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# Effective teaching and learning in vocational education





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# **Effective teaching and learning in vocational education**

**Sally Faraday, Carole Overton, Sarah Cooper**

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# Executive summary

LSN and the City and Guilds Centre for Skills Development present this research report on Effective Teaching and Learning in Vocational Education.

## Background and introduction

The changing nature of skills required for the 21st Century, the need to improve the skills of the UK workforce and the current economic crisis, mean that vocational education is more important than ever. Yet despite recent improvements in provision, Ofsted (2010) reported that the delivery of vocational education and training was variable in quality. Too much teaching and learning was mediocre and more emphasis was required on meeting individuals' needs through more suitable teaching methods.

This project aimed to promote more effective teaching and learning in vocational education, by encouraging thought, debate and discussion about vocational pedagogy. There were four stages to the research. This report covers the first two. The first phase was a review of literature that explored the quality of vocational teaching and learning and what was effective teaching and learning in the vocational context. It included studies that identified which factors had the greatest effect on improving learner attainment and an overview of learning theories and teaching models. The second phase examined examples of vocational teaching and learning in organisations identified as outstanding by Ofsted. A framework that encompassed four different elements of effective teaching – *Teaching Skills, Teaching Relationships, Teacher Reflection and Teaching Models* (Hopkins, 2007) – was used to analyse examples of vocational teaching and learning in practice. There were visits to eight Further Education Colleges (FECs) involving observations across four curriculum areas and interviews with a range of staff. The data collected were analysed and primary research provided the opportunity to understand how the range of teaching and learning skills, strategies and models were being used in practice.

Given the interchangeable use of terminology and the different meanings evident in the literature, we defined exactly what we meant by each of the essential components in the framework:

**Teaching relationships** – teachers' commitments to their learners, the relationships they develop with their learners and range of roles that teachers take. This component was identified as critically important by teachers.

**Teaching models** – are prescribed structured sequences, which are designed to elicit a particular type of thinking or responses, to achieve specific learning outcomes.

**Teaching strategies** – are the 'tools for teaching and learning' that teachers have available to them and '**teaching skills**' are the ways in which teachers select and use the 'tools' at their disposal to achieve effective learning.

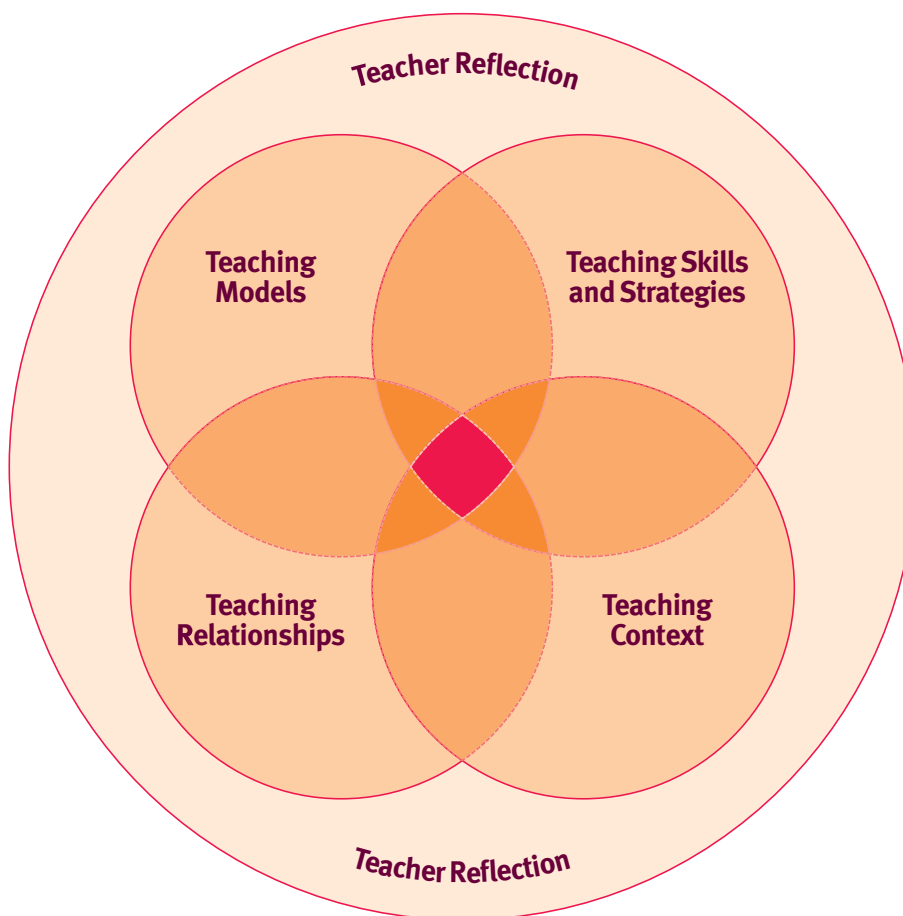
**Teacher reflection** – is a threefold process comprising direct experience, analysis of beliefs, values or knowledge about that experience, and consideration of the options which should lead to action as a result of the analysis.

As work progressed against the framework it became clear that there was one additional, distinctive feature that in part defined vocational learning and that was the *context* within which it takes place. **‘Teaching context’** – covers a mixture of aspects and includes the nature of the vocational subject, the setting where teaching and learning takes place, objectives and desired outcomes for a session plus specifications of the qualification, the nature of the learners, their level and how they learn best including their learning styles.

## Summary of main findings

1. The sessions observed confirmed the findings of research in the literature review: teaching and learning is a highly complex process and effective practice results from a complex interaction of factors.
2. There was little evidence that vocational teaching and learning was fundamentally different from any other type of teaching and learning except in one respect – that of context. Given the importance of context, a new Framework was developed from that of Hopkins (2007), to include ‘context’ as a separate, specific component.

## A Framework for Developing Effective Vocational Teaching and Learning



These five interrelated and overlapping components in the Framework must work in synergy to provide effective teaching and learning that meets the required learning objectives and learning outcomes.

