to make thinking visible.* (Collins et al., 1991; p1)

Collins and colleagues argued that in traditional apprenticeships an expert shows a novice how to do something, helps an apprentice try out part of the task, gives feedback and gradually allows the novice to do more and more of the task or process. At every stage the apprentice can see the processes at work; they are visible. In classroom learning of a subject like reading, Collins worried, the processes of learning are too often hidden.

In traditional apprenticeship learning it is the job of the expert to make visible the tacit processes and so to teach a novice:

> *That is, in cognitive apprenticeship, conceptual and factual knowledge is exemplified and situated in the contexts of its use. Conceptual knowledge thus becomes known in terms of its uses in a variety of contexts, encouraging both a deeper understanding of the meaning of the concepts themselves and a rich web of memorable associations between important concepts and problem-solving contexts.* (Collins et al., 1987; p5)

According to Collins and colleagues (1987), the traditional apprenticeship process can be broken down into six stages:

1. Modelling – where an expert demonstrates to a novice while at the same time describing the processes (or it might be apprentices observing more expert apprentices).
2. Coaching – a key element of the process, involving the selection and structuring of activities and tasks for apprentices, prompting, encouraging, challenging, giving feedback, engaging others to help and so on.
3. Scaffolding – an expert supporting an apprentice by initially giving him or her only part of the task and at the same time offering hints as to how it might be accomplished. The expert gradually removes the scaffolding giving the apprentice more and more responsibility, a process Collins and colleagues call 'fading'.
4. Articulation – all the methods by which an expert helps an apprentice to be able to describe the processes they are using. This might involve skilful questioning by the teacher aimed at helping the apprentices describe what they are learning and the concepts which underpin it. Or it might focus on encouraging the apprentice to 'think aloud' as they learn. Or it might be that a similar articulation of learning processes is produced by apprentices helping each other to talk aloud.

5. Reflection – an apprentice analysing his or her own performance by comparison with their own previous attempts, or with other performances by apprentices with varying degrees of expertise or with the performance of an expert. The goal of such reflection is to identify areas for improvement and then to try these out.
6. Exploration – the process by which, as the scaffolding 'fades' away, an apprentice starts to set and solve their own problems and becomes able to be increasingly resourceful.

If visibility of processes is the most important aspect of cognitive apprenticeship, the second is to do with the social context in which the learning takes place. For apprenticeships are embedded in the culture in which they take place, as we have been exploring with 'epistemic apprenticeships':

> *Apprenticeship derives many (cognitively important) characteristics from its embedding in a subculture in which most, if not all, members are participants in the target skills. As a result, learners have continual access to models of expertise-in-use against which to refine their understanding of complex skills.* (Collins et al., 1987; p5)

In other words, apprentices have the chance to observe others with many different levels of skills and so understand the incremental nature of their learning.

Within apprenticeships, then, two things matter:

1. That the processes of any task are identified by experts and made clear to the apprentice.
2. That apprentices then undertake tasks in the context of their work.

The idea of cognitive apprenticeship, albeit designed to take apprenticeships from workplace into school, provides a really helpful frame for all apprenticeship learning.

But if this is an example of general or academic education learning from vocational education, specifically apprenticeships, there is a good reverse exchange which has been gathering momentum through the work of John Hattie. In 2009 Hattie published a book with an improbable title, *Visible Learning: a synthesis of over 800 meta-analyses relating to achievement.* For the purposes of this discussion it helps to ignore the second half of the title and focus on the first two words – 'visible learning'. For here we are back to the work of Allan Collins in focusing on the need for visibility of processes:

> *Visible teaching and learning occurs when learning is the explicit goal, when it is appropriately challenging, when the teacher and the student both (in their various ways) seek to ascertain whether and to what degree the challenging goal is attained, when there is deliberate practice aimed at attaining mastery of the goal, when there is feedback given and sought, and when there are active, passionate, and engaging people (teacher, student, peers and so on) participating in the act of learning.* (Hattie, 2009; p22)

In this quotation Hattie lists some of the specific processes which need to be visible. But in the book he lists 138 specific methods or processes, ranked according to the impact each has on learners' achievement. We will return to the need for visibility of processes in section 5.4.3.

5.3. THE SIGNATURE PEDAGOGY OF APPRENTICESHIPS

So far in this section we have argued that how you become an apprentice really matters and that visibility of processes along with the social aspects of apprenticeships are important. Now we want to explore the ways in which some teaching and learning methods are most suited to apprenticeships, with their dual contexts of work and education, and then seek to refine this argument to explore the ways in which certain learning methods may be best suited to developing specific outcomes.

There is an idea which may be useful here – 'signature pedagogy'. First coined by Lee Shulman in 2005 it refers to the types of teaching and learning which most suit or match the way a specific profession or vocation operates:

> *Signature pedagogies make a difference. They form habits of the mind, habits of the heart and habits of the hand… signature pedagogies prefigure the cultures of professional work and provide the early socialization into the practices and values of a field. Whether in a lecture hall or a lab, in a design studio or a clinical setting, the way we teach will shape how professionals behave…* (Shulman, 2005; p59)

So, if we were to return to our engineering example of Figure 3, a signature pedagogy for the training of engineers might involve problem-solving, inquiry-based learning, project work, and real-time simulations – all using the engineering design process of prototyping and testing. It would not sit engineers in rows and ask them to learn things by rote or undertake mathematical tests in isolation or write essays.

By the same token, it is possible to think of a blend of learning methods which doctors or accountants or hairdressers or performing artists might use, choosing those which best capture or encapsulate the culture or essence of the target vocation or subject area.

The idea of signature pedagogies relates closely to the idea of epistemic apprenticeships, with which we started this section. Critically it again reinforces a central idea – that different professions and vocations see the world differently:

> *Signature pedagogies are important precisely because they are pervasive. They implicitly define what counts as knowledge in a field and how things become known. They define how knowledge is analyzed, criticized, accepted, or discarded. They define the functions of expertise in a field, the locus of authority, and the privileges of rank and standing.* (Shulman, 2005: p54)

When designing apprenticeships it will be helpful to understand these issues. Here Shulman explains them at three more detailed levels:

> *A signature pedagogy has three dimensions. First, it has a surface structure, which consists of concrete, operational acts of teaching and learning, of showing and demonstrating, of questioning and answering, of interacting and withholding, of approaching and withdrawing. Any signature pedagogy also has a deep structure, a set of assumptions about how best to impart a certain body of knowledge and know-how. And it has an implicit structure, a moral dimension that comprises a set of beliefs about professional attitudes, values, and dispositions.* (Shulman, 2005; p54-55)

For any apprentice framework it may be helpful to be explicit about what the surface structure is, what the deeper structures are and the deeper values and beliefs which govern the area. We will return to this when we explore pedagogical implications for the development of craftsmanship.

Recently the concept of signature pedagogies has been applied to other aspects of learning, for example, in a paper by Chris Golde (2007) to the preparation of doctoral research students (those studying for the highest level of post-graduate degree).

We believe it could equally be a useful unifying idea for the approach to learning we have been exploring – apprenticeships.

Signature elements in apprenticeship learning might include learning with and from experts, practising in an authentic context and feedback/coaching for improved performance.

They would sit firmly in the list of expansive practices. At the organisational level it is possible to situate each of the three elements explored in 5.1 – 5.3 (epistemic apprenticeship, cognitive apprenticeship and signature pedagogies) within the very useful Expansive-Restrictive Framework developed by Fuller and Unwin (2008). They would sit firmly in the list of expansive practices.

5.4. THREE KEY FEATURES OF APPRENTICESHIP LEARNING

There are currently more than 250 apprenticeship frameworks covering more than 1200 job roles, as reported in the House of Commons Library report *Apprenticeship Statistics* (Mizra-Davies, 2014). The majority of apprenticeship frameworks are in the service sectors, such as Business Administration and Retail and there were roughly the same number of female (55%) and male starters (45%).

With such variety, is it possible to make any generalisations about what apprenticeships have in common which might be useful to us as we seek to understand their pedagogy? We think that there are three key features:

1. The fact that they require both on- and off-the-job learning.
2. Their social context – that they require learning from and with others within a community of practice.
3. The requirement for visibility of learning processes – as an integral aspect of the first two and as an increasingly acknowledged feature of effective learning wherever it takes place.

5.4.1. ON- AND OFF-THE-JOB LEARNING

Work-based learning, like apprenticeships, is likely to incorporate aspects of learning:

- *about work* by spending time in the workplace – be it through placement or internship or other means as part of the requirement of a course of study;
- *about work* by spending time out of the workplace learning skills that will help in the workplace;
- *for work* by developing skills at the behest of an employer;
- *at work* by reflecting upon day-to-day experience – whether under instruction or otherwise.

Apprentices learn both on-the-job or off-the-job through their employer and off-the-job at a college or with a learning provider. Within the work-based learning experiences there will typically be:

- an induction to the role;
- a programme of on-the-job learning and working lasting for a minimum of a year;
- a manager whose role is to oversee the apprentice's programme, setting goals and providing feedback;
- systems to encourage collaborative learning with other apprentices;
- some kind of mentoring from more expert workers.

The Chartered Institute of Personnel and Development (CIPD, 2012) has produced a useful guide for employers taking on apprentices. It summarises the role of managers in getting the best out of an apprentice as involving these behaviours:

> *...reviewing and guiding – providing feedback, praise and recognition – providing appropriate levels of autonomy and empowerment – taking an interest in the individual – being available to talk if an employee has a question or a problem – having a personal/approachable manner.*

It sensibly advises that:

> *It is likely that these behaviours are especially important in the management and development of apprentices, who in many cases are having their first experience of the workplace.*

Such advice is a good starting point for the on-the-job aspect of an apprentice's learning, but it leaves a huge amount to the discretion of the employer.

Ofsted has also summarised some on-the-job learning activities which are valuable:

> *...formal and informal training; placements within and outside the company to obtain experience and assessment evidence; mentoring by colleagues; attendance at trade shows; visits, participation in competitions, and manufacturer training. May include learning support visits.* (Ofsted, 2010a; p2)

One important area to consider is the degree to which, as well as developing the occupational competence and knowledge of the apprentice's role, employers also consider the ways in which they can develop the Functional Skills and Personal Learning and Thinking Skills of apprentices while they are on-the-job. It would be easy to make a crude division of roles between what the employer does (skills and knowledge) and what colleges and learning providers do (the rest).

But it should be clear from the previous pages that skill and knowledge do not sit in isolation from culture and habits of practice. More than this, at the simplest of operational levels, if apprentices are away from their job for a maximum of a day a week this leaves too much to be learned in too little time.

A number of problems can occur for apprentices. The on-the-job learning can seem to be the more important or real element (thus relegating significant aspects of the desired outcomes of an apprenticeship to the margins). Or, with limited time available to practise and embed the Functional Skills or PLTS, they are unlikely to be acquired effectively.

Exploring the on-the-job potential for developing these two aspects of learning is one significant way in which the learning of apprentices can be improved.

Apprentices also receive off-the-job learning. The Specification of Apprenticeship Standards for England (SASE) requires a minimum requirement of 280 guided learning hours per year, of which 100 hours must be delivered off-the-job for apprenticeships up to Level 3. Although this is an increase on earlier amounts, it is still low compared to requirements in other countries.

It is, according to Doug Richard, 'this interaction between work and education that defines what an apprenticeship is at its core' (Richard, 2012; p31) although the required balance will vary from one occupation to the next. While learning on-the-job provides many elements needed for one kind of good learning, learning off-the-job may provide additional time for reflection and questioning, and opportunities to learn valuable processes that may be seen only infrequently in the live workplace.

Ofsted lists the following ingredients of effective off-the-job learning:

> *...teaching of theory, key skills and sometimes practical training, with assessment and preparation for external testing. May include industry visits, competitions, and manufacturer training. May also include regular day release, block release, special training days/workshops or may all be delivered on employer premises. May include learning support individually or in groups.* (Ofsted, 2010a; p2)

These suggestions are helpful in legitimating the basics of what is required. But they do not go far enough in articulating the much broader array of pedagogical approaches to learning which might go into off-the-job learning. We explore these in more detail in section 6.1.

The critical issue in terms of ensuring effective learning within an apprenticeship is the degree to which those responsible for the on-the-job elements talk to and understand those who provide the off-the-job learning. Ofsted (2010b; p6) has identified two aspects of such communication:

> *Regular contact between the staff of the provider and the employers in the survey focused on setting targets to provide work-based evidence so that apprentices made progress.*

and

> *Good use of management information in planning and monitoring the work of assessors was a key factor in driving the timely success of their apprentices.*

But there are many other ways in which communication might be developed, not least around the aspects of apprenticeship pedagogy we are exploring in this section (although not necessarily using the term 'pedagogy').

One mechanism which might provide a focus for conversations is the Individual Learning Plan (ILP), something commended by Ofsted:

> *In the best providers seen, the individual learning plan was used well to meet the needs of each apprentice and this had a positive impact on progress and the timely completion of frameworks.* (p6)

An ILP is, as its name suggests, a record in one place of all the elements of an apprentice's planned learning. It can be a very dull document full of little more than previous exam results and dates of specific courses, or it can be much more powerful both as a prompt for desired activities (such as mentoring and coaching) and a reflective space for learners to plan and reflect on their experiences.

We think that ILPs could be significantly developed to act as both a record of achievements and experiences and a prompt for activity to the apprentices, to a mentor and to all those who are supporting him or her.

5.4.2. LEARNING FROM AND WITH OTHERS

In section 3.5 on situated learning we explored the idea of communities of practice and of learning being necessarily 'situated' within a specific context. This is an essential element of all apprenticeships. In some larger workplaces there will be a number of apprentices, where in a small business there might just be one. But even if the apprentice is alone she or he will necessarily be learning and working with others.

Such collaborative learning comes naturally to apprentices. In a piece of research exploring the ways individuals interact as 'teachers' and 'learners' in the workplace, Fuller and Unwin (2004; p37) asked apprentices to complete learning logs. Under the entry heading 'Helping Others Learn' they asked apprentices who had already stated that they had helped someone learn this week, *how* they had done this. Suggested responses involved showing someone how to do a task, explaining how to do something, giving someone the information needed to solve a problem and working with others to solve a problem.

Both colleges and training provider environments, or workplaces, can facilitate the process of learning from and with others. Workplaces can facilitate the processes of learning to and from others by:

- holding team meetings at which issues are raised and solutions generated;
- encouraging employees to get to know each other as individuals;
- creating opportunities for work shadowing;
- arranging visits to other workplaces and to colleges;
- encouraging communities of practice within an organisation to explore specific issues;
- supporting before and after work clubs or meetings;
- using the intranet to post issues and share ideas;
- using social media for learning;
- creating team goals;
- fostering a culture which is open, creative and where employees are actively encouraged to admit to and learn from mistakes.

Colleges can:

- set collaborative challenges;
- teach apprentices the different roles needed in effective teams and allow them opportunities to practise;
- teach and facilitate the giving and receiving of feedback;
- model teaching and learning practices which are truly collaborative.

5.4.3. VISIBILITY OF LEARNING PROCESSES

In all of the preceding pages there has been a common theme – the need for teachers, learners and employers to be explicit about the processes of apprenticeship learning. John Hattie highlights four features of high-quality practical learning in *Visible Learning* (Hattie, 2009):

- The learning arising from any learning experience is given explicit attention in the moment.
- Learners have specific, challenging, practical goals in mind and learning tasks are constructed with those goals in mind so that they are of benefit.
- Feedback is clear and plentiful. Learners recognise the need to welcome and listen to feedback.
- Teachers recognise learners' self-concepts and are fully able to coach them to develop improved learning dispositions and strategies.

Each of the features above requires all those involved to be actively involved in making the processes of learning visible. Apprentices need to learn how to articulate what they are noticing and experts, whether in the workplace, at college or via a provider, need to be able to give a precise name to what is happening. Providers currently track the learning for which they are responsible, not all of an apprentice's learning. The definition of learning is effectively dictated by Ofsted and by the requirements of funding. The ILP needs to reflect all learning experienced by an apprentice.

Apprentices (as do all workers and learners) need clear goals. For a goal to be clear, it needs to be expressed verbally or graphically so that it is visible. Feedback needs to be valued, precise and clear, with clarity of communication being important. And, as we saw in section 3.10 when we looked at the work of Carol Dweck, a deeper level of understanding is needed. Apprentices need to be encouraged to develop growth mindsets both by receiving high-quality feedback and by being able to articulate their own learning intentions in ways which suggest that they see themselves as capable of growing and improving.

6. THE PEDAGOGY OF APPRENTICES: PRACTICES

'While there are many differences between schooling and apprenticeship methods, we will focus on one. In apprenticeships, learners can see the processes of work: they watch a parent sow, plant and harvest crops and help as they are able; they assist a tradesman as he crafts a cabinet; they piece together garments under the supervision of a more experienced tailor. Apprenticeships involve learning a physical, tangible activity.'

Allan Collins, Ann Holum, and John Seely Brown (1991; p1)

In the last section we explained that how apprentices learn what they learn is at least as important as what they learn. The experiences of apprentices are shaped by the culture of the working and learning spaces in which they acquire mastery. As the quotation above suggests, the line of sight to the processes they are learning is different in the workplace from most classroom contexts. And for much of the time apprentices are working and learning alongside those who are more expert than them rather than being in a class of others working at the same standard.

The amount of time available for apprentices for on- and off-the-job learning varies hugely, something we return to later in this section. Different apprenticeship frameworks naturally require different subject 'content' and the locations for learning are similarly varied. Apprentices themselves are all different, some 16-19, some older and more experienced. The learning might be being facilitated by a teacher in a college, by a learning provider in a range of locations or by a skilled worker within a workplace.

Nevertheless it is possible to identify practices which work across this variety. In this section we start by listing effective learning methods and organising these into broad clusters.

We then go on to map these methods against our broad conception of apprenticeships.

We end by exploring some outstanding issues.

6.1. TRIED AND TESTED LEARNING METHODS

In *How to Teach Vocational Education* (Lucas et al., 2012) we identified a range of learning and teaching methods with a strong evidence base. With apprenticeships in mind we have updated the list:

✔ By watching	✔ By teaching and helping
✔ By imitating	✔ Through conversation
✔ By making	✔ By real-world problem-solving
✔ By reflecting	✔ By listening, transcribing and remembering
✔ By being coached	✔ Using assessment for learning approaches
✔ By being mentored	✔ Through personal or collaborative enquiry
✔ By competing	✔ By thinking critically and producing knowledge
✔ Through games	✔ Through simulation and role play
✔ On the fly	✔ Through virtual environments
✔ Through deliberate practice	✔ Seamlessly by blending virtual with face-to-face
✔ By drafting and sketching	✔ Through trial and error, experimentation or discovery

FIGURE 4 LEARNING METHODS THAT WORK IN APPRENTICESHIPS

To make it easier to process this list we group methods together into nine clusters. Each of the nine tables which follow details more about the bundle of methods. We then return to our central argument: that the apprenticeship, like all vocational learning, is a wide concept with a broad set of desirable learning outcomes. Considering each of these outcomes in turn, we consider which methods might be most useful.

6.1.1. LEARNING FROM EXPERTS

By watching and imitating and by listening, transcribing and remembering

We learn by watching and trying first to work out what someone is doing and then to try it out ourselves. Such learning is at the heart of the medieval apprentice model, where novices watch experts, just as it is also at the heart of learning that takes place within family groups. (Rogoff, 1994)

We learn by imitating others. This works well when those we observe are expert, less well when they are either less than expert or even downright bad, although we can always learn from others' mistakes.

We learn by listening and trying to remember and then apply what we have heard: it is on this basis that teachers provide high-quality instruction, demonstration and explanation. Transcribing what we hear helps us to remember what we have heard more effectively, provided we do it strategically. Forrest Wernick (2011) gives us some insight into the role of transcription through his article on jazz solo transcription. While musical transcription and note-taking in a lecture are not identical processes, in the same way that transcribing a whole jazz solo does not equate to better playing, so transcribing teachers' explanations verbatim does little to improve understanding. Both should be about 'reverse engineering, of disassembling, of understanding how the parts create a whole, and how even smaller elements create the parts'. By writing down what is being spoken, the learner is able to simultaneously translate, categorise and record key elements in a form that helps make things memorable for them.