3. There were many examples of **effective practice** in vocational teaching and learning evident in the sessions observed, although this study did select organisations that were known to have effective practice and so the findings may not be typical of vocational teaching and learning.
4. Teachers believed that in many cases, **practice is directly transferable** from one vocational area to another.
5. Teachers indicated that they also **varied their practice**, for example, in response to the different levels of the programmes and abilities of learners.
6. Vocational teaching and learning is **underpinned by some learning theories** – experiential learning and learning styles theories being the most prevalent.
7. Teachers drew extensively on **their own experiences** and those shared with colleagues.
8. **Teaching relationships** were identified both in the literature and by teachers as crucially important.
9. **Teaching models did not appear to be used** intentionally in a planned and systematic way by teachers when deciding how to teach although we were able to infer that some aspects of teaching models were utilised.
10. **Teachers used their skills** to choose from a very wide range of strategies. These included strategies for: differentiation, presentation and demonstration, using technology, group and individual learning, reinforcing learning and assessing learning as well as the use of multiple strategies within a session.
11. In the very best sessions, teachers had **high aspirations** and sought to stretch their learners. They planned to **develop a range of learners' skills** beyond just mastering a particular skill or acquiring information to meet a course or qualification specification. These skills included higher order learning and thinking skills (such as 'advance organisers' and learning to learn), social and interpersonal skills to communicate effectively and employability skills. These were consistent with the skills for the 21st century, as described in the literature review.
12. Effective teachers were **reflective**; they constantly reviewed their practice, discussed it with their colleagues and sought to develop new and better ways of teaching.

## Summary conclusions

These are drawn from the full range of interviews and observations completed as well as the literature review, which set the overall context and framework for the research.

- While there is evidence of very good practice within vocational education, it is clearly not universal, as evidenced from inspection, so there is **considerable scope for identifying, disseminating and sharing good practice and for further development** as a means of improvement.
- Teaching models are not yet established in vocational learning but the whole concept of teaching models could provide a powerful new element in vocational teachers' repertoires. Research evidence shows that learners' attainment could be enhanced by the consistent use of teaching models. There is a **need for substantial further research to further develop teaching models** and for these to be further developed and tested in the vocational context.
- The '**Framework for Developing Effective Vocational Teaching and Learning**' (page 6) could provide a **clear basis for thinking about vocational teaching and learning** as well as a vehicle for sharing and promoting effective practice.

- There is also scope for using the **‘Framework for Developing Effective Vocational Teaching and Learning’** to **provide a structure within which to offer guidance** – this guidance should use the Framework to illustrate the inter-relationships between the five components of teaching relationships, teaching models, teaching strategies and skills, teaching context and teacher reflection.
- The implications of the findings of the research could potentially be wide ranging. There could be **an impact on initial teacher training** for vocational teachers and their continuing professional development. This in turn could **have consequences for teaching qualification specifications** and course design and delivery.

# 1 Introduction

The changing nature of skills required for the 21st Century, the well-documented need to improve the skills of the UK workforce and the current economic crisis, necessitate the delivery of high quality vocational education. (Unwin, 2004, Statz et al, 2004, Conlon et al, 2010 in Wolf, 2011). This means that vocational education is more important than ever.

Most recently, the Department for Education's (DfE) response to the Wolf Review (2011) recognised the role vocational education plays in helping young people progress in education and employment and in supporting the skills needs of the future labour market. The Wolf Review (2011), published during the course of this research, indicates that systematic changes are underfoot in vocational education. Wolf's main concerns are the relevance of vocational courses to the economy, the transparency of the qualifications system and the ease in which young people can make choices regarding courses and places of study. Wolf's recommendations deal with funding, organisation and oversight, and provide the context for the future of vocational teaching and learning.

The strength of the focus on improving vocational education through systemic changes is in direct contrast to the lack of focus placed on vocational pedagogy. Research, however, does tell us that the type and depth of learning acquired on vocational programmes is variable (Statz et al, 2004). Achieving a high quality vocational education system assumes high quality and effective vocational teaching and learning. Research has told us that the quality of teaching is the key factor in improving learner achievement and a recent review of 20 of the world's top education systems concluded that the quality of an education system cannot exceed the quality of its teachers. It suggests that the only way to improve learner outcomes is to improve instruction (Barber and Mourshed, 2008).

In 2009 the Skills Commission Inquiry into *Teacher Training in Vocational Education* found that the repertoire and flexibility of vocational pedagogy is often too narrow and that while the setting and context may be engaging, the methods used can be too passive and uninspiring. The inquiry concluded that vocational pedagogies remain in their infancy and relatively little research has been undertaken into them. Amongst others, Lucas et al (2009), echoed similar concerns. They suggested that key to the delivery of excellent teaching and learning is knowledge and understanding about pedagogy.

*The most important research gaps in the field of practical and vocational education in the UK relate to the naïve, incomplete and sometimes doctrinaire models of learning that underpin Practical Vocational Education (PVE).*

(Lucas et al, 2009, p 3)

LSN and the City and Guilds Centre for Skills Development present this report on Effective Teaching and Learning in Vocational Education. We aim to support the sector by contributing to thinking on vocational pedagogy by examining effective teaching and learning. We therefore hope that this report will prompt debate with professionals and experts in vocational education on how improvements and developments can be supported and achieved and that it acts as a catalyst for further work into all aspects of vocational pedagogy.



## 2 Research design and approach

### 2.1 Research aims and objectives

This report aims to promote more effective teaching and learning in vocational education through encouragement of thought, debate and discussion around vocational pedagogy. The objectives of the research were to:

- examine the literature on effective teaching and learning in vocational education and training
- analyse examples of vocational teaching and learning in practice
- compare the outcomes from the literature review and the examples of teaching and learning to develop a framework for effective vocational education and training and draw from the findings in order to offer guidance for practitioners and others
- identify the implications for policy and further areas for development.

### 2.2 Methodology

The overall research design encompassed a detailed literature review, primary research, analysis and synthesis of data, a final report and resulting guidance for further education (FE) lecturers. The overall approach involved four key phases of activity as detailed below. Each phase of activity is further detailed in Appendix 1.

**Phase One** involved a **literature review** exploring effective teaching and learning based on evidence based research. Appendix 2 of this report, therefore, describes the vocational education context, current vocational provision and explores the quality of current vocational provision. It also explores effective teaching and learning by considering an initial framework around teaching skills, teacher relationships, teacher reflection and teaching models.

**Phase Two** explored vocational teaching and learning in practice. We conducted site visits to eight Further Education Colleges (FECs) involving **observations** across four curriculum areas and **interviews** with teachers of the observed lessons, Quality and Curriculum Managers, other teachers of selected curriculum areas and senior managers. The data collected were analysed and presented in Section 3 of this report. This primary research provided the opportunity to understand how the range of teaching and learning skills, strategies and models, identified in the literature review, are being used in practice.

**Phase 3** built on phases 1 and 2 by using a formative seminar with practitioners who had taken part in phase 2 of the research. The seminar was designed to collate feedback on the report findings and ways forward, including the content and approach for the resulting guidance designed specifically for practitioners.

**Phase 4** involved development of guidance to support vocational lecturers and initial teacher training (ITT) educators, including exemplars and cameo case studies to translate theory into practice. The aim was to provide practical guidance on effective teaching and learning in vocational education which could be adopted by practitioners.