An example from apprenticeships of this kind of learning in practice is:

a rather informal one in that the individual in question was not serving a contractual apprenticeship. Nevertheless, this example shows the importance of imitating experts in the learning journey of an 'apprentice' writer. *The Scotsman* reported in 2003 on a new collection of works by the renowned author of *Catch-22*, Joseph Heller, with an article entitled *Imitation is the Best Form of Apprenticeship*. It describes how Heller's earlier works did not reflect experiences of his own, but were borrowed from the works of other authors. Heller commented that, at this time in his life 'I hadn't had any [experiences] then that seemed worth translating into fiction'. *The Scotsman* observes:

> *...it is both salutary and encouraging to discover that our greatest writers have to serve an apprenticeship. It is also heartening to see a first-class writer – which Heller undoubtedly was, and not just for* Catch-22 *– learning his trade from authors who were literary stars at the time…*

TABLE 13 A METHOD THAT INVOLVES LEARNING FROM EXPERTS

As we think about this group of methods which involve learning from experts it is critically important that we appreciate that as well as learning skills and knowledge we also learn ways of doing things from those we think of as experts. As we explored in 5.1, this can constitute an epistemic apprenticeship that cultivates our six outcomes or one that can undermine them or just limit them to a focus on a few.

6.1.2. PRACTISING

Through trial and error, experimentation or discovery and deliberate practice

Human beings have always learned well by experiencing things at first hand. This is after all how we learn to walk and talk. It is an extremely effective way of learning to do things where we can do so without running undue risks. Generally referred to as experiential learning, an approach first developed by David Kolb, this cluster of methods assumes that we learn well when we can combine both theory and practice.

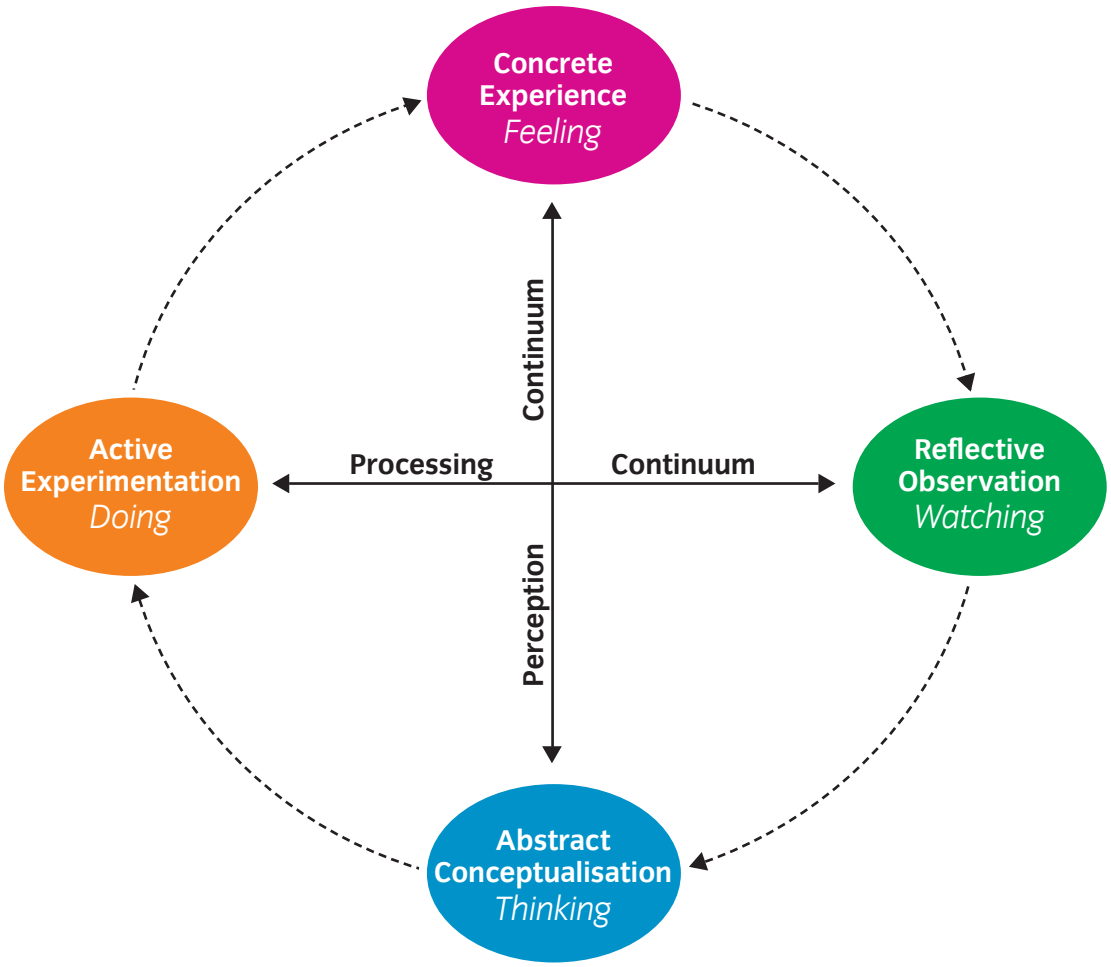


FIGURE 5 KOLB'S EXPERIENTIAL LEARNING. SOURCE: DON CLARK (2011)

Trial and error involves our natural human motivation to be curious. We want to see if something will bear our weight, see what something feels like at first hand. Once we have done so we begin to be able to understand more of the underlying or conceptual explanation. It works well where safe experiments can be trialled but not where, as for example, if learning to be an electrician, personal danger is involved.

Experimentation is a slightly more organised form of trial and error where we attempt a more fundamental trial. It suggests at least a degree of forward planning.

Discovery learning is based on the idea that learning is most effective when we discover something for ourselves rather than being told it (Bruner, 1961). At its core, the idea makes good sense but if taken to extremes it is easy to understand why critics argue that it is wasteful constantly to discover things which you could less wastefully learn by other methods such as repetition or rote. Richard Mayer (2004) argues that where discovery learning is not effectively scaffolded by teachers – as 'guided discovery' – learners are often unable to deduce rules or concepts. An example is the school maths investigation where

students are supposed to 'discover' Pythagoras' Theorem but are given no rules of thumb about how to look for mathematical laws.

To give a name to the effect causing the inefficacy of discovery learning, Paul Kirschner and colleagues (2006) wrote that 'cognitive load theory suggests that the free exploration of a highly complex environment may generate a heavy working memory load that is detrimental to learning', a suggestion which is 'particularly important in the case of novice learners, who lack proper schemas to integrate the new information with their prior knowledge' (p80).

Deliberate practice is a particular kind of practising involving a focus on improving particular tasks. Anders Ericsson (2008), its creator, proposes that it also involves provision of immediate feedback, time for problem-solving and evaluation, and opportunities for repeated performance to refine behaviour.

In *Bodies of Knowledge* (Claxton et al., 2010) we suggested that there are five different kinds of practice:

1. 'getting the feel': on first trying something new, the body has no recollection of how an action should 'feel'; no 'muscle memory'. Over time, the body establishes a template of how it 'feels' when the action seems to be going well.
2. 'automating': until 'muscle memory' has been established, the golfer makes unreliable shots. The learner is able to automate the skills to the point when conscious thought is no longer required for each element of the action. Although the golfer may still need to process distance and wind speed, he does not need to consider his swing. Time, determination and attention are required at this stage of practice (Ericsson, 2002).
3. 'picking out the hard parts': when an action does not lead to the desired outcome, the learner deconstructs that action to consider at which part the process erred (Perkins, 2009).
4. 'improvising': automated practice can become staid and lacking in creativity. Effective practice can involve a level of playfulness in trying new ways of working.
5. 'doing it for real': skills become refined when they are tested in real-life situations which may be competitive, stressful or pressured in some way.

All apprentices need to practise aspects of their learning; the skill of the teacher lies in knowing how best to create the environment in which they can do this best.

An example from apprenticeships of this kind of learning in practice is:

the University of Colorado Boulder's Discovery Learning Apprenticeship Program (http://engineering.colorado.edu/dlc/), which provides undergraduate students with the opportunity to take on a paid, year-long, research experience. 'Apprentices' learn how to research using hands-on techniques to gain insight into whichever field of study interests them within the College of Engineering and Applied Science, from genome mapping to robotics.

TABLE 14 A METHOD THAT INVOLVES PRACTISING

As we think about this group of methods which make up practising there are two clear implications for pedagogy. The first is an explicit recognition of the importance and complexity of learning by trying things out, trying it again, doing it better and better until expertise is established. The second is the realisation that once this complexity is understood, teachers have a number of different strategies which they can deploy to help apprentices become more proficient. So, for example, it will be helpful to know which the hard parts are in any process and have practical 'how tos' ready for apprentices to use.

6.1.3. HANDS-ON

By making and by drafting and sketching

If writing about and talking about skills and knowledge is the default way of operating in general academic subjects in school, hands-on learning is its parallel default setting in vocational education. Of course not all apprenticeships involve physically making things. But 'hands-on' has a more general meaning here implying that the learning is 'firsthand', directly undertaking a part of the target vocational discipline.

Learning by making, as the phrase suggests, is the learning which takes place while the making process is underway. It could be a physical act (making a piece of furniture or a new kind of weld) or it could be conceptual (making a care plan for an elderly person) or somewhere in between (designing and building a website).

An example of how making as learning is taking off can be found in what is sometimes referred to as the Maker Movement or, in terms of pedagogy, as 'Maker Culture':

> *Maker culture encourages informal, shared social learning focused on the construction of artefacts ranging from robots and 3D-printed models to clothing and more traditional handicrafts. Maker culture emphasises experimentation, innovation, and the testing of theory through practical, self-directed tasks. It is characterised by playful learning and encourages both the acceptance of risk taking (learning by making mistakes) and rapid iterative development. Feedback is provided through immediate testing, personal reflection, and peer validation. Learning is supported via informal mentoring and progression through a community of practice. Its popularity has increased due to the recent proliferation of affordable computing hardware and 3D printers, and available open-source software.* (Sharples et al., 2013; p5)

Learning by drafting and sketching is the iterative process of imagining, visualising and beginning to picture something that you can then more effectively make. It is both a means to an end and also an end in itself as insights are acquired.

David Ullman and colleagues (1990) have offered some concrete examples of the way in which drafting and sketching are useful in mechanical design:

1. To archive the geometric form of the design.
2. To communicate ideas between designers and between the designers and manufacturing personnel.
3. To act as an analysis tool. Often, missing dimensions and tolerances are calculated on the drawing as it is developed.
4. To simulate the design.
5. To serve as a completeness checker. As sketches or other drawings are being made, the details left to be designed become apparent to the designer. This, in effect, helps establish an agenda of design tasks left to accomplish.
6. To act as an extension of the designer's short-term memory. Designers often unconsciously make sketches to help them remember ideas that they might otherwise forget.

While this list clearly has an engineering focus, it is easy to see how the learning implicit in each of the suggestions might be useful more widely.

An example from apprenticeships of this kind of learning in practice is:

Lane Halley's blog *The Apprentice Path* is a space for conversation between practitioners of interaction design. Interaction designers work with digital products and their work, Halley suggests, is essentially 'an act of making'. She believes digital product designers learn their craft through practice, study and conversation with peers. Sketching is important in her work. She explains:

> *Learning how to quickly sketch screen layouts and user interface (UI) elements helps me think through design problems, communicate ideas to other people, collaborate, and reduce the need for pixel-perfect deliverables.* (Halley, 2014)

TABLE 15 A METHOD THAT INVOLVES BEING 'HANDS-ON'

As we think about this group of methods which make up hands-on learning, it may be worth reframing making as a learning activity not just an output and, by the same token, reframing sketching and drawing as an end in itself rather than a means to one as more traditionally described.

6.1.4. FEEDBACK FOR LEARNING

Using assessment for learning approaches, through conversation, by reflecting and by teaching and helping others

Feedback for learning is any communication whose emphasis is on understanding and improving the processes of learning. Feedback is information provided by someone to a learner on an aspect of their performance. Feedback is essential to all kinds of learning, but some feedback is very helpful, while other feedback is not. Feedback is seldom neutral, providing as it does, information about the values and attitudes of the feedback giver as well as on the person or task. Two quotations from one of the best analyses of feedback summarise feedback which is helpful and feedback which is not:

> *Feedback at the process level is most beneficial when it helps students reject erroneous hypotheses and provides cues to directions for searching and strategising. Such cues sensitise students to the competence or strategy information in a task or situation. Ideally, it moves from the task to the processes or understandings necessary to learn the task to regulation about continuing beyond the task to more challenging tasks and goals.* (Hattie and Timperley, 2007; p102)

By contrast to effective feedback on processes, person-centred comments are not helpful:

> *Feedback at the self or personal level (usually praise), on the other hand, is rarely effective.* (ibid.)

Assessment for Learning (AfL) approaches help learners/apprentices to seek and interpret evidence for use by them and by their teachers to decide where they are in their learning, where they need to go and how best to get there. Sometimes referred to as formative assessment (as opposed to summative), AfL puts the emphasis firmly on learning and how to improve it by ensuring learners are clear about learning objectives, regularly assess their own progress and are assessed by their peers, and receive regular specific feedback from experts.

Reflecting and reflection are critical to making progress in learning. Reflection involves noticing, verbalising and drawing out lessons from work and learning.

Conversations between apprentices and between apprentices and those supporting or working with them are one of the simplest and most powerful types of informal learning. They might involve asking and answering questions, offering or receiving advice, the sharing of ideas, giving and receiving feedback and much more.

John Hattie and Helen Timperley (2007) have helped us to see that there are essentially three core questions informing effective feedback:

- Where am I going?
- How am I doing?
- Where to next?

> *Feedback is among the most critical influences on student learning. A major aim of the educative process is to assist in identifying these gaps ("How am I going?" relative to "Where am I going?") and to provide remediation in the form of alternative or other steps ("Where to next?").* (ibid.)

Hattie and Timperly have developed a model for feedback which is readily translatable to apprenticeships.

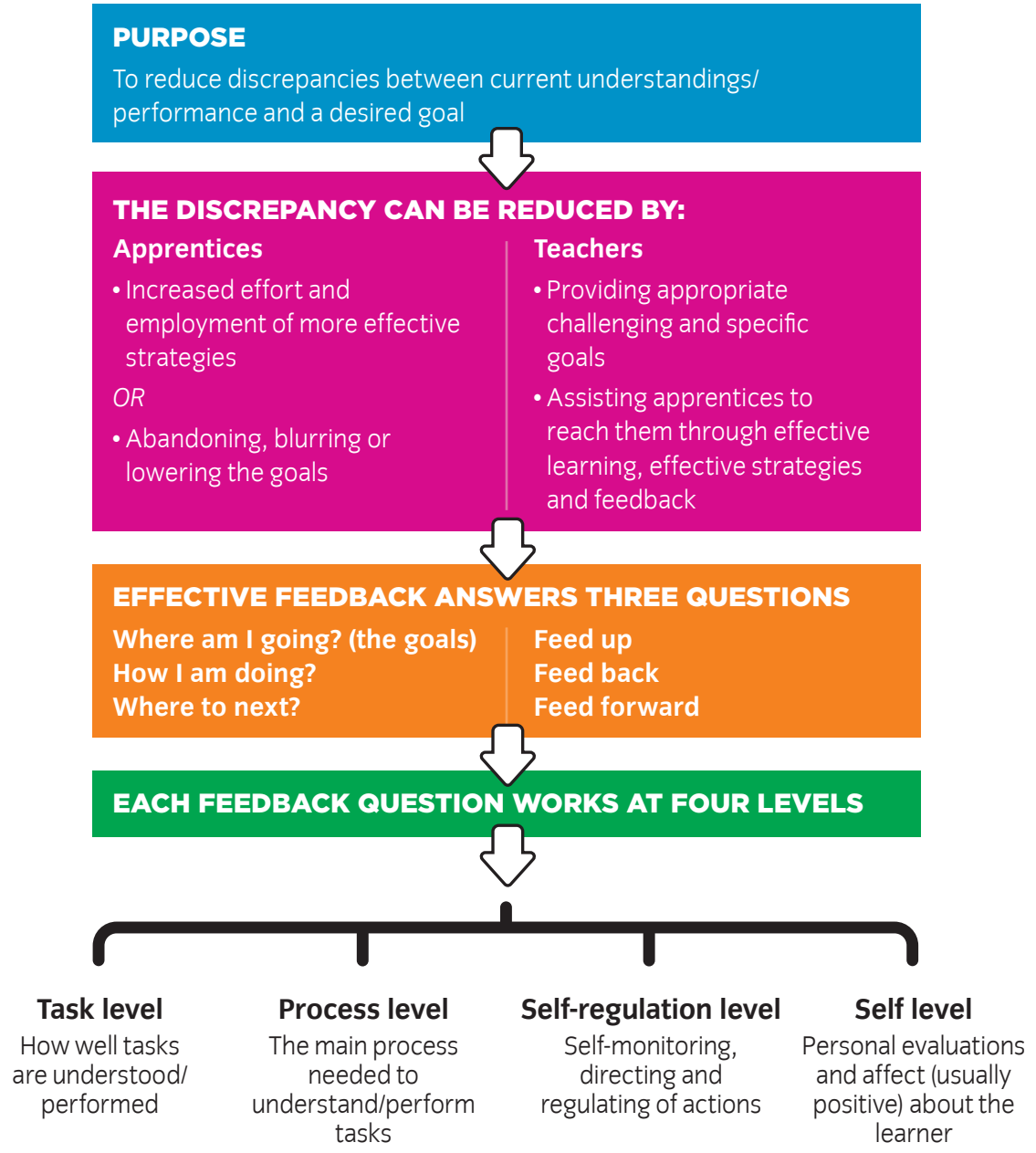


FIGURE 6 A MODEL OF FEEDBACK TO ENHANCE LEARNING (ADAPTED FROM HATTIE AND TEMPERLEY, 2007)

Earlier in this report in section 3.10 we explored the specific types of feedback which are likely to lead to a growth mindset. These build on everything we have described in the last few pages, especially the need for specific, actionable feedback rather than person praise. But, in parallel they also require teachers explicitly to teach and to model the research-based belief that it matters what learners think about themselves as learners.

We need all apprentices to believe that, with practice and effort, they can achieve or exceed their goals.

An example from apprenticeships of this kind of learning in practice is:

in their pamphlet *Feedback: Giving and getting feedback from learners* The Learning and Skills Council (2003) give an example of how one engineering firm provided constant feedback to apprentices:

> *We start on day one by going through the results of their selection test. We tell them how they did on the aptitude test and manual handling exercises, and in their interviews. Then they do an initial assessment test to identify key skills needs. We go through the results of that with them as well, and get them to agree what goes in the learning plan.*
>
> *Once they're on the shop floor, it's the supervisor's job to look after them and make sure they're picking things up the right way. Every apprentice is with a designated MA supervisor. They get an extra amount in their pay packets for supervising apprentices, and some of them have been through the same process themselves.*
>
> *When I'm going round the workshops I can generally hear the supervisors telling apprentices how to do something that bit quicker or better. It keeps them on their toes alright.*

Note that constant, helpful feedback from expert supervisors kept apprentices on track and alert.

TABLE 16 A METHOD THAT INVOLVES FEEDBACK FOR LEARNING

As we think about this group of methods which make up feedback for learning it is critically important that we recognise three things:

- good feedback is powerfully helpful for apprentices;
- some feedback can hinder the attempts of apprentices to improve;
- teachers need to know the difference between the two.

6.1.5. ONE-TO-ONE

By being coached and by being mentored

One-to-one interactions enable apprentices to develop the right attitudes, knowledge and skills in the context of a trusted relationship and where the focus is on them as an individual learner.

Coaching is a process by which two individuals meet regularly to reflect on progress and work on aspects of performance. It involves setting and reviewing goals, identifying issues, working on areas for improvement and reflecting on progress.

Mentoring is a relationship between two people also designed to improve performance but more concerned with overall career transitions. Normally provided by a more experienced and expert worker, a mentor acts as a guide for apprentices, especially where they are young and entering the workplace for the first time, helping them to think through career options and providing pastoral care.

In terms of a pedagogical approach, coaching and mentoring:

> *...can be described as a 'learner-focused constructivist experiential approach'. 'Constructivist' here means an approach that recognises students' prior knowledge and aims to build upon it, complementing instructional and workplace demonstration.* (Jameson, 2012; p49)

They are two-way relationships in which apprentice and coach or mentor seek to construct solutions which will help the apprentice to develop both performance and the most helpful habits of mind for the workplace context in which they are working.

Whether it is coaching or mentoring, a range of learning activities can be involved. The list below is adapted from the Centre for the Use of Research & Evidence in Education's *National Framework for Mentoring and Coaching* (CUREE, 2005):

- identifying and clarifying learning goals;
- talking through the processes of learning;
- developing and reinforcing learners' control over their learning;
- active listening;
- structured questioning;
- modelling, observing, articulating and discussing practice to raise awareness;
- shared learning experiences, for example through observation or film;
- providing guidance, feedback and direction;
- supported review and action planning;
- reflection on and debriefing of shared experiences;
- planning of learning;
- brokering a range of support within and beyond the workplace;
- encouraging conversations between managers, college or provider staff and the apprentice.

Some workplaces have Union Learning Reps who may be both willing and able to provide coaching and mentoring to apprentices.

A good example of mentoring in apprenticeships is:

the UKRC's *Apprentice Mentoring: Mentee training manual* (2012), which accompanies its online training module or can be used alone. The manual provides a reference point for apprentices being mentored in order to get the most out of the mentoring relationship. It provides places to note down thoughts and record progress. It lists the qualities of good mentors and good mentees.

Good mentor qualities	Good mentee qualities
Good listeners Empathetic Encouraging Positive Role models Gave me confidence Non-judgmental	Good listeners Willing to be challenged Wanting to develop Willing to talk openly Open to new ideas Happy to accept feedback

It could be a useful tool for helping apprentices to record conversations, track progress against objectives and provide a record of achievement.

TABLE 17 A METHOD THAT INVOLVES TIME SPENT ONE-TO-ONE

As we think about this group of methods which focus on one-to-one interactions it is clear that, for apprentices, both coaching and mentoring can be especially important where, perhaps because the apprentice is based in a very small organisation, there is little capability to guide their learning.

6.1.6. REAL-WORLD LEARNING

By real-world problem-solving, through personal or collaborative enquiry and by thinking critically and producing knowledge

Real-world learning recognises that the workplace is more like the real world than a classroom. In the real world you encounter challenges, ask and answer questions, engage your critical faculties and use your creativity and nous to solve problems. Many apprentices choose the route precisely because it appears to offer the prospect of real-world learning.

Real-world problem-solving requires apprentices to be able to identify problems and have a range of strategies to find solutions, both working as an individual and in a team.

Personal or collaborative enquiry, like discovery learning, requires apprentices to find things out for themselves rather than be told.

Thinking critically to produce knowledge is the application of appropriate skills and strategies in order to obtain a desired outcome. It involves monitoring thinking processes, checking whether progress is being made towards the desired goal and ensuring accuracy.

The skills being developed in real-world learning are very close to the PLTS required by all apprentices and, indeed, are the natural way to embed these.

As Nancy Hoffman (cited in McLoughlin, 2013; p11) puts it:

> *[The challenge for vocational teaching and learning professionals is] to build curriculum and assessments that replicate the uncertain, messy, problem-based, people intense, and time limited world of work.*

Apprenticeships provide the ideal learning environment for this kind of pedagogy.

An example from apprenticeships of this kind of learning in practice is:

taken from *NotGoingToUni's* (2014) short advertising video by training firm QA Apprenticeships. This shows short clips of real apprentices with 'real jobs, real responsibilities'. Throughout the video, IT apprentices give examples of how they are learning on-the-job by solving problems:

> *James: My job is involved in… the testing side… so I'm currently testing the… billable project… I'm getting paid by the client and just trying to 'break' it, practically!*
>
> *Greg: At the moment I'm working on the help desk… helping customers diagnose faults and repair them. I really enjoy that.*
>
> *Jimmy: My job at the moment is 'analyst'. I test and develop software and I fix the software that's already being used by clients.*

TABLE 18 A METHOD THAT INVOLVES REAL-WORLD LEARNING

As we think about this group of methods which can be called real-world learning, it is important to recognise that one challenge for teachers is to know when it is best to let apprentices find things out for themselves largely unaided (practice) and when more specific upfront guidance is helpful (theory). A related challenge is that of finding a balance between facilitating exploration and ensuring learners' experiences are helpful. Robin Usher (2009) makes the point that while learner experience appears to be valued in vocational pedagogy:

> *Its use is instrumental, selective and at best illustrative. It is only accorded significance if it contributes to the learning of the pre-defined knowledge or skills; if not, it is discounted.* (p178)

To an extent, all learning should be recognised as valuable. Within the boundaries of guided learning hours, teachers need to balance covering content with allowing sufficient time for apprentices to learn and *practise* each skill.

6.1.7. AGAINST THE CLOCK

By competing, through simulation and role play and through games

Learning against the clock is real and important in the sense that, in any workplace, deadlines will be important. But, by contrast, really deep learning transcends time, inviting engagement which transcends timetabled lessons or sessions. Apprenticeship learning is, by definition, a kind of learning against the clock as the apprenticeship has a specified overall time and within that, specified learning hours.

Learning by competing is any learning activity in which one or more individuals compete against one or more other individuals to achieve a task.

Simulation is any learning activity where the environment and/or people are imagined or simulated. For example, in a training restaurant or hairdressing salon learners might be invited to explore the same situation from different perspectives such as a satisfied customer or a dissatisfied one. Role play involves a learner imagining s/he is someone else and 'acting' it out. Simulations and role play often go together. Simulations tend to be time-limited.

Games have an objective, a set of rules, and are played – a key word reminding us of one of their key characteristics: that they are designed to be fun and create an environment where it is absolutely okay to make mistakes. Most games are also competitive and have a natural time limit.

Constructive competition is increasingly being seen as a way of developing the skills of apprentices, especially those most skilled. In *Skills for Sustainable Growth* the Department for Business Innovation & Skills (BIS, 2010; s26) suggested that:

> *...[s]kills competitions and awards can provide an excellent opportunity to raise the profile of the vocational skills across the UK and inspire young people to develop their skills.*

Competitive learning can motivate individuals to stretch beyond their own expected abilities (Williams and Sheridan, 2010). By the same token it can frustrate and demotivate some. But as all work is, in a sense, competitive – businesses regularly talk of their competitors – it would seem sensible to assume that competitive approaches should form part of any blend of apprenticeship learning. A teacher from Boston College summed up the benefits to apprentices and vocational learners well:

> *Competition enhances the importance of confidence and competence. It helps learners focus. It makes them become self reliant and as a teacher gives me the opportunity to observe them in practice and assess their skills and qualities.* (Jennings, 2013; p13)

Competition can either be constructive or destructive, however, and the manner in which competition occurs impacts upon its usefulness to the apprenticeship process. In effective studios and workshops most teachers will at some time invite their learners to compete against others in their class or in their part of a workplace.

Use of simulation is a well-established way of learning and assessing skill development in vocational disciplines. In nursing, for example, simulations of real-life scenarios provide opportunities for learners to practise problem-solving and clinical decision-making in a 'safe' environment (Rush et al., 2010).

Most trainers, teachers and managers will at some time use games to teach a concept, reinforce a skill or explore ideas. *FutureLab* (Ulicsak and Wright, 2010) helpfully summarises the pedagogical considerations of selecting appropriate games in education. They suggest that games which are useful for learning tend to have:

- a learning curve – easy to learn at the start and increasing in difficulty;
- relevant educational content – including having:
  - ✓ clear objectives;
  - ✓ clear progression;
  - ✓ appropriate feedback;
  - ✓ opportunities for collaboration and group work;
  - ✓ assessment and follow-up;
  - ✓ opportunities for creativity;
  - ✓ a help section.

An example from apprenticeships of this kind of learning in practice is:

WorldSkills UK's national competitions (2014), which pit young people against one another in their chosen trade in order to test their skills. Competitors can enter competitions at different levels depending upon the qualification they hold, or are working towards. Intermediate level, for example, tests those candidates with, or working towards, Level 2 apprenticeships.

In terms of learning, not only do competitors get to practise and hone their skills in a pressured environment, but the activities they take part in are designed by industry experts to develop valued qualities in apprentices. These include teamwork, time management and working to deadlines.

TABLE 19 A METHOD THAT INVOLVES WORKING AGAINST THE CLOCK

6.1.8. ONLINE

Through virtual environments and, seamlessly, blending virtual with face-to-face

Online learning – anything which is using the power of the Internet – is growing in importance and sophistication. A virtual environment is any environment that is mediated via a screen of some kind or, potentially, in wraparound virtual reality learning environments designed for specific learning tasks.

As a cluster of methods, 'online' sits apart from the others we have listed so far, being a means of delivering those other methods. For example, learners do not learn simply by 'being online'. They learn through 'watching' while online, or 'thinking critically' while online. So while a method in some respects (particularly when likened to simulation), more often than not it may better be seen as a combination of other methods. For example, although at first glance a MOOC (massive open online course) would appear to be an example of 'learning through virtual environments', in reality it becomes clear that methods of watching, reading, problem-solving, conversation and coaching can all come into play. Behind each of these 'forms of teaching' must sit a series of careful decisions by the pedagogue.

Seamless learning is defined by the Open University (Sharples et al., 2013; p4) as 'connecting learning experiences across the contexts of location, time, device and social setting'. Essentially this means that, as learners can potentially bring their own devices to wherever they are learning or working the idea of the binary alternative between virtual or face-to-face is no longer meaningful as we are effectively online all the time.

Specific developments in the area of online learning include MOOCs and SPOCs (small private online courses). MOOCs and SPOCs can be linked to accrediting bodies or not. Similar to a SPOC is the idea of a flipped classroom, where some of what is traditionally taught in a class is available online before and afterwards to free up time for more intensive interaction in class.

Most of the MOOC and SPOC activity currently exists at Higher Education level. Most of the flipped classroom activity is taking place in schools.

An example of a development in the vocational area of obvious relevance to apprenticeships is the City & Guilds TechBac® being piloted in 2014/15. Aimed at the 14-19 age range, the TechBac® has a significant online component as well as practical hands-on activity.

City & Guilds TECHBAC®

CITY & GUILDS TECHBAC®

DELIVERS WHAT LEARNERS, PROVIDERS AND EMPLOYERS REALLY NEED

TechBac® is a complete Programme of study

Learn by doing
Applied learning and assessment designed in partnership with industry.

Connect to industry
Meaningful links to local and national employers where learners can practise and demonstrate skills.

Prepare for work
Tools that help young people develop the attitudes, personal skills and confidence recruiters demand.

Open doors
Clear progression to higher education, apprenticeships and employment.

- **Technical Qualification**
- **Project & Work Placement**
- **TechBac® Skills Zone**

✔ **UCAS points and HE endorsement**
✔ **Embedded Maths and English**
✔ **Levels 2 & 3**
✔ **Practical, graded assessments**

FIGURE 7 WHAT DOES THE TECHBAC® LOOK LIKE? SOURCE: CITY & GUILDS

An exciting aspect of online learning is being driven by a new approach to online assessment, Open Badges (something we referred to on page 65). Arguably a development of what groups such as the cubs, scouts and guides have been doing with their physical badges sewn on to an item of clothing, Open Badges are virtual celebrations of learners' successes. They are also similar to the 'passports' participants used to record their progress as part of the Duke of Edinburgh's Award Scheme, (now updated to eDofE). And they grow out of a longstanding commitment to the use of portfolios and records of achievements in many walks of educational life.

Users of Open Badges create their own e-backpack into which they can electronically store badges which record their achievements and materials associated with these. This is assessment as learning and offers some interesting opportunities for use with apprentices. As the Open Badges website (*Mozilla OpenBadges*, b) puts it:

> *Get recognition for the things you learn, online and off.*
> - *Open Badges use a shared technical standard to help recognize your skills and achievements. Badges help make them count towards your education, career and lifelong learning.*
> - *Earn badges from anywhere. Then take them everywhere. Manage your badges in your Mozilla Backpack, where you can create meaningful collections and display your badges on social networking and job sites.*
> - *Prove skills. Employers, organizations and schools can explore the data behind each badge issued to verify your skills, achievements and interests.*

Anyone working with apprentices would want apprentices to achieve these kinds of outcomes and Open Badges just might be one means of achieving them. An example of an early adopter of this kind of thinking is the computer games industry which created its 'Gamestar Mechanic' badge in 2012 and has gone on to create a mentoring badge (Gamestar Mechanic, no date).

An example from apprenticeships of this kind of learning in practice is:

training provider *Apprenticeship e-Academy,* a division of Virtual College (http://www.apprenticeshipea.co.uk/). The e-Academy provides online apprenticeship solutions for training providers, colleges and employers. To give an example of the online solution to training, e-Academy provides a comprehensive range of tools:

- enable – a Virtual Learning Environment used by over 800,000 learners;
- learner profiling – holistic initial assessment and recruitment solutions;
- apprenticeship induction – online equality and diversity, health and safety, employee rights and responsibilities and Personal Learning and Thinking Skills;
- e-Functional Skills – a full initial assessment with combined diagnostic tools and learning resources;
- e-technical certificates – all online, reducing costs and manpower;
- a dedicated account manager – supporting you with your transition from traditional apprenticeships;
- e-Portfolio – giving you complete visibility of apprenticeship progress;
- fully customisable branding – using your logo and colours;
- progress review – full visibility of the learning plan, progress and targets;
- enhanced communication – automated review reminders and one-click communication with assessors;
- reports – fully customisable reporting functionality;
- innovative technology – using our virtual classroom, iPhone app and podcasts.

In a case study example, two representatives from a client organisation commented on how they were now able to provide apprentices with Functional Skills training using online tools:

> *Andrew: These tools are helping us address the challenge of how best to deliver Functional Skills.*
>
> *Michaela Learners receive a consistent level of information relevant to their needs and we are seeing far greater engagement – especially with ICT. The online system allows assessors to concentrate their attention and specialist skills on areas of greatest need for the learner.*

TABLE 20 A METHOD THAT INVOLVES WORKING ONLINE

As we think about this group of methods which use online approaches it is worth reflecting on how little online delivery has yet reached apprenticeships (with a few exceptions) and what an opportunity there is for further development.

6.1.9. ANYTIME

On the fly

This last category is a simple reminder that much of what apprentices learn is not planned.

On the fly learning is unplanned, informal, the result of an unexpected occurrence from which something can be gleaned. Sometimes it these on the fly moments – an unexpected conversation with a visitor, equipment which does not work and forces a rethink, a chance encounter, an exchange on social media – which provide learners with useful know-how.

After all, we have known for a considerable while that the way people work in practice often differs fundamentally from the way such work may be described in training programmes (Brown and Duguid, 1991).

An example from apprenticeships of this kind of learning in practice is:

the learning that occurs just by being part of a community of practice. Employers cannot always account for the questions apprentices might ask, what an apprentice might witness or the direction a learning conversation might go in; they can only provide opportunities for the right kinds of questions to be asked – and even this is dependent upon the jobs that come in. The observation element of learning is particularly 'on the fly'.

In an article for the Institute of Leadership and Management, Helen Mayson (2014) writes:

> *Think of how an apprentice learns in a traditional apprenticeship. They first do menial tasks like cleaning up, and putting away tools. While they are doing this, they learn by observation of the master craftsman and the other tradesmen. And then one day the apprentice thought would never arrive, they get given their first real job to make a simple item. From then on the master craftsman tasks them with ever more complex and difficult jobs, each one designed to help them learn new aspects of the trade. The apprentice learns to use new tools and new materials from observing and asking others, and through his own trial and error.*

A good master craftsman holds a safe space around the apprentice so they can learn at their own pace, in their own way, yet knowing they can reach out for help and advice when needed in order to accomplish the task.

So even though the apprenticeship is a 'formal' arrangement, learning within it is fluid and dynamic:

> *The key to the learning is in the tasking. It is through setting tasks that you can set the direction of someone's informal learning, and therefore enable a specific capability.*

TABLE 21 A METHOD THAT INVOLVES LEARNING AS OPPORTUNITY ARISES

As we remind ourselves that true learning cannot be bounded, it may be helpful for workplaces or colleges to remember that, given the importance of this kind of informal learning, it is helpful to acknowledge its importance with all their apprentices, as well as laying stress on the formal aspects of their programmes.

6.2. MAPPING METHODS AGAINST DESIRED OUTCOMES OF APPRENTICESHIPS

Having looked at a range of ways of learning, we explore possible pedagogies for developing each of the six desirable outcomes.

6.2.1. ROUTINE EXPERTISE

When we first introduced routine expertise in chapter 2.2, we used Barbara Brandt's goal-driven description of the expertise desirable in apprenticeships (1993):

1. To discover what works.
2. To recognise tasks, problems or situations and know how to handle them.
3. To perform at an acceptable level.

But routine expertise is in reality even more complex and holistic as the International Network on Innovative Apprenticeship (INAP, 2012) has shown.

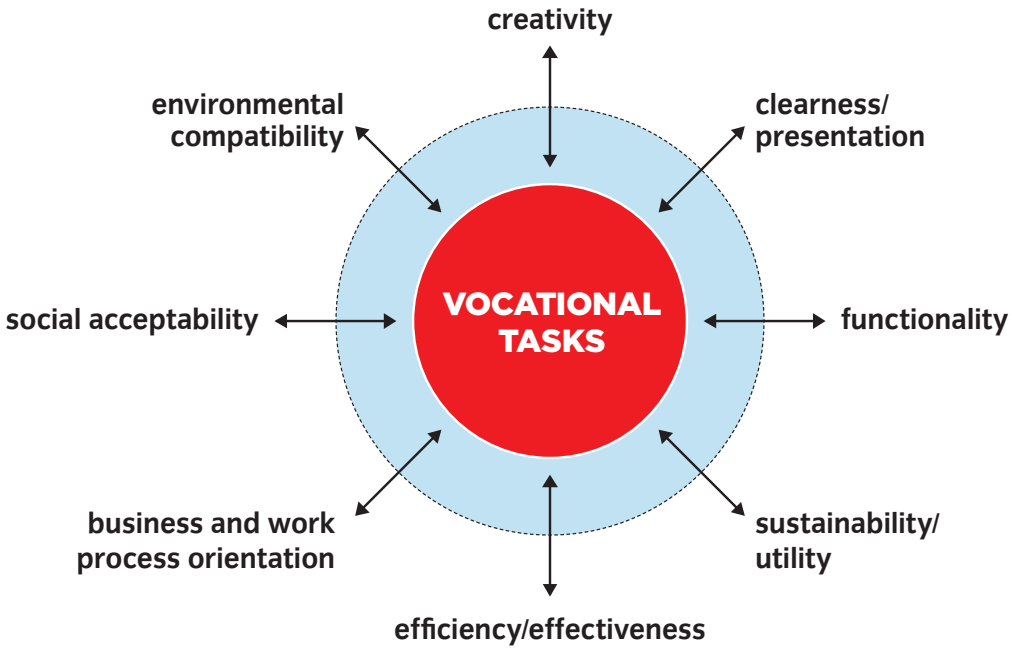


FIGURE 8 ATTRIBUTES OF THE HOLISTIC (COMPLETE) SOLUTION OF OCCUPATIONAL / PROFESSIONAL TASKS TO A HIGH QUALITY STANDARD

Expertise, except in the lowest skill occupations, is not a single one-off event but a set of inter-related attributes of the kind listed in the figure above. Even to undertake routine tasks with reliable levels of skill may call for creativity, a clarity of presentational skill, an ability to use the appropriate function, knowledge that what you are doing can be sustainable, efficiency, business-like attitudes, an awareness of what is socially acceptable and regard for the environment.

The cultivation of expertise – itself not a simple matter as the figure above suggests – requires time on task and a blend of almost any of the methods we listed in section 6.1. This broad view of expertise is useful not only to remind us of its complexity but also to act as a prompt to those supporting apprentices, helping them to keep a broad and balanced view of their teaching methods.