This report is based on the work conducted for phases 1 and 2, as described above. The report was designed to provide an understanding of effective teaching and learning drawn from theory and practice and to promote debate on the implications of the findings amongst policy makers and professionals across the sector. The guidance resulting from the research is designed specifically for vocational teachers and practitioners and is available as a separate document.

### 3 Vocational teaching and learning in practice

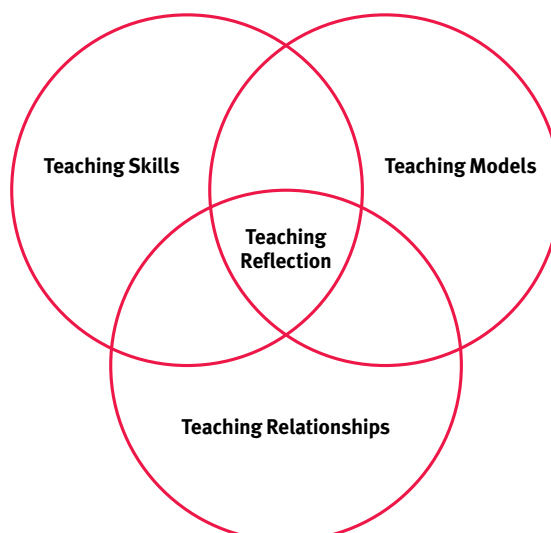
This chapter builds on the literature review and reports on the findings of an analysis of observations of 20 teaching and learning sessions, interviews with the teachers of the classes observed, interviews with other teachers of the same subject areas and interviews with quality managers and/or senior leaders. The observations were conducted in eight colleges and covered four vocational areas: business administration, construction, information and communication technology, and travel and tourism. The colleges were chosen because they were identified by Ofsted as outstanding.

#### Method of analysis

The approach to the analysis broadly drew on grounded theory. In grounded theory, the theory is generated from data, in the process of conducting the research. Key points in the written records of the observations and interviews were coded. The codes were then grouped into similar concepts and a framework for analysis was generated. Initially, three broad groupings emerged: teaching skills; teaching strategies; and underpinning teaching and learning theories and models. We then departed from grounded theory and referred to the literature review, which is reported in full in Appendix 2, to establish a structure for synthesising and reporting the findings.

The findings from the observations and interviews aligned closely with the four ways of thinking about teaching, illustrated in Figure 1 below, that was developed from the Improving the Quality of Education for All (IQEA) research project (Hopkins, 2007). This framework encompasses four different elements of effective teaching – *Teaching Skills*, *Teaching Relationships*, *Teacher Reflection and Teaching Models*. Importantly, it is only when these four elements are in synergy that they are able to support effective teaching. Creemers, who analysed the factors and variables in the teaching and learning process to identify those that could explain the differences in outcomes for comparable groups of learners, informs us that ‘*isolated components or effective elements of individual components do not result in strong effects on student achievement*’ (Creemers, 1994, p 93). (See Appendix 2 – literature review for further details).

**Figure 1 Four ways of thinking about teaching, (Hopkins, 2007)**



These four components: teaching relationships, teaching models, teaching skills and teacher reflection, were adopted as the basis for analysis. We also drew on effect-size research<sup>1</sup> which identified consistently high correlations between learner achievement scores and classroom processes. From this stage, the process of analysis and the refinement of the framework for analysis has been an iterative one.

### Definition of terms

Given the interchangeable use of terminology and the different meanings evident in the literature for these four concepts and the terms used to describe them, we have set out exactly what we mean in this report by each of these essential components and the relevance/importance of each to effective vocational teaching and learning.

**Teaching relationships** encompasses both the teachers' commitments to their learners and the relationships they develop with their learners. In the observations, teachers identified that their relationships with their learners was of critical importance to the effectiveness of their teaching and learning. 'Teaching relationships' also covers the range of roles that a teacher can take within a session and varies between 'high structure,' in which the teacher's role is dominant, directing the learning and 'low structure' in which learners take more control of the process of learning.

**Teaching models** are derived from theories about teaching and learning. Each model can be described as a structured sequence, which is designed to elicit a particular type of thinking or response, to achieve specific learning outcomes. The choice and use of the appropriate model (or combination of models) is influenced by the type of learning objective and nature of the learner as well as other factors such as the repertoire of teaching strategies available and skills of the teacher. A strong body of research and practice suggests that the quality of teaching and learning and learners' attainments can be enhanced by the use of specific models (DfES, 2004b, Hattie, 2009 and Marzano, 1998).

We have defined '**teaching strategies**' as the 'tools for teaching and learning' that teachers have available to them and '**teaching skills**' as the ways in which teachers select and use the 'tools' at their disposal to achieve effective learning. Since we found these to be closely aligned, we have put them together for our analysis

The fourth component of '**teacher reflection**' is a threefold process comprising direct experience, analysis of beliefs, values or knowledge about that experience, and consideration of the options which should lead to action as a result of the analysis (Whitton *et al*, 2004).

As the analysis progressed against the framework of these four components it became clear that there was one additional, distinctive feature that in part defines vocational learning and that is the context within which it takes place. Thus a new, fifth component was emerging to add to the framework. This is discussed further in the conclusions drawn from the analysis, where we present and discuss a new framework for effective vocational learning with five components. However, for clarity, we provide a definition of context at this point.

<sup>1</sup> For further details of effect-size research, refer to Appendix 3.

**Teaching context** covers a mixture of aspects and includes the nature of the vocational subject and the setting where teaching and learning takes place, including the specialist facilities and resources required for that vocational subject. It also includes the learning objectives and desired outcomes for a session plus specifications of the qualification. The nature of the learners, their level, and how they learn best including their learning styles, is also a part of the context. A teacher's choice of teaching strategy or model to enable effective teaching and learning is affected by context in that, for example, it would be difficult to do 'role play' or whole class 'questioning' in a noisy workshop with confined space.

To show how all components might work together in practice, we provide a worked example of a sequence of activities taken from an observed session, in section 4.2.

### Presentation of analysis

In this section we now consider each of these components in turn and provide a selection of illustrative examples and quotations, drawn from the observations and interviews. *Please note that the examples have been selected to illustrate various points and should not be considered as exemplars to copy or necessarily as examples of outstanding practice.* It is also important to stress that in this chapter we are looking at practice from the perspective of each component so inevitably we will also make reference to other components. This is due to the holistic interrelationships of the components in practice.

In the next chapter, we draw our conclusions, and present our **Framework for Developing Effective Vocational Teaching and Learning**. We also provide a worked example drawn from an observed session that indicates how the Framework may be used to analyse the teaching and learning taking place or to illustrate practice.

In presenting our analysis of findings we start with teaching relationships. It would be possible to start with any component and to present the analyses in any order but we have chosen to start with teaching relationships since the teacher/learner relationship is of such fundamental importance and was highlighted during the interviews as highly important in the delivery of effective teaching and learning.