The 'novice' to 'mastery' framework (Dreyfus and Dreyfus, 1980) is one of the most helpful ways of viewing the development of expertise and serves as a useful guide for the selection of methods in helping an apprentice on the journey through to mastery with all the knowledge assimilation and cognitive development that the process entails. It may also be helpful to think of the novice to mastery journey in terms of a move from the periphery to the centre of a community of practice in order to give full consideration to the range of resources at each individual's disposal. Dreyfus and Dreyfus' model for skill acquisition begins with the assumption that picking up a new skill 'by imitation and floundering trial and error' are not as efficient as 'seek[ing] the aid of an instructor or instruction manual' (p1). The authors' view is that skill is formed initially by following formal rules, but that experience with concrete examples drives expertise and mastery. The move from novice to master is reflected in a change from analytic thought to intuitive response, as shown in the tables below – using the Dreyfus and Dreyfus example of a pilot.

	NOVICE
Definition	A novice has no experience of the situation under study. She is able to recognise some context-free *non-situational features* that do not require experience. She uses rules to determine how to act when these features occur.
Example: pilot	A novice pilot can read cockpit instruments *(non-situational feature)* and manipulate controls *(use rules)* in response to readings and context-free visual cues e.g. the angular displacement of the horizon.
Suitable learning methods	**Remembering** non-situational features and rules. **Simulation; practising.** Explaining of rules through exemplars or **expert demonstration.** **Imitating** coaches. Monitoring by self-observation or instructional **feedback** to ensure compliance with rules. **Observation; questioning; listening.**

TABLE 22 MAPPING LEARNING METHODS FOR THE 'NOVICE' LEARNER

	COMPETENT
Definition	A novice progresses to competence after considerable experience of real situations. She observes recurrent meaningful patterns which are no longer seen as context-free *(aspects)*. She stores these aspects in memory for future recognition of similar aspects. She learns principles *(guidelines)* for how to deal with particular patterns occurring. *Guidelines* treat all aspects as equal.
Example: pilot	A competent pilot recognises aspects such as 'verging on stall conditions', being 'high in the landing approach envelope' or having a 'dangerous crab angle' and knows *guidelines* for correcting them.
Suitable learning methods	**Remembering** aspects and guidelines. **Simulation; practising** with real-world examples. Expert **coaching** and **feedback**: drawing attention of the learner to aspects as they occur and that stand out as memorable; formulating principles to help the learner dictate actions for when these aspects occur *(guidelines)*.

TABLE 23 MAPPING LEARNING METHODS FOR THE 'COMPETENT' LEARNER

	PROFICIENT
Definition	The competent learner becomes proficient with increased practice and a wide variety of typical, *whole* situations. *Aspects* (patterns that occur) appear more or less important depending upon their relevance to a goal. As the learner experiences a whole situation from a different *perspective*, she is able to recognise similar situations that have the same goal in future; learner uses memorised *principles (maxims)* to determine appropriate action.
Example: pilot	A proficient pilot has the *goal* of making a safe landing. She sees her position in the landing envelope and her crab angle as two important aspects but knows she can ignore the terrain beyond the runway. She manoeuvres down following *maxims*. If these maxims do not work, she adopts a new *perspective* and views other aspects such as the land beyond the terrain and the runway length as being important.
Suitable learning methods	**Simulation; practise** meeting a range of goals under different conditions. **Conversation** with other experts, or with those at a less experienced stage of development who are still able to articulate their decision-making processes. **Visualise** different aspects that might require decision-making **Timing** oneself. **Training others** to verbalise and internalise decision-making process.

TABLE 24 MAPPING LEARNING METHODS FOR THE 'PROFICIENT' LEARNER

	EXPERT
Definition	The highest level of mental capacity. The expert no longer needs the analytical principles of the proficient learner *(rules, guidelines or maxims)*. She has a vast repertoire of experience and each situation has associated with it an intuitively appropriate action.
Example: pilot	A pilot now responds intuitively and appropriately. She is now 'flying' rather than 'controlling a complicated mechanism'. She should begin to reflect upon what she is doing; she will notice a degradation in performance.
Suitable learning methods	**Competition** with other experts. **Practise** using different equipment.

TABLE 25 MAPPING LEARNING METHODS FOR THE 'EXPERT' LEARNER

	MASTER
Definition	The expert has reached the highest level of mental capacity, but verges into mastery when her performance transcends its usual high level. She no longer needs principles and can cease to pay conscious attention to her performance. Now she can produce the appropriate *perspective* and its associated *action*. She experiences moments of intense absorption, which cause her performance to transcend its usual high level.
Suitable learning methods	Provision of opportunities for absorption. Facilitating **extended time** spent on a piece of work and opportunities for the expert to cease to pay conscious attention to her performance. Observing/supervising/**coaching** others at work to hone teaching skills.

TABLE 26 MAPPING LEARNING METHODS FOR THE 'MASTER'

Two particular problems remain. Firstly, as Ian Kinchin and colleagues (2008) point out, identifying where a practitioner is, on the novice to master spectrum, is difficult because Dreyfus and Dreyfus do not really explain how learning from experience happens, beyond as an exercise of storage in memory of a myriad of different scenarios linking aspects to actions and goal fulfilment. But this is not insurmountable once practitioners have a clear understanding of the progression being described.

A second and more fundamental challenge with the development of expertise is the notion of 'tacit knowledge' and experts' use of intuition. Not being able to verbalise actions:

> *...may simply be [because teachers] lack the appropriate tools to uncover what it is they are doing, and/or the vocabulary to articulate it.* (Kinchin et al., 2008; p321)

So how do we surface this knowledge? Although much of what an 'expert' knows may be difficult to articulate for the average highly experienced practitioner, the expert *teacher*-practitioner should be able to unpack this knowledge for learners in a more skilled and meaningful way.

There exists a body of theory and research around the pedagogy of visualising expertise. In this field, David Feldon (2006; p91) makes the case for explicit codification of knowledge, based on much evidence in this area:

> *Analysis of the evidence indicates that experts' free recall of strategies introduces errors and omissions into instructional materials that hinder student success. In contrast, when experts engage in structural knowledge elicitation techniques (e.g. cognitive task analysis), the resultant instruction is more effective.*

6.2.2. RESOURCEFULNESS

Resourcefulness – being able to stop and think and do things that you have not specifically encountered beforehand – is desirable in a world of change.

Looking across national occupational frameworks for apprenticeships globally you would notice a reduction in their number over time. While being a specialist is still hugely important in some areas – using metal to make clocks for example – being adaptably able to work with metal in other engineering contexts is more likely to be useful:

The principle of specialisation was replaced with the principle of exemplarity. (INAP, 2012: p8)

In other words, apprentices need to be resourceful enough to have learned examples of working practices from which they can further specialise or with which they can adapt to the situation in which they find themselves.

Developing resourcefulness through teaching, and conveying its importance, requires a shared understanding of what it means to be resourceful. Does it mean drawing on personal reserves of ideas and strength? Does it mean drawing on external sources? Or some combination of the two?

Taking a psychometric approach to the study of resourcefulness, Benedict McWhirter and colleagues (2008) examined the factors comprising Rosenbaum's 'self-control schedule' as a measure of learned resourcefulness. According to Rosenbaum's earlier work, learned resourcefulness comprises three dimensions of skills:

1. Reformative self-control: the skills for effective problem-solving and strategies for postponing the need for instant gratification;
2. Redressive self-control: the use of positive self-instructions for thought, mood and pain control;
3. Perceived self-efficacy: belief in the effectiveness of one's own coping skills when faced with stressful situations.

It involves a corresponding repertoire of self-control behaviours including:

1. The application of problem-solving strategies such as approaching difficult problems in a systematic way; the ability to delay immediate gratification reflected, for example, in the statement, 'I tend to postpone unpleasant tasks even if I could perform them immediately';
2. The use of self-statements to control emotional responses such as, 'when I am feeling depressed, I try to think about pleasant events';
3. Perceived self-efficacy, reflected, for example, in the statement, 'I need outside help to get rid of some of my bad habits' (Rosenbaum, 1980, cited in Akgun and Ciarrochi, 2003; p289).

In terms of teaching learned resourcefulness, research has demonstrated that the skills associated with self-control 'can be learned and increased through conditioning, modelling, and instruction' (McWhirter et al., 2008; p1100). Other key strategies for developing resourcefulness include approaches such as problem-solving, problem-based and enquiry-led methods of teaching.

David Perkins uses the metaphor of the 'whole game of learning' to describe the development of learners who are resourceful and able to transfer their learning from one context to another. His seven simple pieces of advice draw from some four decades of research still seem to us highly relevant and useful. The first phrase in each item are the exact words Perkins uses, the remaining words are an adaptation to the topic of apprenticeships:

- Play the whole game – use extended projects and authentic contexts so that learners are less likely to be thrown when they encounter something new.
- Make the game worth playing – work hard at engaging learners giving them choices wherever possible and so build the range of self-control strategies they need.
- Work on the hard parts – discover the most effective ways of practising so that making mistakes and learning from them becomes normal resourceful behaviour.
- Play out of town – try things out in many different contexts so that even if something seems slightly different learners have more confidence to persist.
- Uncover the hidden game – make the processes of learning as visible as possible so that all those working with apprentices have a common language to set goals and chart progress.

- Learn from the team and the other teams – develop robust ways of working in groups and seek out relevant communities of practice so that when learners encounter novel situations they have already learned how to use the resources of those around them.
- Learn from the game of learning – be in the driving seat as a learner, developing tried and tested tactics and strategies which are regularly practised.

6.2.3. CRAFTSMANSHIP

We have seen how important craftsmanship is in section 4.1.3. But it is also a difficult thing to teach or deliberately to learn. For, as we saw when thinking through epistemic and cognitive apprenticeships, it is so closely allied to cultural and behavioural aspects of any work or learning space.

When INAP talks about professional ethic, it is clear that they are touching on a related matter:

> *Occupational identity is a prerequisite for work commitment and the associated sense of work responsibility. Occupational or professional identity is the basis of a professional ethic, which is based on intrinsic motivation. The best way to promote a professional work ethic is to give apprentices the opportunity to shape the overall context and business processes of a company and to understand how they contribute to the success of the company. Fragmented occupational structures lead to unhealthy demarcations between different departments in an enterprise. To address this in recent times, many human resource managers attempted to promote 'organisational commitment' based on fostering an emotional bond between employees and their company. Due to the flexibility of labour markets and the increased frequency of changing jobs, organisational commitment has become considerably less relevant. Therefore, one can conclude that today's flexible labour markets do not lead to an erosion of 'occupational identity' but to the increased importance of vocational education and occupational commitment.* (INAP, 2012; p10)

Culturally then, it is suggested, employers need to give their apprentices real opportunities to shape and contribute towards the goals of the organisation in a world of flexible labour markets where such commitment is too often not demonstrated so clearly.

For Richard Sennett (2009; p20), 'the craftsman represents the special human condition of being *engaged*'. In order to uncover what it is that makes the craftsman think in the way he does, Sennett draws parallels between the approaches of two very different architects in the early 1900s in Vienna. Both had a strong sense of aesthetics, but while one gave full rein to his obsession and ended up disappointed in his achievement, the other had 'more constraints, more willing to play and to engage in a dialogue between form and materials' (p261) and produced a home in which he held significant pride. Comparing the two side by side, we can glean a number of behavioural tendencies of the 'good craftsman' (p262):

- The good craftsman understands the importance of the sketch – 'that is, not knowing quite what you are about when you begin'. He uses the informal sketch as a working procedure for preventing premature closure.
- The good craftsman places positive value on contingency and constraint. This means that he sees problems as opportunities and so does not become blinded to possibility through his own obsession.
- The good craftsman does not pursue a problem relentlessly to the point that it appears perfect but ceases to work for the user. Instead, he allows a measure of incompleteness.
- The good craftsman avoids perfectionism that is aimed more at showing what he is capable of than at ensuring an object is useful.
- The good craftsman knows when to stop because further work would cause his product to degrade.

From these descriptions of good craftsman-like behaviours it is not difficult to think of some teaching and learning interventions which might encourage them.

Lois Hetland and colleagues have shown how, at the level of an art and craft studio, it is possible to identify and then actively encourage certain habits of mind which, taken together, contribute to craftsmanship. In *Studio Thinking* Hetland and colleagues (2007) explore how the learning of a craft happens. They see the habit of mind as comprising two main elements: working with purposeful attention; and caring for materials and tools.

In their study, they observed excellent visual arts teachers and developed a pedagogical framework called *Studio Thinking*. This described:

1. Three *studio structures* that reflected how classrooms were structured.
2. Eight *studio habits of mind* which reflected the 'hidden curriculum', i.e. what teachers were *really* trying to instil in students.

What they found was that whenever teachers were helping students develop their technical skills or craft, 'they were also inculcating one or more of the other seven habits of mind'. Thus, the development of technique was never taught as an isolated skill.

The three key structures were (p5):

1. Demonstration/lectures – short, authoritative demonstrations of processes and products, often with visual examples and deliberately designed to be immediately useful.
2. Students at work – significant assignments, specified by the teacher, as the principal means of learning.
3. Critique – routine moments throughout all sessions when students come together to critique each others' works in progress, to observe, reflect, give and receive feedback and talk with each other.

According to Hetland and colleagues:

> *The three Studio Structures foster an apprentice-master-craftsman relationship between student and teacher; these structures help create an atmosphere in which student artists work as artists with other artists (teachers and peers).* (p21)

Hetland's eight studio habits of mind are laid out on the next page and are, arguably, just as important for apprentices in their day-to-day labour. Here we have adapted them for a number of different apprenticeship pathways.

STUDIO HABIT OF MIND	EXAMPLE OF HOW AN APPRENTICE MIGHT NEED THIS HABIT
Engage and persist	The electrical and electronic servicing apprentice must be able to use her analytical skills to work out what is causing a device to fail and her practical skills to fix it. Most importantly, she must be able to persist in the face of a stubborn and unfamiliar problem.
Envision	The fencing apprentice must learn to prepare sites for fence erection works. She will need to envision potential problems as obstacles become apparent and to visualise how changes in ground surface material will impact her plans. In her mind she will consider how unseen service cables are likely to lie before contacting companies to check her suspicions.
Express	The floristry apprentice must learn to express herself through her design and assembly of floral displays that convey a feeling or personal meaning.
Observe	The surveying apprentice must be able to observe and attend keenly to visual contexts in order to assess the condition of a property and monitor its maintenance as she collects survey data.
Reflect	The learning support apprentice needs to be reflective as she supervises activities in the classroom or outdoor learning space, so that she can evaluate the learning of pupils as well as researching her own practice.
Stretch and explore	The exercise and fitness instructing apprentice must learn to stretch beyond her own capabilities, embracing opportunities to learn from past experience. As she develops and delivers session plans, she might take a risk to bring something new into the programme in order to keep it fresh and challenging.

TABLE 27 STUDIO HABITS OF MIND: ADAPTED FOR APPRENTICES. BASED ON HETLAND AND COLLEAGUES (2007)

Attending to the meaning of work and promoting the view of *work as craft* is, suggests David Corson (1985; p298), given insufficient focus in curricula. He proposes a range of practical strategies that could be utilised to develop this focus on craftsmanship:

1. Vocational preparation programmes might emphasise work skills rather than job skills. The task of finding and mastering what is common to 'work', rather than what is specific to 'a job', will inevitably help the discovery of the meaning of work.
2. Programmes should be student-centred and individualist, since people's interpretations of work as craft and their understandings of the meaning of work are likely to be very idiosyncratic.

3. Programmes might explore the context of 'work' by case study and analysis. Where does work fit in the scheme of things? Where does remuneration appear as a factor? Can work really be confined as a phenomenon by constraints such as time, duration and intensity?
4. Programmes should include counselling and group discussion sessions that emphasise discovering and discussing work rewards to be derived by the self, e.g. social intercourse and its related benefits, reflective pleasures, sense of mastery and achievement, sense of service, feeling of responsibility, etc.
5. Programmes incorporating work experience should highlight interaction with workers who are themselves 'craftsmen' and who offer an example of craftsmanship in practice. Recreational or unconstrained occupational workers might be included as exemplars, using discussion sessions following on-the-job contacts.
6. Programmes linking social studies courses with work experience might advance the position that the way in which work activities are carried out provides an organising principle for approaching the particular society under study.
7. Programmes incorporating work experience might use a student questionnaire for assessing levels of work satisfaction during periods of work experience.
8. Programmes linking studies of the language of the culture with work experience will deliberately aim to expand the communicative repertoire of students, both its lexical range and its functional and contextual applications. The meaning of work becomes real to students when they are able to organise the vague representations in their conceptual framework and link them with language which becomes available to them for reflection and interaction.

We earlier likened the concept of craftsmanship with a sense of vocation or 'calling' that an apprentice develops about his work. In this context, Selena Chan (2013) argues that workplace models such as managers, supervisors and other workers, 'provide daily exemplars for apprentices to aspire towards' (p377). These teachers will employ a vocabulary that emphasises the quest for excellence, using 'words and phrases such as: drafting, polishing up, refining, shaping, moulding, re-working, re-drafting, critiquing, practising, and so forth' (Lucas and Claxton, 2013; p17).

Communities of practice, such as those found in environments where apprentices learn their job, foster learning that goes beyond pure technical proficiency and are in a position to apply a pedagogy whose ultimate aim is to develop craftsman-like performance. Atkinson and colleagues (2013) cite Trevor Marchand's study of masonry and carpentry (we cite Marchand elsewhere in this report) in their claim that skilled activities are learned through observation, mimesis and repeated exercise. Further, skilled activities are learned by teachers:

> *...striving to make craft and artistic competence sufficiently overt for it to be assimilated by the student-performer, and thus available for commentary and criticism, emulation and repetition.* (Atkinson et al., 2013; p500)

Rendering apparently hidden aspects of knowledge and skill through modelling is, thus, a key means by which teachers impart craftsmanship to apprentices.

Mike Rose (2010) describes how, when you see a good teacher at work, you see 'signs of the mind stirring, of people beginning to get a sense of what they can do'. In his own experience, he recalls one of his teachers assigning a piece of work to him that 'flipped a switch in me, that helped me redefine who I was'. Rose also observed a high school programme in the construction trades. The teaching faculty from across the subject areas focussed on the integration of academic work and trade skills. The programme attempted to provide a new start for students who had not done well in school. At this time Rose observed this idea, of giving learners a sense of what they can do, in practice:

> *In the electronics classroom, the teacher had built the wooden frame of a small house and placed an electrical panel in it so that students could test their skills. On the day of my visit, a couple of students were installing lights and running wires to the panel while a group of younger students who were entering the program watched. The older two nodded that they were ready, and the instructor walked over to the central power source and ceremoniously flipped a switch. The whole house lit up! Ceiling lights, wall lights, floods. "Wow," exclaimed one of the younger students under his breath. "Man," he said, "that's crazy!"*
>
> *I know, son. It is crazy. See where it leads you. Then hold it close and run with it.*

Bringing a number of the strands of pedagogy together in terms of a contribution to the development of a pedagogy of craftsmanship is the recent work of Ron Berger. In *Leaders of their own Learning*, Berger and colleagues (2014) make the kinds of suggestions for cultivating craftsmanship we have been describing thus far. But he goes further. In a compelling argument supported by both research and practices, he makes the case for what he calls 'student-engaged assessment'. Student-engaged assessment:

> *Changes the primary role of assessment from evaluating and ranking students to motivating them to learn. It builds the independence, critical thinking skills, perseverance, and self-reflective understanding students need for college and careers.* (p5)

Berger's team of authors, many of whom are connected to the Expeditionary Learning Schools in the USA, describe in detail the kinds of pedagogical interventions. These include:

- rigorous target-setting: see our earlier comments on deliberate practice (section 3.8) and the potential of apprentices' ILPs;
- accessible methods for checking student understanding regularly: see our comments on assessment for learning;
- explicitly using data with learners: see our emphasis on the visibility of processes;
- modelling, critiquing and feedback: see Lois Hetland and colleagues' studio structures;
- student-led structures: see our discussion of the kinds of roles envisaged by Unwin and Fuller in more expansive apprenticeships;
- regular celebrations of learning as they share their work with others, demonstrations with portfolios of not only final 'products' but the learning processes behind them;
- standards-based grading (the shorter more accessible employer-led descriptions of apprenticeship frameworks).

6.2.4. FUNCTIONAL LITERACIES

In *How to Teach Vocational Education* (Lucas et al., 2012) we suggested that there are two main models for teaching functional literacies. One approach is to teach functional literacy subjects as discrete courses. Specialist literacy or numeracy teachers, for example, would take this job on. The second approach is to embed functional literacies within authentic situations in the programme of vocational study as part of the vocational course. Teaching would most likely be undertaken by the vocational subject teacher, for practical reasons. In this way, literacies are taught within the context of end-use such that 'transfer' of learning (from a generalist to a specialist context) is not required in the wholesale way it would be through discrete literacy subject teaching. Instead, literacies are taught in an applied manner. As expounded in our earlier section on the 'challenges' of Functional Skills teaching, the issue of making sure embedded teaching is sufficiently 'visible' as to be transferable to other problems *within* the area of vocational expertise is important.

While these two models predominate, an alternative – and some might argue a more promising approach from a learning point of view – might be to combine the two approaches and at the same time rethink the respective roles of colleges, learning providers and employers.

A 2013 review by Harkin and Smith supports the view that for effective learning, a partnership between those delivering the vocational learning and the Functional Skills – whether on- or off-the-job – is important to ensure that learning can be applied to the job to give it context and meaning. Should organisations and resources allow it there is no reason, in theory, why functional specialists could not be on hand within the off-the-job learning element; their time co-ordinated across the range of apprenticeship courses so that they co-facilitate elements of the course alongside a vocational subject specialist as appropriate. Thus, specialist literacies teachers work within a vocational subject area to maintain the embeddedness of functional literacy teaching.

This approach presents obvious administration issues, however. It involves at least two teachers preparing a programme of study together. If it includes teachers for each functional literacy specialism, this number could potentially stretch to multiple teachers requiring input. It also involves the Functional Skills teacher having sufficient confidence and proficiency within as many vocational subject areas as they are timetabled across.

So, the 'functional literacy specialist' versus 'practical subject specialist' debate is a pedagogical as well as an organisational issue, which may or may not be mirrored in the 'bolt-on training' or 'infused throughout the course' debate. We argued (Lucas et al., 2012) that whichever approach is adopted there is a need to map functional literacies against specific vocational areas or categories more precisely so that, whoever teaches them, it is more likely that learners will be engaged.

Some evidence (Casey et al., 2006) would suggest that embedding Functional Skills/literacies effectively into vocational education does result in higher success rates, not only in the vocational qualification itself, but also in the embedded literacy and numeracy programmes. In this respect, not only must the literacy materials be contextualised to the vocational area, but they must be regarded as essential in the development of learners' professional identity and for success in their vocational area.

Good teachers of functional literacies recognise that they do not have all the answers and will need learners to teach them if they are to contextualise learning. In a *Times Educational Supplement* article (2014), Sarah Simons, English teacher at an FE college in Nottinghamshire, illustrated this well:

> *I regularly tell students that I don't have all the answers. If I'm contextualising functional literacy around a beauty therapy course I won't have in-depth knowledge of threading techniques… I'll need them to teach me as I teach them… This doesn't apply exclusively to their vocational area. In my English class, if a 16-year-old voices an idea that is far superior to mine, why would I insist that I'm right just because I'm the teacher?*
>
> *…The colleagues I admire the most are those who have been around seemingly forever but are still dedicated to their own learning. Although I am secure that I have a broad understanding of the sector and how to teach my subject within it, I find that the more I learn, the more I discover there is to learn.*
>
> *… As education professionals, we should be challenging our own beliefs and assumptions by putting ourselves in positions where we are struggling to keep up intellectually… The richest learning is when I leave exhausted and intoxicated with thought…*

Whoever takes on the role of teaching literacy skills within the specific work context will require contextualised knowledge. Training programmes for these individuals need to be appropriate. Just as professional development programmes for English teachers in schools need to be 'nuanced enough to account for the range of teacher needs in terms of linguistic knowledge and the contexts in which they will enact the Curriculum' (Jones and Chen, 2012; p147), programmes for those working in vocational areas must be appropriately contextualised.

6.2.5. BUSINESS-LIKE ATTITUDES

In section 4.1.5 we offered various interpretations of what business-like behaviours might be. These included attributes to do with self-presentation, with an awareness of how to work with other people (both within and beyond the organisation) and a set which relate to moral and ethical issues. Within such attitudes there is also overlap with aspects of two of our other desirable outcomes – craftsmanship (hard work and effort, for example) and wider skills for growth (such as a positive mindset and can-do attitudes.)

Attitudes depend on a combination of values and experiences. But while values suggest how any person might behave, culture tends to be more important. So, even if an organisation says that 'listening to the customer' is important, if most employees talk negatively about customers and merely go through the motions of showing interest in their opinions, any apprentice working in that environment is unlikely to develop an attitude of really caring for customers.

Most organisations have a set of published values and it is relatively easy to turn these into a list of desirable attitudes. It is much harder to plan any kind of teaching, training or learning which effectively develops attitudes. Why is this? Perhaps the most powerful reason is that what we believe and how we act are not as easily connected as we might think. Research by Chris Argyris and Donald Schön has helped us to understand why this is.

Two ideas are helpful here. The first relates to the power of organisational culture and the second suggests the kinds of culture in which all apprentices might like to find themselves working and learning.

The first of these – espoused theory or theory in action – explains how there are two versions of the way most people behave. The espoused theory is what they say they believe and, therefore, what they would do in any situation, whereas theory of action (sometimes called 'theory in use') is what they actually do when these situations arise.

When someone is asked how he would behave under certain circumstances, the answer he usually gives is his espoused theory of action for that situation. This is the theory of action to which he gives allegiance and which, upon request, he communicates to others. However, the theory that actually governs his actions is his theory in use (Argyris and Schön, 1974).

How people behave is in effect another way of describing organisational culture. And it is the culture of the organisation which is the most significant influence on those who work in it, especially its most junior employees such as apprentices. Culture is created by leaders and managers whose actions define what is really valued in the workplace. At the individual level it is transmitted by the kinds of role models which managers offer those around them. It is reinforced by the organisation's reward structures; the behaviours which get rewarded being the ones that are actually valued whatever the organisation's Mission Statement says.

It follows that the most effective way for apprentices to acquire business-like attitudes is through absorption and osmosis, by seeing examples on a daily basis of the espoused attitudes being the ones which are rewarded and valued. It is difficult for these to be taught, although, through simulation, role play and discussion, apprentices can be invited to consider how they might behave in certain circumstances and begin to see how this will indicate the attitudes which govern their working life.

The second idea which Argyris and Schön offer us is 'double loop learning'. (1978)

Chris Argyris has distinguished between two ways of dealing with problems which he calls single and double loop learning. Single loop learning is when a problem is fixed and no significant action is taken to ensure that the problem does not occur again. Double loop learning, on the other hand, involves understanding the underlying system. Once an error is detected and corrected the organisation then modifies its systems so that it does not happen again.

The idea of double loop learning was an important step along the way towards the idea of what Peter Senge (1990) was to call the 'learning organisation' and 'systems thinking'. Systems thinking is a way of seeing the whole picture, seeing interrelationships and patterns of change rather than isolated moments.

As apprentices learn their craft, trade or profession it is important that they are surrounded by people who likewise look to fix both the short-term problem and, at the same time, be prepared to think about underlying issues. In practical terms an apprentice may lack the experience and judgment to do more than learn that, if they are going to be business-like, they will have to be prepared to be observant, questioning and constantly on the lookout as to how they can improve the quality of what is being made, produced or done in their organisation.

6.2.6. WIDER SKILLS FOR GROWTH

Identifying what skills (or 'learning dispositions') might be relevant for a particular course of apprenticeship learning – to suit the current and future needs of apprentice and employer – is a key area of thought for pedagogic leaders and teachers.

By 'wider' we mean of relevance to life beyond education. Precise specifications of which wider skills are most desirable vary from one country or agency to another, and Lucas and Claxton (2009) identified a range of approaches adopted across the world, from national and state education departments, to research institutions, third sector and commercial organisations.

In *Expansive Education* (Lucas et al., 2013) we addressed the idea that teaching content versus teaching learning is not an either/or. It is a naïve assumption that teaching 'learning' or 'skills' is an add-on and a waste of time which detracts from the 'real' job of teachers. Whatever subject is being taught the teacher will, implicitly, be shaping the way apprentices approach the learning process and the dispositions they learn to value and to develop in themselves. These kinds of value judgments are being made in every lesson, and made visible by the way a teacher talks and teaches. While it is possible to get good examination results by 'spoon feeding' learners, does this also stifle curiosity and build dependency (Lucas and Claxton, 2009)?

For example, will an apprentice be learning to think like an engineer, considering the whole system before homing in on a problem and mentally rehearsing a practical design solution? Or will they be taught to look at a problem piecemeal? Will they be taught to assemble and troubleshoot based on written instructions? Or will they be given the subtle message that real engineers never read manuals but always start with their own investigations by getting a 'feel' for a machine?

Will an apprentice baker be taught – to use Selena Chan's (2013) earlier example – to think like a baker and use their senses to evaluate the nuanced distinctions relating to the quality of ingredients? Will a disposition of resilience be taught when experimenting with new ingredients, ideas or machinery? Or will the value of compliance with tried and tested methods be the subtle but powerful message learned?

Teachers cannot choose between teaching content and teaching learning. An apprenticeship must produce apprentices who are both experts in their area of vocation and powerful learners, with wider 'skills' and 'dispositions' for growth.

Yet when it comes to teaching wider skills, the pedagogical implications are not easy to isolate. Lucas and Claxton (2009) propose adopting a metaphor of 'cultivation' rather than one of 'teaching' or 'training'. A coherent culture is required, one that recognises the gradual development of wider skills and 'consistently invites, rewards and exemplifies the wider skills that are treated as desirable' (p21). In order for desirable wider skills to become 'second nature' to apprentices, all elements of the learning environment – both on- and off-the-job – should be considered, developed and planned to infuse these skills and dispositions throughout, including:

- the default discourse of instruction, interaction and reporting both on-the-job (e.g. within the factory floor, office and managers' office) and off-the-job (e.g. within the classroom, workshop and staff room);
- the physical and visual environment;
- the amount of ownership apprentices are given for their learning;
- examples set by both trainer and employer.

Most critically, 'merely pasting a concern with 'key competences'… over the top of 'business as usual' is unlikely to be effective' (Lucas and Claxton, 2009; p22).

APPRENTICESHIP OUTCOME	SOME METHODS THAT WORK
Routine expertise	Watching, imitating, extensive practising, talking things through with peers, giving and receiving feedback, reflective feedback and using Virtual Learning Environments (VLEs) are all examples of effective methods.
Resourcefulness	Whichever method is selected, it is important that both the processes of the specific vocation and the more general learning processes are made explicit. This requires the teacher constantly to describe what is going on when they are modelling a skill, regularly give feedback to learners as to what they seem to be doing and encourage a culture in which learners feel free to critique each other's work. Learning through simulations and scenarios can be helpful as is enquiry-based and real-world problem-solving approaches. Prompt sheets generated by learners can be useful in suggesting lines of enquiry which they can pursue when they get stuck. Such lists would include two lines of self-support: 1. Thinking through where they may have encountered a similar situation before. 2. Scanning their environment for tools which might help or other people who might be able to help.
Craftsmanship	Encouraging pride and a passion for excellence is rarely the preserve of a specific method. Rather it is the result of the role-modelling of the teacher and other learners, the language used and the culture in which the vocational education is located.
Functional literacies	Whichever approach is adopted there is a need to map functional literacies against specific vocational areas or categories more precisely so that whoever teaches them it is more likely that learners will be engaged. If such Functional Skills were not acquired first time round (at school) then methods chosen will need to be innovative, especially engaging, and able to boost confidence by requiring only small progress to trigger a noticeable reward.

Business-like attitudes	Not connected to specific methods, it is important to use a vocabulary and language from the target vocation as well as the routines, processes and cultural expectations it brings. Methods which are more authentic will be important, although this needs to be balanced by explicit learning about the needs of the chosen 'business'.
Wider skills	Whichever methods are being used it is helpful if a common language is developed, one which works in the specific vocational context. Extensive practice in different contexts will be important too.

TABLE 28 DESIRABLE APPRENTICESHIP OUTCOMES AND LEARNING METHODS

6.3. SOME ISSUES

There are many issues that we could explore in more detail but three seem most important: a consideration of the amount of time it takes to become really skilled and how we currently do not allow enough time for learning in apprenticeships; the enormous opportunities of digital learning; and the specific complexities of the social partnership between employer, college and learning provider in the provision of apprenticeship learning.

6.3.1. THE TIME IT TAKES

Intermediate, Advanced and Higher level apprenticeships in England currently need to offer a minimum of 280 guided learning hours. This statement from BIS (2011) remains unchanged in the updated SASE document (BIS, 2013e):

> *An Intermediate Level Apprenticeship framework must specify the number of Guided Learning Hours (GLH) that an apprentice must receive to complete the framework. This must be a minimum of 280 GLH of which at least 100 GLH or 30% (whichever is the greater) must be delivered off-the-job and clearly evidenced. The remaining GLH must be delivered on-the-job and clearly evidenced.* (BIS, 2011; p9)

Where did the figure of 280 hours for lower level apprentices come from for a form of learning which used to take seven years? Who determined that 180 of these hours would be best spent on-the-job? Who decided that apprentices need off-the-job learning? And that this should be a minimum of 100 hours, say, some two hours a week? How should the amount of guided learning hours relate to the level of the learning?

Which research evidence did policy-makers and legislators study before they came to these decisions? We suspect that no research was studied and that these numbers – lower than most of our international competitors specify – are simply a pragmatic compromise between what employers will wear in terms of apprentice productivity, historical patterns of timetabling by colleges and learning providers and available budgets.

Here's how long some apprentices actually spend learning.

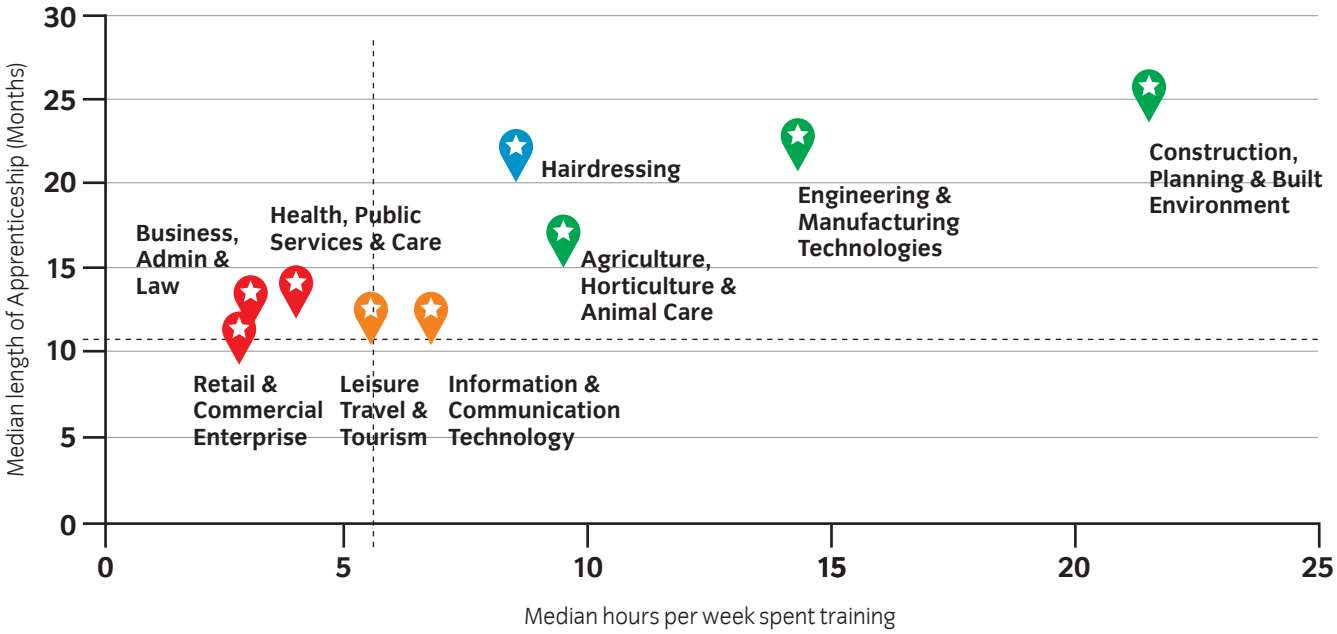


FIGURE 9 MEDIAN LENGTH OF AN APPRENTICESHIP (MONTHS) AND MEDIAN HOURS SPENT TRAINING PER WEEK BY FRAMEWORK TYPE. SOURCE: BIS (2013)

As you can see the time they spend learning is hugely varied.

So what does the research say? We know that acquiring any kind of practical expertise requires time and practice. Anders Ericsson and colleagues (1993) – whose work we introduced in section 3.8 – have suggested that typically it takes many many hours to become an expert. Ericsson's work has gained much popularity through the work of writers like Malcolm Gladwell (2008) in the USA and Matthew Syed (2011) and others here in the UK. Primarily through Gladwell, a figure of 10,000 hours was bandied about as the correct number. This has now stuck in many people's minds and can be found referred to as the 10,000 hour rule.

It's easy to see why this stuck.

It's memorable. It seems to explain how some people get very expert at things. It reminds us that we can all get better and smarter if we are prepared to put in the practice. It's specific and sounds plausible.

But Ericsson and colleagues were looking at the development of elite performers, initially violinists. And Ericsson's explanations were much more nuanced than this. Gladwell used Ericsson's research essentially to argue that there is no such thing as talent, only practice and effort. This is not what Ericsson says (2012). Much of Ericsson's research is concerned to describe how successful performers practise, not how many hours they spend on it.

Most apprentices are not experts! They just have to be appropriately skilled and, we have suggested, broadly equipped to deal with working and civic lives. But even so, 280 hours seems rather a small amount.

Certainly, The International Network on Innovative Apprenticeship (INAP) thinks it takes much longer to learn about the real nature of any vocation:

> *The average training period for learning an occupation ranges from three to four years. A sufficient period of time is important, because immersion in an occupational culture and the process of vocational socialisation are important factors in the development of occupational competence. Integration*

> *into a 'community of practice' is associated not just with the acquisition of related qualifications and competences but also the development of vocational identity.* (INAP, 2012; p10)

Those researchers who have looked more closely at this, such as Mike Rose (2009), describe the complexities of learning to combine cognitive abstraction and skilled physical work:

> *…here's what we find when we get in close. The plumber seeking leverage in order to work in tight quarters and the hair stylist adroitly handling scissors and comb manage their bodies strategically. Though work-related actions become routine with experience, they were learned at some point through observation, trial and error, and, often, physical or verbal assistance from a co-worker or trainer. I've frequently observed novices talking to themselves as they take on a task, or shaking their head or hand as if to erase an attempt before trying again. In fact, our traditional notions of routine performance could keep us from appreciating the many instances within routine where quick decisions and adjustments are made. I'm struck by the thinking-in-motion that some work requires, by all the mental activity that can be involved in simply getting from one place to another: the waitress rushing back through her station to the kitchen or the foreman walking the line.*

Learning how to think in the manner of an expert in one's own field takes time, and thinking skills as well as manual and physical ones must be embedded thorough practice, repetition and critique.

In their 2012 report *Ensuring Quality in Apprenticeships*, Ofsted rued the proliferation of apprenticeship training which is not sufficiently long, 'to embed properly the employment and technical skills being developed by apprentices'. This was seen particularly in IT, retail, leisure, customer service and business administration. Conversely areas such as construction, engineering and hairdressing benefitted from being delivered over longer periods. Apprenticeships in these areas 'were more likely to include traditional and better quality learning, often delivered off-the-job'.

In The *Richard Review* (2012), arguments are made for stipulating a one-year minimum length for apprenticeships (p81), something which has now been done.