## 3.1 Teaching relationships

Teaching relationships refer to the relationships teachers develop with their learners as well as how learners relate to each other. The literature review within this report identified that in FE specifically, the tutor-learner relationships are identified as 'the most important link in the learning process', (TLRP, 2006). A meta-analysis of learner-centred teacher-learner relationships confirmed the importance. It reported that positive teacher-learner relationships are associated with optimal, holistic learning with above average mean correlations when compared with other educational innovations for cognitive and behavioural outcomes (Cornelius-White, 2007).

The way in which a teacher interacts with learners sets the scene for the subsequent learning to take place. As indicated earlier, within the research, teachers felt that their relationships with learners were of prime importance for the teaching and learning to be effective. The features of effective teacher relationships that were identified from the observations, included:

- getting to know learners – knowing which learners need more attention
- good rapport including listening

- high expectations (see Hattie and Merzano's meta-analyses of effect-size)
- building trust
- humour – appropriate, not sarcasm
- relaxed atmosphere – relaxed learning with elements of fun
- mutual respect – respect of other people's opinions
- behaviour management – so that all of the group have the chance to learn.

Active learning, while carrying out assignments or projects for instance, gave many opportunities for teachers to build relationships with learners. The teacher's role during this activity can take various forms: demonstrator, organiser, coach, mentor, facilitator, reflector and even co-learner. A relationship of trust between the teacher and learners is likely to develop while working together and discussing aspects at various stages of the assignment, so that the teacher becomes an 'accomplice' in the learning process rather than the knowledge base. The following is a selection of examples taken from the observations and interviews.

*Use humour, yes, well we class it in the building trade as banter. So if a student's not enjoying themselves they won't learn. You've got to be humorous sometimes because if the student is bored or not enjoying something, they'll turn off, you've got to have things that are interesting. I mean, they say that you shouldn't 'pull people's legs', but when you get into the building trade, when you get on site, you've got to have that understanding – the difference between when someone's having a laugh and when someone's being horrible to you. There's a big difference between laughing with somebody and laughing at somebody.*

Part of relationship building is the skill of the teacher in managing the behaviour of groups and individuals within a learning session. For example, a teacher might not allow learner discussion during the creation of plans, so that work is individual and then, might use pairings to discuss how each plan was created and the advantages and disadvantages of each plan. Therefore, managing behaviour is in part an individual teacher activity but also an organisational activity.

In one college (shown in the example below), within the study, they decided to change the culture of the college making behaviour one of the issues – behaviour of all staff and all learners. Over a period of time the culture changed so that relationships between teachers and teachers, teachers and learners and learners and learners became ones of mutual respect in which learning could flourish.



*The college itself went through a culture change and that was really important. All the managers for the first time met away from college. I don't know how you find the atmosphere (in the college) but most people say that they find it open and friendly and it didn't used to be like that.*

*A charter was put together in the college.*

*In our divisional meetings, we had to say what actions we would do to make sure that this (the charter) was embedded. So one of the things was that we would communicate effectively, so we all had to sit in a division meeting and say how we would communicate effectively.*

*The two actions we gave ourselves were, we'd always reply to an email within twenty four hours and have something on our desk that said where we were teaching and when we were in the staff room or we would write on the whiteboard where we would be. There were ten things on the charter but the last one, the tenth one said, 'We will all follow all of those above'.*

*Then things started to change and that's really I think when we started to have a feeling of mutual trust between staff and that also developed in the students. We wouldn't let students hang round in gangs or groups. We wouldn't let them wear hats or hoods. We expected them to get to their work on time, we expected them to ring up if they weren't going to be in and whereas before you had to keep nagging them, it just became the expectation.*

*As part of that, we developed a teaching and learning model that said students need to be active and engaged and because there was an atmosphere of mutual respect they could develop, and people bought into doing that.*

Within each teaching model there is a 'social system', that is, the roles and relationships that learners and teachers take within each teaching model. For example, in some teaching models, the teacher is the source of information, the demonstrator or organiser. In these cases the teacher provides the structure and is in control as in a session within this study, where the teacher was organising the learners to play a game of dominos where one half of the domino was a question and the other half was an answer to a different question. The teacher needed to orchestrate the 'play' and the learners followed the instructions in the process, gaining knowledge from the game. In other teaching models, activity (and control) is divided more equally between the teachers and learners and the teacher acts as a facilitator, questioner or reflector as in the following example where a teacher is working with learners on an ICT assignment and facilitating their progress.

*I'm facilitating them, watching them, making sure that they're all on task really because you do get odd students who will go off task quite easily but I think they did well today. I asked them what they wanted to do, what they want to achieve and then laid the task out for them, reminding them they have a hand-out to have a look at and follow the instructions. Students don't enjoy instructions! But I just remind them to look at the hand-out as I went through things, such as, remember you've got to put the key frame in, and showed them how to do it. I did demonstrate with a few students how to do it. I advise as well on the colours that they're using or if they're saying to me, 'I can't draw' I say, 'Well, you can draw this,' and I'll draw them a little telephone, show a little sample, just to encourage them to do it.*

The final stage is where the learners take complete control and are learning independently. In this following example the class decides they now want to get on with the practical themselves and they don't need any more demonstration from the teacher. Importantly the teacher knows the group well enough to feel confident that the learners will be able to progress on their own.

*In the theory session they will have had verbal instruction; in the workshop they will have verbal and written instruction and can also see the finished item on the board. They have seen the teacher creating one as well. So, I am working with them. When I asked them, 'would you like me to do one?' they said no. They were far more interested in doing it and me helping them. So, straight away, I picked up on that because I know the group and I thought, I've done my bit, they are happy to carry on, so I'll leave them to it now.*

A useful way of considering the social system or describing the respective roles and responsibilities of teacher and learner has been provided by Fisher (2008) in what he describes as '*a gradual release of responsibility model*'. Four stages are described, moving from teacher directed or focused activity to independent work:

- teacher focus – teachers are in control and might demonstrate or 'model' what is required from learners
- guided instruction – teachers prompt, question, facilitate, or lead learners through tasks that increase their understanding of the content
- collaborative learning - to consolidate their understanding of the content, learners need opportunities to problem solve, discuss, negotiate, and think with their peers. Collaborative learning opportunities ensure that learners practice and apply their learning while interacting with their peers
- independent work – this is the overall goal. Independent learning provides learners with practice in applying information in new ways. In doing so, they synthesise information, transform ideas, and solidify their understanding.

Fisher points out that importantly, the gradual release of responsibility model is not linear. Learners move back and forth between each stage as they progress with their learning.