Our argument is for a much clearer recognition of the time it takes to learn to bec*ome the kind of apprentice we are arguing this country deserves*.

6.3.2. THE DIGITAL REVOLUTION

While we explored online learning in section 6.1.8, digital learning is part of a much larger phenomenon, the so-called 'digital revolution'.

But what is the reality? As pointed out by Charlynne Pullen and Olivia Varley-Winter (2012; p6) 'the 'digital revolution' and the myth of completely technophobic teachers can polarise a debate which is ultimately about using new technologies to improve teaching and learning'.

The debate is not – we argue – about whether to replace the teacher, to bypass the need for thinking about pedagogy or to discard other tried-and-tested methods of learning. Neither is technology truly being used in a way that considers pedagogy when it is merely the same content (as previously conveyed via the medium of a textbook, blackboard or the mouth of a teacher) but made more visually appealing with a YouTube clip or online graphic.

Blended learning or 'hybrid' are methods of learning that combine classroom and online approaches. They invite teachers and learners to consider whether a face-to-face or an online solution is the most productive method. For, instead of seeing the Internet largely as a repository of information, blended learning represents the concept of the Internet as a place for communication, collaboration and knowledge construction (Robertson, 2008). Wikis, which allow multiple users to edit them, are one such example. Interactive social media is another.

Engaging technology in meaningful ways, rather than simply novel ones, is an issue for all teachers and pedagogic leaders. Nadim Bakhshov (2014; p18) argues that when technology is allowed to intervene into the realm of pedagogy with a clear educational purpose, it can have a 'profoundly positive and meaningful educational value'. He warns, however, that:

> *Too many conversations about technology are led by a confusion of novelty and purpose. They hype surrounding the radicalisation of education tends to blind professional from looing more carefully at their practices and exploring, through systematic inquiry and research, meaningful or educationally-oriented approaches to engaging learning technology.*

Instead of thinking how they can make teaching 'more interactive' (for the sake of it) or 'more fun' (to entertain and engage bored learners), teachers need to focus more tightly on how technology can be used to enhance each and every one of the ways of learning we listed previously. It is our argument that when these things are in place, learning becomes more engaging in any case. The job of the pedagogic leader thus becomes about considering each of the ways of learning, as well as the possible role of digital technology in enhancing it. For example, how can online material be used appropriately so that what learners are watching helps them learn by imitation? Or encourages them to problem solve real issues? Or by making them think critically?

As an example Michelle Caton and colleagues (2013) describe how a group of hairdressing tutors took a multi-media blended learning approach to the re-design of a pre-apprenticeship training course to improve completion rates. While a major focus of many of the changes was on improving engagement (it was based on the principles of student-centred engagement), administration (e.g. a booking system for assigning students to rooms for giving presentations) and some on making sure information was accessible (e.g. use of glossaries), the case provides some good examples of how technology was used to aid each of our established ways of learning:

DIFFERENT WAYS OF LEARNING	EXAMPLE OF HOW BLENDED LEARNING APPROACH UTILISED TECHNOLOGY TO ENHANCE EACH WAY OF LEARNING
Learning through feedback	The redesigned course included elements of peer and tutor feedback (p8).
Learning by imitating	The course involved learning much technical language to describe over 20 conditions of the hair and scalp, their causes and treatment. Learners were given access to audio files as well as interactive activities to help them with pronunciation (p8).
Learning by drafting and sketching	Web tools such as www.GoAnimate.com were used by the learners to create their own animations and slideshows (p6).
Learning by real-world problem-solving	Learners were given 'scaffolded activity-based decoding exercises involving: multi-media inputs; cartoon-based dialogues; student presentations in groups and pairs; PowerPoint presentations (both as sources and as student-generated data); and YouTube clips' (p6).
Learning through enquiry	Learners were 'required to go beyond the scaffolded material, generating their own content by means of research on the Internet and elsewhere' (p6).
Learning by thinking critically and producing knowledge	Although course materials were provided by teachers, the requirement to do their own additional research meant that 'learners would eventually be required to deal with unscaffolded, real-life texts' (p7).

TABLE 29 BLENDED LEARNING: TECHNOLOGY IS USED TO ENHANCE SPECIFIC ESTABLISHED WAYS OF LEARNING

Digital technologies may have much to offer once pedagogic considerations have been explored.

Ian Robertson points out (Robertson, 2008) that technical concerns can act as a barrier to adoption of blended learning methods by teachers but that, more fundamentally, the values and beliefs that underpin a teachers' own teaching practice must be addressed.

With the proliferation of hand-held devices capable of accessing the Internet, smart learners, like their smart devices, are no longer required to choose whether to sit at a computer or in a group with their peers. They are constantly able to use the resources of the Web or of those around them to help them learn and work. In colleges, BYOD (bring your own device) policies are increasingly common. Students install software onto their own mobile phones which will enable them to access the intranet and use the college's systems. In some workplaces this is the case, too. Indeed the mobile phone has become an invaluable learning and working tool. In work we did with apprentice plumbers (Spencer et al., 2010), we found that the mobile phone – rather than, say, a wrench – was their most important tool. With it they were able to call each other when faced with novel situations such as a new error message on a boiler, for example.

This integrated approach is increasingly referred to not as blended but as 'seamless learning' involving continuity of learning across multiple locations, times, technologies or social environments). The Open University's first report on innovating pedagogy (Sharples et al., 2012) notes that seamless learning has

so far been explored by those developing software 'for mobile devices that allow people to carry their learning with them and to switch quickly from one learning activity to another', and from a learning journey angle. Multiple devices allow access to extended learning projects across different social and learning environments, including educational institutions and the workplace.

The digital revolution has changed the way we buy goods, navigate our way around, access information and communicate with each other. It requires similar epistemic and cognitive revolutions too.

It calls on teachers, employers and learners to look at every aspect of the apprenticeship process – recruitment, induction, communication, teaching, learning, assessment, especially in the creation of portfolios and learning plans, and so forth.

6.3.3. A TRIPLE SYSTEM – WORKPLACE, COLLEGE AND LEARNING PROVIDER

In many countries the delivery of apprenticeships is a partnership between employers and the education system – colleges or vocational schools. But in England, there is a valuable third partner normally referred to as a training provider.

Most employers choose to work with a training organisation to deliver an apprentice's training (according to AELP (2014b) more than 70% of apprentices are managed in this way). Training organisations manage the process for employers, including advertising apprenticeship vacancies, coordinating the recruitment process, delivering training and assessment, and providing feedback on the performance of apprentices. The system is further complicated because some colleges themselves act as training providers for an employer or group of employers.

In England there is currently a move towards funding employers directly (rather than funding training organisations or colleges). How this funding change will impact on training providers and colleges is not yet clear.

But it is the exchange of pedagogical know-how in which we are more interested. With three kinds of bodies closely involved in the delivery of apprenticeships, it is potentially more challenging than in a dual system to ensure that there is a really good understanding of learning and teaching processes across the three social partners.

6.3.4. AUTHENTICITY

The CAVTL Commission (McLoughlin, 2013) uses a powerful phrase with a clear image – 'a clear line of sight to work'. In their review of adult vocational teaching and learning this sense of authenticity was one the strongest findings for CAVTL.

In their review of what makes learning effective in a vocational context, Khaled and colleagues cite the promotion of authentic learning through 'real-life contexts' (and its status as a crucial element of effective vocational curricula) as being responsible for an increase in learning activities and settings designed to model working contexts. A number of models have been developed in recent decades including problem-based learning and virtual simulations.

To develop competencies, effective learning happens 'through guided experience in work-related environments that are meaningful to students' (Khaled et al., 2014; p3). Increasingly used in off-the-job vocational education, hands-on simulations aim to create such meaningful, occupation-related learning experiences.

Simulation incorporates elements of 'active learning' with guidance from an expert teacher through tasks and contexts that are designed to reflect real occupational practices, including real materials and

equipment. Simulation allows for pausing and reflection. Students are able to experience the variance between theory and practice.

The precise characteristics of hands-on simulations that deliver occupation-related outcomes are open for debate. Anne Khaled and colleagues' (2014) study, for example, looked at the degree of authenticity and self-directedness of the simulation and found that these two factors did not necessarily lead to greater competence. The main predictors of competence development were, in fact, found to be:

1. Student perceptions of perceived value in the exercise.
2. Student perception of authenticity of the exercise.
3. Choice about how to perform tasks.

The degree of self-directedness was found to influence competence development indirectly by impacting upon student perceptions.

We have seen how three key features of apprenticeships – off-the-job learning, on-the-job learning and learning from others – can be considered in light of a broad range of established methods of teaching and learning. We have also explored ways in which the six desirable outcomes of apprenticeships can best be achieved.

In the next section we draw our analyses together asking how use of these three frameworks might help to improve the quality of apprenticeships in the UK today.

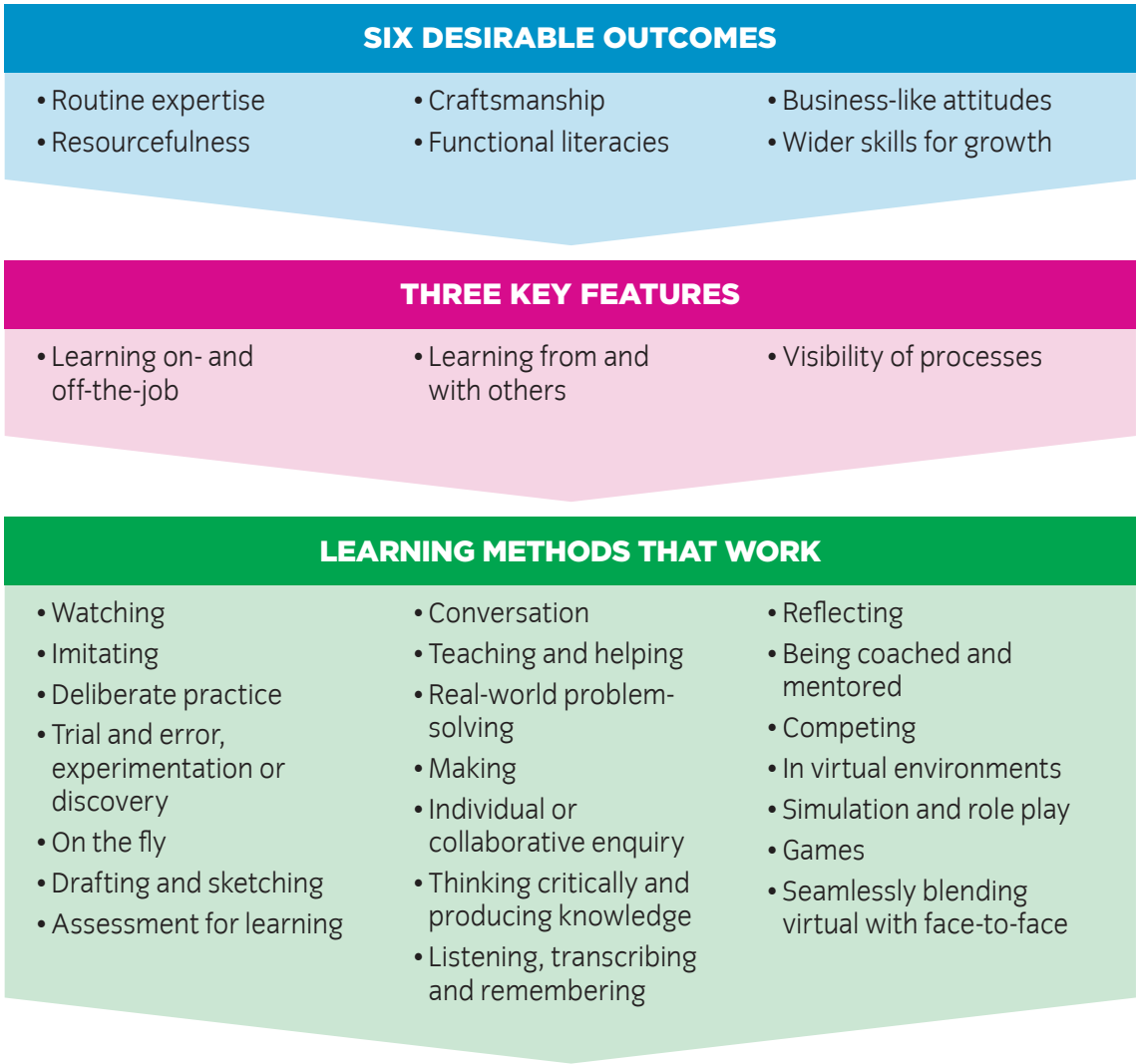


FIGURE 10 OUTCOMES, FEATURES AND LEARNING METHODS

7. APPRENTICESHIPS IN THE REAL WORLD

'A key goal should be to ensure apprentices… have the status of *learners* – something that would be supported by a change in the legal definition of an apprentice from an employee to a special status that guarantees the right to high-quality off-the-job training.'

Tony Dolphin and Tess Lanning (2011; p127)

Throughout this report we have tried to look at the ways in which, while apprenticeships are a contract of employment, for them to be successful they are really an agreement about learning. We have looked at the idea of apprenticeships both as a broad idea of international relevance and with regard to some of the challenges facing the UK in general and England in particular.

Always we have been trying to focus on the learning element, trying to put the learning back into apprenticeships. While the details of assessment and funding are of huge importance, just as are the respective roles of government, employers and providers, it is the processes of learning – the pedagogy of apprenticeships – which is too often ignored.

In this final section we pull the strands together in two parts – issues of wider significance followed by matters related to some of the current thinking in England in particular – and then offer some conclusions and suggestions for further action. Even where we are talking about the English context we hope that readers from other countries will make connections.

7.1. THE WIDER CONTEXT

Here we briefly explore international thinking, the Learning Sciences, the timeless idea of craftsmanship, the tensions between individual and organisations' needs, and progression issues.

7.1.1. LEARNING FROM OTHER COUNTRIES

In his review of apprenticeships, Doug Richard (2012; p15) was very clear that, notwithstanding the justified praise which the systems of Germany, the Netherlands and Austria receive, it is not helpful to dwell on such comparisons:

> *I cannot recommend we adopt a system built, over generations, upon a very different economy, labour market and social partnership.*

We agree with Richard. Plans for any reform need to be achievable and realistic, as well as desirable. Nothing short of wholesale restructure would achieve the kind of dual systems of equally valued general and vocational education.

Richard makes the important caveat, however, that in order to thrive in the future, the English system must learn from those who hold apprenticeships in high regard and do not tie prestige solely to university education. In this regard, other economies can provide relevant and idealised models to help us develop our own approach here in the UK.

21st Century Apprenticeships, a review of apprentices carried out by Tom Bewick and colleagues (2013) for the Federation for Industry Sector Skills & Standards, helpfully focuses on four countries – Australia, Canada, Ireland and the United States – with which England has more comparable educational structures. Bewick concluded that all apprenticeship systems are different and that no one country has all of the answers. Instead he chose to make a number of conclusions (page 10), three of which we summarise here:

- An improvement in the quality of apprenticeships will and should lead to a short- to medium-term reduction in numbers;
- It may be important to create some kind of kitemark for the quality of the apprenticeships;
- Any employer-led system (such as the one being introduced in England, for example) will require significant investment if it is to be successful.

The report includes a useful comparison of apprentices across the five countries (p76).

	 AUSTRALIA	 CANADA	 ENGLAND	 USA	 IRELAND
Apprentices per 1000 Workers	40 (1)	30 (2)	20 (3)	14 (4)	10 (5)
Youth Umemployment Rate (2013)	12.1% (1)	12.9% (2)	21.1%(4)	16.3% (3)	28.5% (5)
Completion Rate	55% (4)	50% (5)	74% (3)	80% (2)	87% (1)
Employers Hiring Apprentices	26.9% (1)	19% (2)	8% (4)	4% (5)	11% (3)
Female Apprenticeships	34% (2)	14% (3)	54% (1)	9% (4)	2% (5)
Total Score	**9**	**14**	**15**	**18**	**19**
Overall Ranking	**1**	**2**	**3**	**4**	**5**

FIGURE 11 PERFORMANCE OF THE G5 COUNTRIES IN APPRENTICESHIPS – OVERALL RANKINGS. SOURCE: BEWICK AND COLLEAGUES (2013)

In Europe, while there is a shift away from the providers of apprenticeships towards learners, Cedefop (European Centre for the Development of Vocational Training) identifies that European policies are reflecting a shift in thinking about the importance of learning outcomes – a clarity about what the learner is expected to know, to do or to understand at the end of the process. This provides a way of comparing course offerings. It provides transparency and accountability, to the benefit of both learners and employers.

This is not just a European trend, nor is it completely new. Cedefop suggests in some places it may have been around for the past two decades at least. Learning outcomes are identified using the notion of key competences or other transferable learning outcomes (p128). These ideas are tied to a move away from the traditional 19th Century paradigm that saw education as a response to the needs of industrial society. Cedefop argues that although debates about what is learned and why are not new:

> *...technology, along with the associated changes in communication, acts as a catalyst, making change unavoidable and increasing the pace at which it takes place... [W]hat we learn has certainly become more problematic... as the increasing rate at which knowledge and information are expanding and the resultant escalating pace of curriculum change is forcing us to focus on what should be included and what should be dropped from any syllabi. The move to embrace key competences and learning outcomes could bring more precision and clarity to this selection.* (Cedefop, 2009; p130)

A competency focus is thus favoured by European economies. Many EU countries use as a reference point in their training and education systems the 2010 European framework for key competences for lifelong learning. Eight competences are included:

1. Communication in the mother tongue.
2. Communication in foreign languages.
3. Mathematical competence and basic competences in science and technology.
4. Digital competence.
5. Learning to learn.
6. Social and civic competences.
7. Sense of initiative and entrepreneurship.
8. Cultural awareness and expression.

This framework attempts to provide a comprehensive and balanced list of the key competences required for personal fulfilment, social inclusion and employment in a knowledge society (Markovic and Axmann, 2006).

In EU legislation, the Copenhagen process, launched in 2002, aims to contribute to an improvement in performance, quality and attractiveness of VET through enhanced co-operation at European level. The process is based on mutually agreed priorities that are reviewed periodically. Four subsequent reports have evaluated and reviewed priorities and long-term strategic objectives. The latest, in 2012 (Europa, 2010), identified a number of priority actions for I-VET (Initial VET, i.e. general training carried out in the initial education system, usually before entering work (Cedefop, 2008). These particular objectives aim at making I-VET an attractive 'learning option' (2010; p7); and later cited in *Business Europe*, 2012; p8). These are:

1. Raise the quality of I-VET by improving the quality and competences of teachers, trainers and school leaders, introducing flexible pathways between all education levels and increasing public awareness of the possibilities which VET offers. This is of particular importance in participating countries where VET tends to be undervalued.
2. Encourage practical activities and the provision of high-quality information and guidance which enable young pupils in compulsory education, and their parents, to become acquainted with different vocational trades and career possibilities.
3. Ensure that key competences are integrated into I-VET curricula and develop appropriate means of assessment.
4. Organise teaching and learning activities which foster the development of career management skills in I-VET.
5. Give learners in I-VET access to appropriate up-to-date technical equipment, teaching materials and infrastructures. VET providers should consider sharing costs and equipment amongst themselves and in co-operation with businesses. Work-based learning in enterprises which have the relevant infrastructure should also be promoted.
6. Monitor the transition of VET graduates to the labour market or to further education and training, using national monitoring systems.

Such objectives complement our earlier advocacy of six desirable outcomes for apprenticeships today.

7.1.2. THE LEARNING SCIENCES

In section 2.1. we showed a timeline of some of the key moments in the history of apprenticeships, most of which revolved around terms and conditions, institutional reform, assessment and funding. If we were to provide a similar map of the history of our understanding of learning, it would only be in the last 30 or 40 years that significant developments would be apparent.

For notwithstanding some hugely important individual thinkers throughout the 20th Century, some of whom are mentioned in section 3, it was not until a few decades ago that, drawing from cognitive science, sports science, educational psychology, anthropology and many other disciplines, we began to have a more sophisticated understanding of how people learn. These various disciplines are increasingly referred to as 'the Learning Sciences'.