Teachers themselves decide within the teaching models that they are using, what actions or reactions to take to further the learning for individuals and groups. In some teaching models, the teacher tries to shape behaviour by rewarding certain learner activities and maintaining a neutral stance toward others. In other teaching models, such as those designed to develop creativity, the teacher tries to maintain a non-evaluative, equal stance so that the learner becomes self-directing. Principles of reaction help the teacher respond to what the learner does. They can help teachers select the responses they will have in their interaction with the learners and provide them with guidelines by which they can better tune in to the learners and select model-appropriate responses to what the learners do (Ji-Ping and Collis, 1995).

### 3.1.1 Teaching relationships – comments

The more teachers know their learners, then the more able are they to ensure that each individual learner is learning in as effective a way as possible and that the group collectively is being managed in the best way for effective learning to take place. Behaviour management is made easier if teacher-learner relationships are well developed and trust is part of the culture of the group. The literature review identified that teacher-learner relationships were the most important link in the learning process - a crucial part of the teaching

and learning framework – and this was confirmed by the observations and interviews in this study.

The extent of the teaching relationship development with a group of learners is likely to affect the choices and operation of the other components in the Framework, including the teaching model. In some teaching models the teacher takes the lead and provides the structure for learning while in other teaching models there is a sharing of control between the teacher and the learners or ultimately, learner independence in learning. It is important that the teacher has understanding of individuals within the group to be able to make effective decisions on teaching strategies and teaching model choice. We look at the different teaching models in the next section.

## 3.2 Teaching models

**Teaching models** are derived from theories about teaching and learning. **Each model can be described as a structured sequence, which is designed to elicit a particular type of thinking or response, to achieve specific learning outcomes.** The choice or use of the appropriate model (or combination of models) is influenced by the type of learning objective and nature of the learner as well as other factors such as teaching strategies and teaching skills. A strong body of research and practice suggests that the consistent use of specific models can make learning more effective (DfES, 2004b, Hattie, 2009 and Marzano, 1998).

### What is a teaching model?

It is important to note what we mean by a teaching model. We have found that the term ‘teaching model’ has been used to describe many other approaches. In different documents a number of terms appear to be used interchangeably: models; strategies; approaches; techniques and methods, to name a few. Teaching models are not the ‘real world’ but merely a way of helping us understand and think about teaching. There are a vast number of teaching models, some variations of others, and they come in many shapes, sizes, and styles. To add to the confusion, some terms, such as ‘demonstration’, can be used for both a teaching model and also a strategy or method.

To draw the distinction between teaching strategy and a teaching model, the definition of a teaching model we have used has two distinctive features. The first distinctive feature is the nature of the learning objective and outcome required and whether the learning is related to:

- acquiring and learning skills, procedures or knowledge, or
- processing information, building concepts and rules, generating and testing hypotheses and thinking creatively, or
- collaboration and learning together to construct new knowledge and understand concepts

The second distinctive feature is the structured sequence of steps or phases (the syntax) used to achieve that particular type of learning objective. In teaching models, it is the tight linkage between these two aspects that defines a teaching model. Strategies do not have the same linkage and may be deployed more widely, as an essential part of a teachers’ repertoire to achieve a range of learning outcomes.

The term teaching model is also used in vocational teaching and learning to describe other different concepts. If these concepts lack the distinctive linkage between these two particular features above, then they are not what we mean here by a teaching model.

**In our analysis of the observations and interviews we found no evidence of the intentional, planned and systematic use of teaching models**, as defined above. That is not to say that teachers' practice was uninformed by theory. In some cases teachers stated explicitly the aspects of teaching and learning theories that underpinned their practice – experiential learning and learning styles theories being predominant. Teachers referred to the importance of actively engaging learners and the observations and interviews showed that experiential, activity-based learning was the norm. Although there was no direct reference by teachers to any particular theory of experiential learning. When referring to learning styles, teachers frequently mentioned that their learners were for example, 'visual learners' or 'kinaesthetic learners' and explained how they had planned their teaching to take account of these factors. However, conceptualisations of teaching models did not, in the data available for analysis, appear to inform their practice. Teachers appeared to draw pragmatically from a very wide range of strategies, based on experience of what worked for them with their learners, in their contexts. Sessions were generally complex with a very large number of different activities within sessions that could combine the use of a number of different strategies. Teachers did not generally articulate a relationship between the strategies they chose and 'teaching models'.

This presented us with a dilemma. Since there is evidence in the literature to suggest that learning could be enhanced by the consistent use of models (DfES, 2004b, Hattie, 2009 and Marzano, 1998), we needed to establish whether they could be applied to vocational learning. Given that teaching models are currently not prevalent or explicit in the vocational learning discourse, **our task in analysing the data was to see if we could infer what might be described as teaching models from the observed and described practice.** In analysing teaching models we have drawn on the DfES (2004b) guidance on teaching models and the taxonomy of models produced by Joyce et al (2008) as a framework for reference, as shown in the following table. More detailed descriptions of these models are provided in Appendix 7.

**Table 1 Teaching models compared**

Type of objectives	DfES categories	DfES teaching models	Joyce families	Joyce teaching models
Acquiring and learning skills & procedures	Acquiring and learning skills	<ul style="list-style-type: none"> <li>● Direct interactive teaching</li> <li>● Modelling</li> <li>● Demonstration</li> <li>● Mastery learning</li> <li>● Simulation</li> <li>● Coaching</li> </ul>	Behaviour & cybernetic	<ul style="list-style-type: none"> <li>● Social learning</li> <li>● Mastery learning</li> <li>● Programmed learning</li> <li>● Simulation</li> <li>● Direct teaching</li> <li>● Anxiety reduction</li> </ul>
Processing information Building concepts Operating and testing hypotheses Thinking creatively	Acquiring concepts	<ul style="list-style-type: none"> <li>● Inductive (classifying)</li> <li>● Enquiry</li> <li>● Concept attainment</li> <li>● Visualisation</li> <li>● Metaphor/analogy</li> <li>● Bridging</li> </ul>	Information processing	<ul style="list-style-type: none"> <li>● Inductive</li> <li>● Inquiry training</li> <li>● Cognitive growth</li> <li>● Advance organisers</li> <li>● Mnemonics</li> </ul>
Constructing knowledge Addressing misconceptions Solving problems Reasoning empathetically	Constructing knowledge	<ul style="list-style-type: none"> <li>● Constructivism</li> <li>● Group problem solving</li> <li>● Role play</li> <li>● Dialogic teaching</li> </ul>	Social	<ul style="list-style-type: none"> <li>● Group investigation</li> <li>● Social inquiry</li> <li>● Jurisprudential inquiry</li> <li>● Laboratory method</li> <li>● Role playing</li> <li>● Positive interdependence</li> <li>● Structured social inquiry</li> </ul>
			Personal	<ul style="list-style-type: none"> <li>● Nondirective teaching</li> <li>● Awareness training</li> <li>● Classroom meeting</li> <li>● Self-actualisation</li> <li>● Conceptual systems</li> </ul>

Although the models listed are indicative rather than comprehensive, what is immediately evident is that while there are commonalities between the two ways of thinking, they are by no means identical. For example, there is no equivalent of Joyce's personal family in the DfES categories.

In the sections below we provide information about each of the four categories of teaching models:

- acquiring skills/behaviour and the cybernetic family
- information processing
- constructing knowledge/social family
- personal family

The observations conducted through this research provided material for the explanations of teaching models that follow. This material was drawn from the data where we were able to recognise that some models (or aspects of models) were being used. In these cases, we were able to infer that models were used in practice although they did not seem to be used intentionally or systematically and in many cases, the phases of activity that define a model were not fully put into practice.

The examples (drawn from observations and interviews) are provided to illustrate how models are used in practice and are not necessarily examples of best practice or ideal models. For each example that follows we have provided an introduction describing the context for the session, the learning objective(s) and outcome(s) and the sequence of activity ('syntax') of the session, in terms of a series of phases. Most of the examples shown take only a small part of a lesson. In practice teachers used a very wide variety of strategies within a single lesson and it was difficult to discern a single teaching model that applied to a whole session.

### 3.2.1 Acquiring skills/ behaviour and cybernetic family of models

Joyce's behaviour and cybernetic family of models are related to the acquisition and development of skills. Direct interactive teaching, modelling, demonstration and coaching are teaching models that are particularly effective in helping learners to learn new skills and procedures and acquire knowledge (DfES 2004b).

Teaching models include:

DfES	Joyce <i>et al</i>
Direct interactive teaching	Social learning
Modelling	Mastery learning
Demonstration	Programmed learning
Mastery learning	Simulation
Simulation	Direct teaching
Coaching	Anxiety reduction

The critical point about behavioural models is that learners change what they do in response to feedback. Feedback was seen to be one of the most powerful factors evident in the effect-size research. Different techniques were evident for providing feedback and helping learners to master a particular skill or piece of information.

#### Direct teaching/programmed learning

From the example below it is possible to infer two teaching models: elements of the direct teaching model and the programmed learning model.

Direct teaching is particularly effective in enabling learners to acquire skills. It is a very structured approach involving a high level of interactivity which is teacher directed and involves direct communication usually with a whole class, although it might be undertaken with an individual or small group of learners. Direct teaching has the highest effect-size of any single teaching strategy, though this may be in part because 'Direct Instruction' is a 'Russian Doll' that includes many other strategies such as active learning, reviews, and homework, so there is an additive effect (Petty, 2009). This model usually involves direct input from the teacher together with a strategy of modelling or demonstration and clear instructions to the learners. The teacher then checks the learners' skills or understanding, provides guided practice and ultimately the learners undertake independent practice.

Programmed learning is a self-paced, self-administered programme (computer based in this case) presented in a logical sequence and with much repetition of concepts or skills.



The example below shows how the teacher builds up skills through demonstrations, practice, feedback, and coaching until the skills are mastered. (Demonstration is a strategy that was frequently used by teachers in analysis of observations and there is further information about it in the skills and strategies section, 3.3). The context is a computer aided design course that is structured to teach basic skills to a group and then enable individuals to work through a series of activities to master a basic range of skills. As the learners progress through the programme, there are exercises designed to enable them to work at their own pace. In this example, after initially taking a highly structured, information giving role, the teacher adopts a facilitating role with learners taking increasing responsibility for their learning.

The lesson's learning objective is to draw four different shapes using Computer Aided Design (CAD) – a square, a circle, a triangle that includes using angles and a five pointed star which is a more complex shape. In this session the teacher introduces the learners to the basic tools in CAD, the line and circle tools and the erase tools, by demonstrating them.

### Sequence of activities (syntax)

The lesson starts with the learners all at the same stage and the teacher employs direct teaching.

**Phase 1.** In the first session, the teacher logs on to the computer with the screen visible to the learners on the wall and the learners log on to their computers. The teacher draws the square first, as it's the easiest. The teacher clicks on the line tool and tells the learners to find and click on the line tool. The teacher draws a line of a given length, 45mm. As she demonstrates, she describes what she is doing.

**Phase 2.** The learners select the tool and draw the line of 45mm and then draw a square.

**Phase 3.** The teacher questions the learners and checks their progress, guiding them as required.

**Phase 4.** Once they are confident, learners practice by drawing squares of different sizes on their own.

The teacher demonstrates the tools necessary to draw a circle and the cycle of phases is repeated. The session proceeds step by step until all the tools and skills have been covered. When an individual learner is stuck, the teacher sits next to the learner, takes the mouse, demonstrates and describes what to do, then asks the learner to do exactly the same. If the learner makes a mistake, the teacher explains what is wrong and makes the learner repeat the task correctly. The learner practices until the skill is established and the teacher does not take the mouse again but might point to the main screen or question and prompt the learner if required.

At this point, the learners all start working through a programme with a series of basic drawings, practising new techniques each week and progressing through it at their own pace. The model here might be seen as programmed learning where the teacher's role becomes increasingly non-directive, guiding and facilitating as necessary.

Every student each week is told, 'Complete this drawing using your erase tool or your trim tool – to tidy up the edges you use your trim tool. Try to do layers by yourself rather than asking questions all the time.' Another student might be told, 'Well, last week you got loads and loads of help from me, this week can you do a little bit more independent work?' Each student has their own individual objectives and learners progress to more complex drawings once they have mastered the basic skills.

### Direct teaching using physical guidance

In a construction session, the teacher provides direct teaching with physical guidance to help learners acquire the learning objective of mastering the skill of welding.

In terms of context, the session takes place in a workshop. The teacher is also concerned with his relationship with the learner. He is very aware of the issues of personal contact and invading personal space so ensures that he has the learner's consent for physical contact. The teacher guides the learner and progressively removes his support, a process described as 'scaffolding' learning.

#### Sequence of activities (syntax)

The teacher had previously demonstrated welding.

**Phase 1.** The teacher asks the learner if he minds if he guides his hands; the learner agrees. (The teacher points out that if the learner had objected, he would not have done so.)

**Phase 2.** The teacher holds both of the learners hands as he starts to weld because the learner doesn't yet have the fine motor skills.

**Phase 3.** The teacher tells the learner that he is slowly going to take his hands away and he wants the learner to carry on. (He explains that if he had just removed his hands without warning, the learner's hands would have gone up).

**Phase 4.** The teacher removes his hands and the learner continues to weld unaided.

The teacher comments that it is a contentious technique but it is an effective way of teaching someone to weld. He points out that often they hold the torch too far away from the work. Teaching them the right distance is important as the learner needs to operate safely. 'If you tell them to go closer they might go too close and then the flame could dip into the pool and splash.'