> *Learning Sciences is an interdisciplinary field that studies teaching and learning. Learning scientists study learning in a variety of settings – not only the more formal learning of school classrooms, but also the more informal learning that takes place at home, on-the-job and among peers. The goal of the Learning Sciences is to better understand the cognitive and social processes that result in the most effective learning, and to use this knowledge to redesign classrooms and other learning environments so that people learn more deeply and more effectively.* (Sawyer, 2008; p1)

In 2006 the first edition of the *Cambridge Handbook of the Learning Sciences* (Sawyer, 2006) was published, a strong indication of the importance of this field.

From the Learning Sciences we are increasingly better able to understand such matters as how people acquire expertise, about problem-solving, about thinking, about creativity, about the importance of prior knowledge and experience, about the social dimensions of learning, about reflection, about the importance of scaffolding learning and about the power of mindset or learner self-image.

From the perspective of apprentices it is significant to us that, although there have been significant structural changes globally and in England over the last 30 years in terms of how apprenticeships are managed, there has been far too little thought about how the Learning Sciences might be used to improve their quality.

Yet the Learning Sciences could offer specific suggestions for improving every aspect of an apprentice's learning, including, for example, helping him or her learn:

- how to set goals;
- how to ask better questions;
- how to practise more efficiently;
- how to learn from and with others;
- how to develop resilience;
- how to learn more effectively online;
- how to reflect and then adapt.

7.1.3. THE EROSION OF CRAFTSMANSHIP

While we have been learning more about learning we have, according to a number of experts, been becoming less skilled, less able to perform as a craftsman does. This is true across the world in developed societies.

The traditional conception of a craftsman is someone who is not just 'trained' but 'educated'. This does not mean, necessarily, that he or she has spent time studying from books, but refers to what David Corson (1985; p291) calls 'possession of a body of knowledge along with a conceptual scheme to raise that body of knowledge above the level of a collection of disjointed facts'. The craftsman is, thus, an expert in his or her particular field and at a particular area of skill.

This apparent strength is at odds, however, with the demands of the 'skills society', the term used by Richard Sennett (2009), or the 'new economy', Matthew Crawford's term. In *Shop Class as Soul Craft: An inquiry into the value of work*, Crawford observes that the manual trades, with their possession of a single skill set, are viewed through a lens of fear, 'fear that acquiring a specific skills set means that one's life is *determined*' (p19) when compared with the 'ticket to an *open* future' provided by Higher Education.

The skills society rewards potential rather than achievement. This modern conception, argues Richard Sennett (2009), is:

> *...bulldozing the career path; jobs in the old sense of random movement ['of a lump of coal or pile of wood that could be moved around at will'] now prevail; people are meant to deploy a portfolio of skills rather than nurture a single ability in the course of their working histories; this succession of projects or tasks erodes belief that one is meant to do just one thing well. Craftsmanship seems particularly vulnerable to this possibility; since craftsmanship is based on slow learning and on habit.* (p265)

Sennett's solution to this issue for organisations is to ensure, through training and job retraining, that the craftsman's routines evolve and his existing skills are built upon.

Alison Fuller and Lorna Unwin found, similarly, that 'the important role of maturation with regard to the formation of expertise is being undermined by the pressurised nature of contemporary workplaces'. Their study of contract researchers within an elite university and software engineers within a 'cutting edge' software engineering company found that, while the trajectory of software engineers 'mapped quite neatly onto an apprenticeship model' (p27), the researchers were subject to institutionalised job insecurity and a far from guaranteed route to success. Fuller and Unwin argue that a professional formation of knowledge workers needs to be conceptualised as apprenticeships if organisations are to construct and support this formation.

7.1.4. JOB-FIT VERSUS INDUSTRY-FIT VERSUS SELF-DEVELOPMENT

In today's complex world there are some inbuilt tensions within apprenticeships that have not always been so obvious. In slower moving times it would have been enough to prepare for a job; these days that would be foolhardy – at the very least knowledge of an industry is more sensible. While in medieval apprentices it would have been difficult to separate out learning which was about the person and learning that was geared to the job as it was all under the roof of one master, today personal development and training for work can seem as if they are very different concepts.

The *Richard Review* in England argued that, in contemporary apprenticeships, the ultimate aim must be about both job-fit and broader occupation-fit. The implication is that these should not be mutually exclusive. This ultimate outcome:

> *…of an apprenticeship is its sole purpose and it is this which should define all other aspects of an apprenticeship. The outcome that we want an apprenticeship to deliver is that an individual, at the end of their apprenticeship, has reached the standard expected of members of that occupation. As such, they are capable of doing their job well, confident to operate within their sector, and attractive to employers beyond their immediate job. In meeting the industry standard, any employer within the sector can be confident that the completed apprentice now has a recognised set of skills and capabilities, and can be expected to operate competently within a new work environment.* (p48)

Similarly, '[t]he goal of an apprenticeship is to take the apprentice to a new level of competency in a given job, and ensure they can apply their skills in different contexts to their immediate job role' (Richard, 2012; p8).

Employers the world over are concerned to ensure retention of their own apprentices. Training apprentices involves a large investment of time, as well as the sharing of valuable organisational processes, technologies and methods. Employers may have particular 'types' they tend to recruit for because they know these types make a good social and relational 'fit' with colleagues and clients. It is often in employers' interests to develop particular attitudes and dispositions in apprentices; ones which will stand them in good stead in the employers' particular organisations, but not necessarily put the apprentice at an advantage should they look to be recruited elsewhere.

So while the central notion of the apprentice-employer relationship might indicate that apprentices are trained for a specific, skilled occupation and must learn to be competent within the current job to meet the needs of their current employer, the needs of the sector at large are also pertinent, as are the continuing developmental needs of the apprentice as a potential future employee of other organisations.

And yet political/economic necessity, and ethical ideals such as lifelong learning, dictate that an apprentice's training should not be limited purely by the employer's needs. As argued by Richard (2012; p4):

> *We cannot be content with an apprentice's training being limited by the scope of the job. In a dynamic and changing economy, people need to be ready to be able to apply their skills in new jobs and sectors. So while we must ensure that apprenticeships are training people for real and specific occupations, we must also ensure that an apprenticeship is broad enough to equip someone with genuinely transferable skills: skills which they will need and use in any job, and skills which enable them to be competent and confident beyond the confines of their current job, both in their sector as a whole, and beyond it.*

Apprentices themselves, while happy to demonstrate loyalty to an organisation providing sufficient rewards, challenge, and career development can, once trained, take their expertise, resourcefulness, and business-like attitudes elsewhere, should they wish to develop their career in this way.

7.1.5. ISSUES OF PROGRESSION AND LEARNER IDENTITY

The progression of apprentices to Higher Education is a desired policy objective. For example, Kewin and colleagues (2011) cite a statement from John Hayes, Minister of State for Education, Skills and Lifelong Learning, regarding 'greater emphasis on progression' and also the government's report *Skills for Sustainable Growth*, which endorsed Hayes' view. The desire has not yet translated into numbers of apprentices choosing to progress to HE, however, because the target numbers were easily achievable at Level 2, and so there were very few Higher level apprenticeships available.

A 2013 report for BIS (Joslin and Smith) examined progression to Higher Education of six tracked cohorts of Advanced level apprentices between 2004/05 and 2010/11. It finds that relatively few apprentices progress to HE:

> *The research shows that this [government funding] is much needed given that even with a progression rate of 15.4% over seven years, apprentices do not match the rates of other vocational learners at 40%... or A level learners at 90%... Comparing this figure with the aspirational figure given by the National Apprenticeship Service of 50% of advanced level apprentices showing "interest in pursuing a degree-level equivalent course"..., there is clearly a way to go before there is more equity between the progression rates of apprentices and other full-time vocational and A level learners.*

While learners considering apprenticeships initially want to progress to university, for various reasons this does not translate into actual progression statistics (UVAC, 2010). In *Progression from Vocational and Applied Learning to Higher Education in England* UVAC (2010) cites an interconnected number of reasons for this lack of progression, including:

- lack of opportunities;
- lack of demand from employers and learners;
- lack of ambition among UK employers in their use of graduate skills;
- a low proportion of UK managers and business owners educated to degree level.

To this list, James Kewin and colleagues (2011), add demand- and supply-side barriers:

- employers do not realise that their apprentices have the ability or potential to progress;
- difficulties for employers in engaging with HE providers, particularly universities, due to limited understanding on the part of HE admissions and academic staff;
- lack of awareness and aspiration on the part of apprentices;
- practical difficulties of fitting HE around family life and work patterns;
- lack of requisite skills for HE such as advanced mathematics for engineering;
- negative experiences of formal education in the past.

The recent growth in apprentices in England has been most significant for those over 25 – 45% in 2012/13, compared with 18% in 2009/10, (House of Commons Library, 2014). So when we talk of apprentices we may be referring to 'traditional' young apprentices in the 16-24 age range or we may be thinking of men and women who are more mature and, indeed, may be parents themselves. Catering for the needs of apprentices becomes that much more complex as a result of variation in their ages.

The motivations of apprentices are complex, too. Although an economic motive might be central, there are many reasons people take up study for a skilled trade. Mike Rose (2011) conducted research at a college in the US that prepared students for entry to skilled trades and found that '[s]tudents learning a skill often want more out of college than the prospect of a job'.

It is an underlying theme of R*emaking Apprenticeships* that apprenticeships which have high-quality, rigorous learning at their heart are likely to be more attractive to learners and, in turn, lead to apprentices wanting to progress to higher levels.

7.2. TENSIONS BETWEEN THE SIX DESIRABLE OUTCOMES AND STAKEHOLDERS

Drawing on our earlier research for City & Guilds, we have argued for a broad conception of apprenticeships, stressing the need for six desirable outcomes:

1. Routine expertise.
2. Resourcefulness.
3. Craftsmanship.
4. Functional literacies.
5. Business-like attitudes .
6. Wider skills for growth.

But in the real world there are inevitably going to be tensions.

If you asked an employer to put these six in rank order, what would their list look like? Would it be the same for a small employer as for a large multinational? Would it be the same during periods of prosperity as it would be in a recession? Employers with a longer-term vision may prioritise (2), (3) and (6), say, while those with immediate needs may want (1), (4) and (5).

What about colleges and training providers? Would they want the same outcomes? Many will see one of their roles as being very much about (6). Would universities want something different?

What about governments, especially those which are directly or indirectly funding apprentices? From a national perspective which of these six outcomes will matter more? Or is that too political a question?

And, perhaps most importantly, what about apprentices themselves? In a fast-moving employment market will (2) and (6) seem rather important? If you are just starting out will anything other than (1) matter? And you will have increasingly no choice about (4) as it will be a mandatory and more rigorous (though not necessarily more authentic or real-world) part of your apprenticeship.

In this last section we look at some of the issues raised by Doug Richard concerning reforms to the system of apprenticeships in England. Some of the issues we explore are unique to England, while others will speak to international readers of this report.

Richard's 10 principles of reform are summarised here (adapted from Bewick et al., 2013; p5):

1. Importance of a strong vision for apprenticeships, supported by government and driven by employers.
2. A clear definition of apprenticeships that is fundamentally a contract between an employer and employee.
3. Greater parity of esteem for apprenticeships as a highly valued learning pathway, including attracting the best students.
4. One industry standard and qualification designed by employers.
5. A test at the end to prove the apprentice is competent.
6. Functional maths and English as key components in the standard.
7. Purchasing power of training in the hands of employers, ideally through the tax system.
8. Innovation in marketing and Big Data to drive awareness and demand for apprenticeships.
9. Innovation in quality assurance with less emphasis on box ticking.
10. Lower levels of bureaucracy, including a less complex array of intermediary bodies.

In all that we have written so far, we have been concerned about what is not listed as a principle here but which, we argue, needs to be:

> *A commitment by employers and providers to offer the highest possible quality of learning, informed by best research and best practices, for all apprentices relevant to the skills that achieve the desired outcomes for both employer and learner.*

The actions which need to follow from such a commitment are explored in our conclusions in section 7.3.

Earlier we mapped our own six outcomes against those articulated by Richard and the Department of Business, Innovation and Skill's subsequent plans, currently being explored in a number of Trailblazers[1] prior to 2017/18 when it is intended that new standards will be in place for all apprentice routes.

7.2.1. BROADENING OR DILUTING THE BRAND?

There is continuing international interest in apprenticeships. Across the world there is broad support for apprenticeships amongst all stakeholders as a means of educating individuals for the workplace. But, as we implied in the last few paragraphs, with popularity comes a plurality of views on what an apprenticeship should be.

Is the expansion of apprenticeships here in England and in other places a good thing? Or does it run the risk of diluting the brand, making it less not more attractive? At the same time how do we ensure progression into apprenticeships at lower levels?

For example, there is a potential hidden clash of values between those championing the apprenticeship as a training solution for sectors beyond the traditional trades and manual skill-based vocations, and those calling for tighter control over what is defined as an apprenticeship. Darren Evans (2014) reported in the UK's *Times Educational Supplement* a comment from the head of the EU's vocational training centre Cedefop, James Calleja, urging employers 'from non-traditional sectors' to consider taking on apprentices as a means to tackle youth unemployment across Europe. Suggested industries were health and ICT. Evans noted a similar sentiment from the chief executive of the UK's AELP, Stewart Segal, that there was no reason why apprenticeships should not be available in every sector and occupation.

We support the use of apprenticeships as an instrument for multi-sectoral vocational learning with Richard's caveat that not all jobs are suitable for apprenticeship training. Without pointing to specific sectors, Richard makes it clear that jobs which 'are suitable for apprenticeships will be those which require sustained and substantial training' (p26) before competence can be arrived at.

In our earlier section on the purpose of apprenticeships, we listed other factors required of apprenticeships, including:

- training that goes beyond what an employer might typically offer to all new staff;
- typically taking more than a matter of months to become competent;
- skills which enable progression within the sector beyond the immediate job.

Although this does not automatically rule out certain sectors from utilising the apprenticeship model, it does suggest that one sector may have more *jobs* which are suitable than another sector. Richard asserts that an apprenticeship in 'customer service' – as an example of one job in many industries – is not sufficiently linked to a specific job and, thus, should not qualify.

While those in the artisanal crafts are particularly open to retraining because of their 'craft habit and material focus, which serve retraining' (Sennett, 2009; p254), a craftsman-like disposition may not necessarily be of universal benefit. In a 2006 *Political Quarterly* paper, Sennett (2006a) reported an

1: Groups of employers working together to design new apprenticeship standards for occupations in their sectors.

ethnographic study concerning middle management in investment banks. During this study he uncovered the idea that in a highly mobile business world, the ability to learn new tasks as organisations take on new kinds of work is an ability more prized than that of mastering a particular skill and repeating it year after year. Further, individuals who were seen as being 'institutionally ingrown and attached to a particular skill' (p164) were actually seen in a negative light.

And yet, we would argue that organisations still value individuals who perform tasks well, and to the delight of the customer, however unfamiliar they might be with the job in hand. So it would seem that in some vocational contexts, the notion of craftsmanship might be better conceptualised as 'flexible craftsmanship'. Rather than having pride in her occupation, it might be about having pride in the work she produces, whatever that might be. Rather than a dedication to work, it might be about having the drive to see any job through to completion. This is less about being an expert in one particular skill, and more about an approach to working that might – while not reflecting masterly expertise – incorporate a palette of 'craftsman-like' dispositions.

RATHER THAN...	THE FLEXIBLE CRAFTSMAN HAS...
Expert level knowledge	Ability to find things out
Master of his or her skill	Desire to master the task
Dedication to his or her work	Drive to see a job through to completion
Being the best	Desire to do the job to the highest standard
Pride in what he or she does and who he or she is	Pride in the work he or she produces and in his or her integrity

TABLE 30 'CRAFTSMAN-LIKE' DISPOSITIONS

Indeed, the shelf life of many skills is short. In a paper about the disorienting changes to society in the new economy, Sennett (2006b) claims that 'in technology and the sciences, as in advanced forms of manufacturing, workers now need to retrain on average every eight to 12 years' (p17).

In *What Should Pedagogy and Curricula Look Like for our Working Futures* (2014), Jenny Shackleton emphasises the uncontrollable nature of the world of work with factors such as new technology, lack of jobs and the falling average lifespan of a company. Because of this, she argues that such a curriculum must consider 'the big picture within which to embed one's thinking throughout adult life. This may help to build foresight and the skills to position oneself in the middle and longer term' (p19).

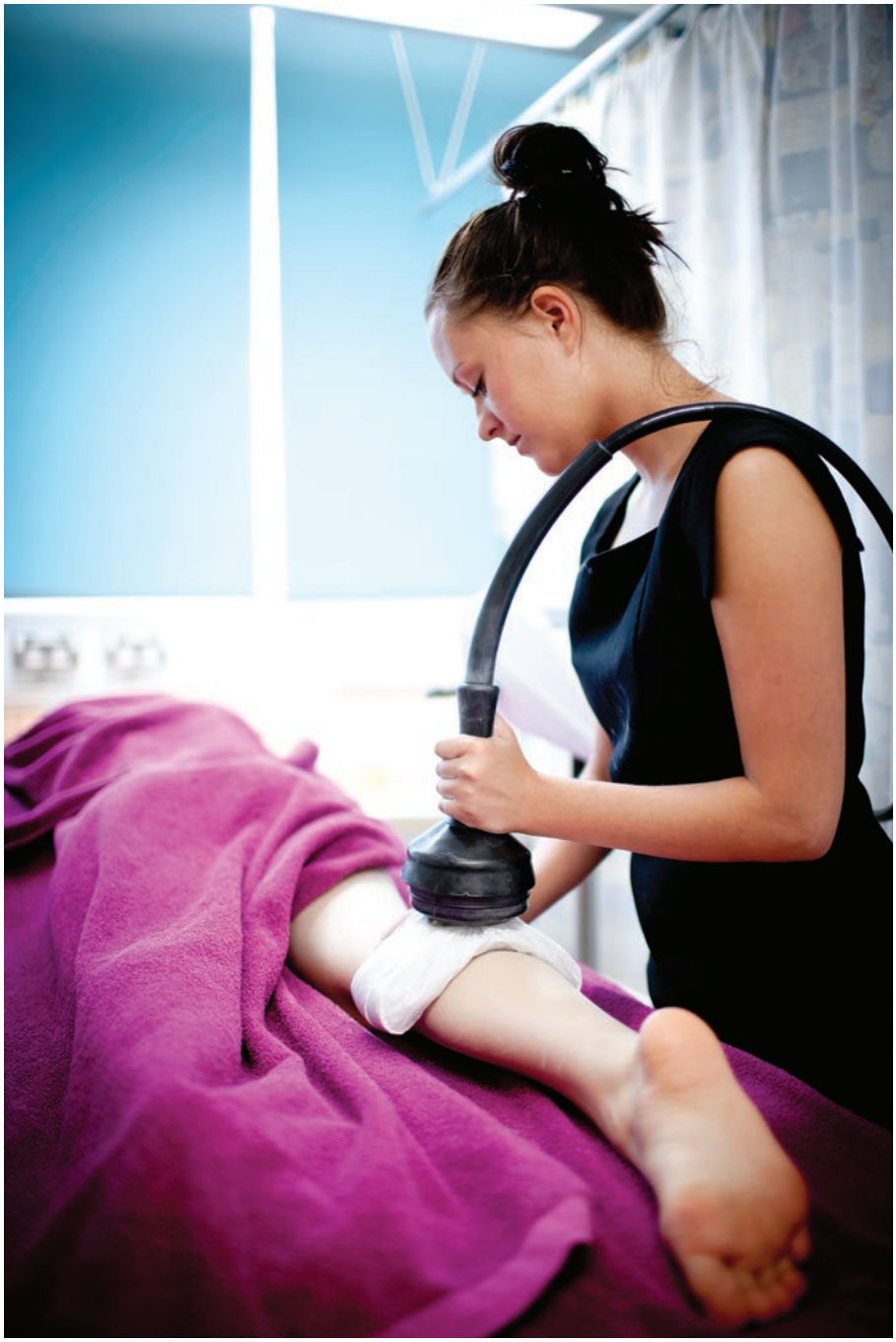
We agree with Richard's (2012) assertion that 'not all instances of training on a job are apprenticeships' (p4) and propose that while apprenticeships should be broadened to a wide range of industries, they should not be diluted to all jobs. Apprenticeships need to be reserved for those vocations and job roles that require individuals to learn a *substantial* amount before job competence can be achieved.