### Direct teaching using demonstration

There are a number of ways of implementing the direct teaching model. The model used here is known as the 'PAR' model: **Present, Apply, Review**, which is a structured skills version that could be suitable for many vocational areas. There are three stages:

1. **Present** new material
2. **Apply** this new learning (learner activity)
3. **Review** the skills learned this lesson.

The teacher in this session uses the teaching model of direct teaching and the strategy of demonstration as the tool, in this case, to present new material and achieve the learning objective of acquiring the skill of technical drawing.

### Sequence of activities (syntax)

**Phase 1.** The teacher sketches a drawing on the white board. This is done in stages, to teach the learners how to do a technical drawing.

**Phase 2.** The learners copy the drawings stage by stage, as the teacher does them.

**Phase 3.** Once the learners have completed their drawings, the teacher talks about what they have copied, goes round to each learner and provides feedback, praising good drawings and indicating where they need to improve.

The teacher points out the importance of being able to draw so the customer can see exactly what you are intending to do...‘and this is why the tradesperson should be able to express themselves not only in the written word but in sketches.’

### Simulation

In this model the learners engage in activity to achieve the goal of the simulation. There is a worked example of this model in practice in section 4.2. In this example, as an alternative to simply providing information about why the aircraft safety demonstration is important, the teacher chooses a strategy that ensures that learners have direct experience through the simulation from which to learn.

#### 3.2.2 Acquiring concepts/information processing family

Cognitive teaching and learning models help learners to process information, develop and acquire concepts and rules, generate and test hypotheses and think creatively. These models are useful for learning objectives concerned with developing and acquiring concepts, reasoning, processing information and thinking creatively (DfES, 2004b). The teaching and learning models that are effective in meeting these types of learning objectives are often called ‘cognitive’, and are also referred to as ‘information processing’. Cognitive approaches are structured sequences and include models that require learners to think and reason in specific ways. By engaging in these sequences learners also develop their thinking and learning skills.

Teaching models include:

DfES	Joyce
Inductive (classifying)	Inductive (classifying)
Enquiry	Enquiry
Concept attainment	Concept attainment
Visualisation	Cognitive growth
Using metaphor	Advance organisers
Bridging	Mnemonics

## Enquiry

Elements of enquiry, researching and investigating topics were evident in the observations.

The use of the enquiry model helps learners to collect information, build concepts and test hypotheses. In this first example, the learning objective is for learners to identify and remember key statistics relating to health and safety in (the construction) industry. The learning objective is concerned with searching for specific information and remembering it.

This is an example of the 5-E model of enquiry. This model focuses on the five phases of engagement, exploration, explanation, elaboration, and evaluation.

### Sequence of activities (syntax)

**Phase 1.** The teacher welcomes the learners and outlines the learning objectives for the day. She provides five questions relating to health and safety statistics and directs the learners to the Health and Safety Executive website.

**Phase 2.** The learners search to find the answers and record their answers. While they are doing this, the teacher informs them that they will be asked to give a brief presentation of their findings.

**Phase 3.** The teacher asks for volunteers to present their findings.

**Phase 4.** Following the presentations there is class discussion facilitated by the teacher.

**Phase 5.** The evaluation phase is not completed in this session but there is a short quiz and recap in the next session in terms of what was hard and what easy, what they needed to be aware of.

The teacher knows from experience that by simply telling the learners the relevant statistics they would think it was ‘boring’ and would be unlikely to remember the information. Through the use of this model, the learners are actively engaged in researching the information and the impact is increased by them presenting their findings to the rest of the group, thus reinforcing the learning. (The teacher’s skill is used to ensure that over time all learners present their findings, not just the same ones who volunteer.)

This teacher, in a computing session, devises an activity that requires the learners to undertake enquiry. The learning objectives are to be able to understand and describe in detail the capacity and functionality of printing equipment, to understand how, in customer support, they can improve the use for the customer and teach the customer more about the equipment they already have. This example takes one part of a complex session, to demonstrate how the teacher undertook the first part of the objective. The model we infer to be in use for this part of the session might be described as enquiry (information processing family), with individuals undertaking their own investigations to find out the information required.

### Sequence of activities (syntax)

**Phase 1.** The teacher puts up a slide and asks them, on their own notepaper, to take down the basic specifications of the computer.

**Phase 2.** The learners investigate how to find these specifications and which are different on these machines from the ones they are used to. They make handwritten notes on what they find out. The teacher aids their exploration, partly on PowerPoint and partly by walking around and questioning the learners – ‘What does this mean?’ and ‘How do I tell what that is?’

**Phase 3.** The teacher provides a printout of a questionnaire, a hardware log, for the learners to go through and fill in all the information required about basic specifications, such as where they plugged in the computer.

**Phase 4.** The teacher uses a short clip from an Eddie Izzard comedy stage show about having trouble with a printer to introduce the activity of reporting back all the information the learners have found out about the printer. (This part of the learners’ enquiry had been conducted outside the lesson, as homework. The use of investigation outside of the learning setting is one of the factors identified as positive in the effect-size research.)

The session continues with learners reviewing and discussing their work in groups. For this later work the model might be seen as social enquiry, located within Joyce’s ‘social’ family of models.

### Developing higher-order skills

In some sessions it was clear that teachers were actively attempting to develop learners’ thinking and learning skills in addition to meeting the course requirements. The teachers indicated that they thought the development of higher-order skills was important for transition between qualification levels and also as 21st century employability skills.

In this computing class, the learning objective is concerned with developing the learners’ higher-order research and analytical skills. Although the task involves developing their knowledge about computer systems and developing concepts involving deductive reasoning and comparing systems, the teacher suggests that it is the development of the higher order skills that is important. These are the skills that the learners will need to be able to use in the workplace.

### Sequence of activities (syntax)

**Phase 1.** The teacher provides learners with information about user needs.

**Phase 2.** Learners have to carry out research on their own. They have to analyse systems, to compare systems, to identify what components could improve the system and the reasons why.

**Phase 3.** The learners report back and justify the suggestions they make for improving the systems.

The teacher indicates that through the activity the learners are developing research and analytical skills, the type of skills they will need in the workplace, without really realising they’re doing it. ‘They’ll be just asked to carry out the task but underpinning that, they’re looking at those higher order skills where they’re researching, they’re analysing computer systems, different computer specifications. They’re suggesting upgrades, they’re justifying the upgrades for it, they’re not just listing them, they’re justifying why that’s a justifiable upgrade to that particular system.’

### 3.2.3 Constructing knowledge/social family

The literature suggests that in vocational learning particular models predominate – in work-based learning, those derived from the theories of constructivism and situated learning in particular (Kerka, 1997, Rush *et al* 2010). The work context provides the ‘situation’ within which communities of workers operate together.