7.2.2. BREVITY VERSUS REAL UNDERSTANDING

The Department for Business, Innovation and Skills in England has laid down a minimum length of time for apprenticeships (one year) and associated minimum requirements for on- and off-the-job learning. This means that low-level training is far less likely to be passed off as apprenticeship learning.

But much is left unsaid about how the teaching of literacy and numeracy should be managed and how PLTS should be encouraged. The move away from tests of Functional Skills towards the new GCSE English and maths examinations means that the nature of the experience will be noticeably more 'academic' and less authentic for apprentices.

By the same token, while PLTS remain in the specification for apprenticeships at all three levels, they are not assessed and it is unclear how employers will treat them and how, assuming they do value them, they will go about embedding them in the workplace experiences of all apprentices.



7.3. CONCLUSIONS

From our research we have drawn a number of conclusions.

7.3.1. REMAKE APPRENTICESHIPS

Apprenticeships have an honourable history. At their best they combine formal and informal learning, on- and off-the-job development, the opportunity to become steeped in the values of important occupations and huge personal benefits to the apprentices themselves who also get paid while learning.

The English government has called for 'radical reform' in apprenticeships, but its definition of apprenticeships is not yet ambitious enough.

In this report we offer a broad definition of apprenticeships. Our definition is designed to ensure that all apprenticeships not only deliver industry- and sector-valued expertise, but can also deal with unexpected situations, be proud of their craftsmanship, be skilled in contemporary 'literacies', be business-like and be equipped as lifelong learners to take their full place in wider society.

Our research suggests that the current planned reforms to apprenticeships in England are too limited in their definition of apprenticeships. While we welcome greater engagement with and ownership of employers in the process, we are not convinced that employers will necessarily have the more expansive view of apprenticeships which is necessary for them to be highly valued as a pathway of choice by learners.

7.3.2. AN APPRENTICE SYSTEM TOO FOCUSED ON QUANTITY

Successive governments in England (and elsewhere in the world) are keen to expand the numbers of apprentices.

No country wants its young people to be unemployed and apprenticeships provide one means of preventing this, but rapid expansion of low skill options can easily result in a lowering of standards. Sometimes it can seem sensible to see apprentices as synonymous with low-skilled training for jobs but, in reality, this does not do justice to apprenticeships. In some cases it is possible for any system to be gamed, with financial incentives persuading employers, colleges and training providers to create apprenticeship starts where none really exist.

Such activities undermine the brand of apprenticeships, reduce the likelihood of good employers and good learners choosing them and make it unlikely that apprentices will be held in high esteem.

7.3.3. PUT THE LEARNING BACK INTO APPRENTICESHIPS

Apprenticeships are fundamentally a relationship between an employer and an individual focused on learning – the learning necessary for him or her to achieve whatever outcomes are important for that apprenticeship. Initially the apprentice is a novice, but over time he or she gains expertise and becomes more skilled until confident and competent enough to become a fully-fledged employee (or start up an enterprise of their own).

The core process at the heart of apprenticeships is learning. Core activities are teaching, training, coaching and mentoring. But anyone reading the documents which have emanated from the government in England (and in other countries) over the last five years would not know that.

In too many government documents about apprenticeships, 'learning' and words which are synonyms for learning are hardly used. Instead words like 'framework', 'accreditation', 'standard', 'qualification', validation' and 'grading' are predominant.

Contrast this with government writing about the quality of colleges, schools or universities. Such documents are full of words like 'learning' and 'teaching'. Some even mention 'pedagogy'.

The Individual Learning Plan (ILP) which apprentices use is the exception to this criticism and is, we believe, a mechanism capable of considerable further development to become a formative learning planning tool.

If England is genuine about becoming first in class for its apprentices then it needs to understand the importance of the learning environments in which apprentices learn and the methods which those around them use to help them learn most effectively.

7.3.4. UNDERSTAND THE ESSENCE OF APPRENTICESHIP LEARNING

Apprenticeship learning is special, requiring a partnership between an employer and a provider of learning. It has at least three distinctive features: it requires both on- and off-the-job learning; it is situated in a particular business and social context – a community of practice; and the requirement for visibility of learning processes is high. Not only does the research show that having visible learning processes produces better learning outcomes, so too, given the need for employers, providers and apprentices to be able to speak a common language, visibility of processes is essential.

Developing apprentices – like teaching college students or bringing up a young family – is not a morally neutral activity. It is inevitably linked to the values of those who are teaching or parenting. By exploring ideas of epistemic and cognitive apprenticeships we have shown that *how* employers and learning providers develop apprentices is at least as important as *what* they do. Culture matters. Indeed when it comes to developing the right kind of attitudes – essential if England is to turn out world-class apprentices – culture is more important than methods and much more significant than structures and funding systems.

7.3.5. UNDERSTAND THE PEDAGOGY OF APPRENTICESHIPS

Over many centuries apprenticeships have developed a range of complex and interesting methods by which those more experienced and skilled can help those just starting out as apprentices to learn and become more competent. However, a reader of government documents – especially an employer – would have not the remotest idea what these are. They are invisible.

In earlier work we contributed a theoretical underpinning to the broader field of vocational pedagogy.

Now we draw on research from across the world to suggest a set of methods which work best in apprenticeship learning. As we explore pedagogy for apprenticeships it will be important to consider in particular the role of technology and seamless learning in apprenticeships, an underdeveloped area of thinking.

7.3.6. PUT PEDAGOGY INTO PRACTICE TO CREATE THE BEST POSSIBLE APPRENTICES

Any consideration of pedagogy or teaching or learning has to start with a higher-level question: what kind of pedagogy for what kinds of outcomes?

We have argued for a broad definition of apprenticeships and laid out an ambitious set of desired learning outcomes. If these are to be delivered then decisions about methods have to reflect such intentions. We describe those methods which are most suited to creating the best possible expansive apprenticeships.

It is one thing, for example, to specify that no learner can receive an apprenticeship without having a Level 2 qualification in English and maths: it is quite another to suggest imaginative and effective teaching and learning methods for employers and providers to use to help apprentices achieve this laudable and essential threshold.

And a similar requirement is necessary for understanding the pedagogy of apprenticeships for each of our other five desired outcomes.

7.4. WAYS FORWARD

Finally we suggest some potential next steps for the continued evolution of apprenticeships.

7.4.1. PUT LEARNING AT THE CENTRE OF THE WORK TO REFORM APPRENTICESHIPS IN ENGLAND

Between 2014 and 2016 important prototyping work is being undertaken by groups of employers – Trailblazers – to redefine and simplify apprenticeship frameworks. Their focus is on defining apprenticeships, writing simple standards and developing appropriate and trusted assessment methods.

We suggest that these Trailblazers and their partner colleges and training providers need to broaden their thinking about the desirable outcomes of apprenticeships and consider the learning required to deliver more ambitious and higher quality apprentices, better suited for a complex and fast-changing world.

We ask government departments – BIS and DfE in particular – to initiate this shift.

7.4.2. FACILITATE A DEBATE ABOUT THE PEDAGOGY OF APPRENTICESHIPS

Given the importance of having the highest possible standard of teaching, training, coaching and mentoring in all apprenticeships, it will be helpful if employers and their partners have opportunities to debate and discover the learning methods which may be most suitable for their apprentices. Through such discussions they may be able to extend the range of methods used and establish a clear sense of the signature pedagogy for apprentices in their chosen occupation. With key partners and stakeholders they can develop common approaches to apprenticeship learning and a common language for all to use.

We suggest government, employer bodies such as CBI, IoD and CIPD, AELP, AoC, 157 Group, Edge, vocational examining bodies and wider sector bodies such as NAS and AAN could facilitate this debate.

7.4.3. DEVELOP APPRENTICE LEARNING GUIDES FOR EMPLOYERS, COLLEGES AND TRAINING PROVIDERS

As new standards are developed it will be important for employers and their partners to have the best possible understanding of the teaching and learning methods which are most likely to develop the kinds of apprentices they desire to see.

Whether nationally, regionally, sectorally or by Trailblazers with some expert support, it will be helpful to have well-researched and practically useful guides for employers to use in developing the learning of their apprentices.

Such guides can draw upon and contribute to best practice internationally. An early potential focus might be on the development and best use of ILPs.

7.4.4. CREATE INTERNATIONAL FORA FOR EXCHANGE OF THINKING ABOUT THE PEDAGOGY OF APPRENTICESHIPS

Across the world individual countries are facing common challenges with regard to developing high-quality apprentices. Working through existing groups with an interest in apprenticeship learning – INAP, INNSI, ISSI, UNEVOC and the City & Guilds Alliance for Vocational Education, for example – we suggest that the pedagogy of apprenticeships is increasingly seen as a valuable part of the process of creating the highest quality of apprentices. Employer groups such as CBI, IoD and FSB in England (and their counterparts across the world) may also have an interest in being part of this wider exchange.

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APPENDIX 1: APPRENTICESHIP CHARTERS

NIACE CALL FOR APPRENTICESHIP CHARTER

Following the Labour Party's publication of *A Revolution in Apprenticeships* (Husbands, 2013) adult learning body Niace called for an industry-wide charter to ensure apprenticeships served to support apprentices to develop a career and not just to perform in their current job. Recognising a tension between the goals of apprentices and their employers, Niace Chief Executive David Hughes said that:

> *Niace believes that the quality of apprenticeships and the interests of apprentices need to be championed by the introduction of an 'apprentice charter'. This three-way agreement between apprentices, employers and government, would ensure an expansive approach, leading to a secure job, thereby helping to deliver the positive returns on investment for all three of the apprenticeship stakeholders. (Freddie Whittaker, 2014)*

EUROPEAN YOUTH FORUM CHARTER

The European Youth Forum (http://www.youthforum.org/european-youth-form/) is the platform for 99 European youth organisations including both National Youth, and International Non-Governmental Youth organisations. It aims to represent their common interests. One such interest is the area of employment for young people. As such, it has produced a European Quality Charter on Internships and Apprenticeships.

European Quality Charter on Internships and Apprenticeships

Preamble

Given that:

- transition phase for young people from education to the labour market has become increasingly difficult – youth are disproportionately affected by unemployment and face structural challenges in finding quality, stable employment and to earn decent income;
- early labour market experience such as internships and apprenticeships are useful to facilitate youth access to labour market, to ease the transition between education and employment and to develop labour market relevant skills[2];
- not all pupils or students have the possibility and the necessary financial means to take part in quality work trainings (apprenticeships and internships) as part of the school curricula and university programmes, including those that are taking place abroad;
- there is mounting evidence that work placements (internships) outside formal education are frequently replacing quality employment for young people;
- lack of clear quality guidelines undermines the main purpose of internships and apprenticeships as educational opportunities that give practical skills to young people;
- there is a need for more research and labour market monitoring in this area.

2: This Charter defines apprenticeships as work-oriented trainings that are part of vocational education and training and that are solely school-based programmes or combined school and work-based programmes, both carried out in the formal education system, bringing credit points.

This Charter defines internships as either:

a) part of higher education that brings credit points where interns have a student status, access to services like student loans, student housing, health insurance, scholarships etc;

b) taking place outside formal education (also after graduation) that do not bring credit points for the diploma. Some of these internships do not have a legal status or may even be considered illegal;

c) any other form of similar work experience that is offered to young people as a work-based learning opportunity.

We urge all the providers of internships and apprenticeships to commit to quality standards and to apply a clear and coherent code of conduct, leading by example.

We urge European countries, European institutions and social partners[3] to commit to establish (or where applicable reinforce already existing) legal quality frameworks for internships and apprenticeships.

We call on internship and apprenticeship providers and public decision makers to adopt a system of certification and to ensure the recognition of the knowledge and skills acquired though internships and apprenticeships.

Implementation of this Charter does not constitute valid grounds to reduce the general level of protection afforded at national level.

Article 1

We are convinced that internships and apprenticeships should be primarily a learning experience and believe that:

- internships/apprenticeships should never lead to job replacement;
- well organised internships/apprenticeships help young people acquire practical experience and add practical skills to the knowledge and qualifications that have been previously acquired through either formal or non-formal education;
- internships/apprenticeships help to orientate oneself professionally and also widen one's perspectives of different sectors;
- internships/apprenticeships provide recognised working experience that develops the skills of young people and elevates their professional capacity;
- internships/apprenticeships should be carried out under guidance of a competent supervisor and have access to robust evaluative and complaints channels to monitor progress and quality of the internship/apprenticeship experience;
- interns/apprentices should be informed at the beginning of their internship/apprenticeship experience of their social and labour rights, workers representatives, their responsibilities to the organisation, any health and safety risks posed to them through the position or at the workplace and are provided the relevant social protection accordingly.

Article 2

We believe that internships (as part of Higher Education) and apprenticeships should meet the following criteria:

- existence of a written and legally binding contract between the educational institution, intern/apprentice and hosting organisation outlining the main principles of the internship/apprenticeship, including how many credit points this will contribute to the diploma of the intern/apprentice; a description of learning objectives and tasks should be attached to the contract;
- length and tasks of the internship/apprenticeship correspond to specified learning objectives that are shared with the student at the beginning of his/her internship/apprenticeship;
- guidance throughout the internship/apprenticeship period by a supervisor(s) trained specifically for the role;

3: EU Social Partners, in their Inclusive Labour Markets Agreement, signed in March 2010, already committed themselves for more and better traineeships and apprenticeships.

- the right of the intern/apprentice to receive reimbursement of costs incurred during the internship/apprenticeship or right to receive food, housing and public transportation tickets instead;
- decent remuneration for work carried out additional to the requirements outlined in the internship/apprenticeship contract, including compensation for overtime;
- clear evaluation criteria of the internship/apprenticeship period

Article 3

We believe that internships taking place outside/after formal education should ideally not exist, however where they exist they should meet the following criteria:

- existence of a written and legally binding contract outlining the length, remuneration of the internship, a description of learning objectives and tasks should be attached to the contract;
- decent remuneration not below the EU poverty line of 60% median income or national minimum wage, if more favourable, in accordance to the tasks which are performed by the intern and to working hours (overtime should be additionally compensated). Internship remuneration should be regulated either in law or collective agreements in accordance with national practice;
- use of internships should be limited to pupils, students and very recent graduates, length of internship period should be restricted to a reasonable and fixed number of months;
- reimbursement of costs incurred during the internship;
- inclusion of the intern in the social security system, especially those of health, unemployment, pension systems;
- mid-term evaluation, discussion of the possibilities to be hired as a permanent employee during the internship period and a final evaluation at the end of the internship period;
- limited number of interns per internship provider;
- transparent advertising that includes a detailed task description and working conditions.

Article 4

We urge the competent stakeholders to progressively develop the following support and monitoring policies for a better implementation of quality internships:

4.1. Legal framework and recognition of skills

- Internships should be given a place in the national legislation and employers should be provided assistance to any legal enquiries related to the implementation process.
- At the European level there should be mechanisms in place to promote the exchange of best practices in the area and the implication of the main criteria that define quality internships.
- National and European systems for certification and recognition of knowledge and skills acquired though internships should be in place to further support the smooth integration of young people in the labour market and support youth labour mobility.

4.2. Monitoring and statistics

- Statistics should be available on internships, nationally and at European level, with a special focus on: the number of internships available, the average length of internships, the social benefits being made available for interns, the allowances paid to interns, the age groups of interns.
- An overview should be available, nationally and at European level, on the different internship schemes and their place within the legal systems.

4.3.Partnerships

- National partnerships run between schools, universities, civil society organisations and the social partners should be encouraged and supported.
- More career development loans and investment in training by employers should be encouraged and supported.
- Schools should provide assistance to the young people when they are looking for a suitable apprenticeship.
- Student and pupil organisations, trade unions should be available to provide assistance to interns throughout the internship period.

Available: http://www.youthforum.org/assets/2013/10/0595-10_European_Quality_Charter_Internships_Apprenticeships_FINAL.pdf
(accessed 24 July 2014)

IT SERVICES SECTOR-WIDE CHARTER

A number of IT Services companies have signed up to a charter for the employment of apprentices in the UK. The aim of the charter is to streamline the industry's approach to apprenticeship. It has standardised six common roles: software development; testing; IT support; project management; network; and business analysis. Issues of diversity, career progression and hiring processes are also given attention (Nguyen, 2012).

IT Service Sector Apprenticeships: Charter for the Employment of Apprentices

The IT Services sector recognises that apprentices bring valuable skills and potential to our talent pipeline and we commit to the following principles:

- Review our resourcing approach to see where opportunities can be offered to Apprentices.
- Work in partnership with National Apprenticeship Service, e-skills and other supportive agencies to create a small number of nationally accredited standard entry points that can be used to provide careers advice to people at school or college and available through e-communication channels.
- Work together to aggregate demand enabling education partners to create efficient and cost effective delivery models for all parties in the sector to benefit from.
- Develop Apprentice programmes to provide routes to gaining IT Professional status and to supplement our core skills entry points where appropriate.
- Encourage diversity of applications, in particular women, into IT services.
- Ensure there are consistent standards for the IT Services industry recognised by all in our sector as high quality, fit for purpose in a highly fluid skills environment and motivating as a career route for entrants at this level.
- To align the education and long-term career development opportunities for people with the IT careers of the future.

Available: http://www.uk.capgemini.com/resource-file-access/resource/pdf/apprentice_charter_and_crib_sheet.pdf
(accessed 24 July 2014)

UNIONLEARN'S CHARTER FOR APPRENTICESHIPS

Unionlearn is the TUC's learning and skills organisation. It sees high quality apprenticeship as a way of developing skills for the current and future workforce in order to develop a prosperous and equitable economy. As such, it believes there are a number of principles that need to be met in order to benefit apprentices, employers and society as a whole. It has drawn up a Charter (Unionlearn, 2013) to reflect these principles:

Unionlearn: Charter for Apprenticeships

We agree that an apprenticeship should:

1. Be a job with a productive purpose

Apprentices should have parity of terms and conditions with all other employees. All quality apprenticeships will have progression opportunities to genuine employment.

2. Be paid a fair rate

Apprentice rates should reflect the job done; if an apprentice does a full job they should be paid for it, or quickly progress incrementally to that point.

3. Ensure high quality training and clear individual development

Apprenticeship programmes must identify a clear programme of training that is relevant to the job and recognisable in the sector. Apprentices must be given sufficient paid time off-the-job to study in colleges, or in dedicated training centres at the workplace. On-the-job training should be fundamental to the apprenticeship. There should be a clear system for supervision, support and mentoring, by appropriately trained work colleagues.

4. Involve the trade union at every level of the programme

Trade unions should have a constructive role in the development and delivery of the apprenticeship programme. Unions will negotiate around aspects of the apprenticeship, support apprentices and work with the employer to ensure the quality and success of the programmes.

5. Ensure apprentices have regular access to, and support from, trade unions

The union rep should play an integral role in supporting, developing and advocating for apprentices. Union representatives, especially union learning reps, are ideally placed to act as mentors to apprentices.

6. Be accessible to, and achievable by all

A good apprenticeship programme will include strategies to ensure that apprenticeships are accessible to the widest possible demographic and diverse spread of people. Particular attention will be given to enabling people from disadvantaged groups to take up any opportunities offered and support given to complete them successfully, thereby achieving the full benefit of apprenticeship.

7. Be part of, and contribute to, a healthy and safe environment

Employers and unions should work together to ensure a safe environment. Particular attention should be given to the unique needs of apprentices and young workers. Apprentices should be given sufficient training on health and safety, including relevant legislation, and the programme should be regularly reviewed from a health and safety perspective.

8. A commitment from the employer to complement the workforce, not supplement it.

- Apprentices should not be recruited for job substitution, but to fill genuine skills shortages and plan for future skills gaps.
- Apprentices should be employed by the employer, not as temporary or indirect labour.
- Apprentices should be a key part of the workforce, and shouldn't be seen as a way of reducing cost.

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City & Guilds also has years of experience of supporting the design and delivery of apprenticeship programmes. Our apprenticeships span 26 different industries and currently cover 126 job roles.

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