Almost without exception, theories of experiential, activity-based learning (derived from Kolb, 1984) including constructivist theories and situated learning, were prevalent in the observations. This is unsurprising, since they are firmly embedded in initial teacher training, professional development and the common inspection framework. The interviews with staff responsible for professional development confirm that experiential learning is central in vocational learning.

These teaching models require learners to collaborate and learn together, they help learners construct new knowledge and understand concepts. These models are particularly relevant for learning objectives related to constructing knowledge, addressing misconceptions, solving problems and reasoning empathetically (DfES 2004b). Teaching and learning models that are effective in meeting these types of learning objectives are often referred to as ‘social models’. The teacher’s role in this model is that of facilitator, identifying opportunities to create appropriate environments or contexts in which learners can think about a particular topic. The teacher requires learners to work collaboratively and to learn from each other.

In constructivist theory, learning is an active process where learners ‘construct’ new ideas or concepts built on their current knowledge and understanding.

Teaching models include:

DfES	Joyce
Constructivism	Group investigation
Group problem solving	Social enquiry
Role-play	Jurisprudential enquiry
Dialogic teaching	Laboratory method
Using metaphor	Role play
Bridging	Positive interdependence
	Structured social enquiry

Teachers in all vocational areas, within this research, used learning activities that actively engaged learners and encouraged them to work together.

There are four stages in constructing for learning:

1. a planning or preparation stage, identifying the current knowledge, skills and understanding that learners already have about a topic – what they already know
2. the teacher outlines the new concepts to be developed, exploring with learners what knowledge, skills and understanding they will need to develop
3. both teachers and learners identify how the new knowledge relates to what they already know and how it relates to their previous experience
4. learners’ new learning is assessed.



These following examples are what we have interpreted from observations and interviews, as elements within the ‘constructing knowledge/social family’ of teaching models.

### Constructivism, group investigation

Group investigation attempts to recreate a democratic atmosphere in the classroom where the learners work together to solve a problem. The contribution of each member of the group makes the outcome better than if it was done by individuals. Group investigation puts the learners in charge of the learning and allows them to investigate what interests them most. (Sharan and Sharan, 1989).

Group investigation goes beyond cooperative learning and follows the following six steps: learners are given a problem; they discuss ways to solve it; they plan how to carry out the investigation in a group and assign roles; they work together and independently; they analyse progress and report findings, and the process is evaluated (Abordo and Gaikwad, 2005).

The example below shows some of the elements of constructivist learning and group enquiry while not following the entire model. The learning objective is for learners to be able to identify the country, city or resort where world-wide tourist attractions are located. The teacher in a travel and tourism session helps learners to construct knowledge about the world wide tourist attractions and where in the world they are located. The teacher initially draws on learners’ current knowledge and experiences. She then introduces concepts of known and unfamiliar attractions and location and then arranges a series of tasks to enable learners to construct their knowledge of both attractions and location. By asking the learners to produce displays, the teacher could assess the learners’ new knowledge by seeing what they had found and through questioning them.

#### Sequence of activities (syntax)

**Phase 1.** To introduce the topic, the teacher provides the learners with a sheet giving an overview of world-wide tourist attractions. She then leads a discussion by picking out one of the destinations and asking who has been there. The discussion is split between European and worldwide attractions and includes famous attractions such as the Empire State Building with which learners are familiar, even if they have not been there.

**Phase 2.** The teacher shows a short video of an unfamiliar attraction - Christ the Redeemer in Rio de Janeiro and indicates where it is located.

**Phase 3.** The teacher gives the learners an A4 copy of the map of the world and lots of travel brochures and magazines. The task is to find pictures in the brochures of as many tourist attractions as possible, to indicate on the world map where these attractions are located and to make a display on a large sheet of paper. The learners look at the Atlas to identify the locations.

**Phase 4.** The learners have to research two interesting facts about each attraction to add to their displays. They also have a tourist attraction guide which they can use.

### Constructivism using debate

In this example, the teacher used a learning activity in the form of a debate to enable learners to develop their concepts and understanding of the differences between two different types of boilers. There was a subsidiary learning objective to this activity, developing the skills necessary for a debate. The functional skills of communication and listening were thus embedded in the activity.

#### Sequence of activities (syntax)

**Phase 1.** The teacher gives each group of learners specifications of different boilers together with the advantages of each.

**Phase 2.** Each group has to decide how to present the advantages of the boiler.

**Phase 3.** The teacher explains and writes up the rules for the debate: listening, not butting in, keeping eye contact etc.

**Phase 4.** Each group has 5 minutes to decide how to sell their product and the others then have to work out what the advantages and disadvantages of it might be.

**Phase 5.** The teacher chairs and opens the debate to the floor for questions.

The teacher then employs teaching skills to ensure that every learner contributes.

### Group investigation developing team working skills

For the leisure and tourism industry, the teacher explains that learners have to be team players and has devised an activity of delivering presentations on specialist topics to build the team work skills relevant to the industry. As the teacher said:

*There are very few job opportunities in our industry that are a solo role. It's very much about being part of a team and a lot of them are very embarrassed about doing that at first; standing up presenting, just talking to other people in general. So we do use it quite a lot to build their confidence up and get them to realise that even though those groups are very mixed, mixed age and culture for instance, they have to be able to communicate and work together as a team.*

The learning objective is to build learners' concepts of different types of specialist holidays. In a previous lesson they investigated boating holidays and in this session they are investigating skiing holidays.

**Sequence of activities (syntax)**

**Phase 1.** The teacher introduces the session by recapping on the previous week's session on boating and the different types of questions they need to ask customers to be able to meet their needs. The holiday type for the session – skiing – is introduced and that this type of holiday needs some very specialist type questions.

**Phase 2.** Through question and answer, the teacher introduces the market types and points out how varied and complex they are.

**Phase 3.** The teacher prepares to show a video and asks the learners to start thinking about what sort of questions they would need to ask the customer to be able to match them up with the types of holiday shown on the video.

**Phase 4.** In groups, the learners talk about the sort of questions they would need to ask the customer to be able to find the right holiday and they discuss, share and note down their ideas.

**Phase 5.** The teacher takes questions from each group in turn.

At a later stage, there is a further activity to consolidate and achieve the learning objective, the learning about the four different specialist types of holiday – that also requires the teaching model of group investigation.

**Phase 1.** The learners pick one of four different specialist types of holidays from a hat.

**Phase 2.** Working as a team they conduct background research on the holiday and prepare a presentation.

**Phase 3.** Each group gets up to do a presentation on their particular specialist area, working as a team and all taking a role.

The teacher points out that in this way they are working as a team. The groups work as a team right through to the end of this particular task.

**Cooperative learning using scenarios**

In cooperative learning, groups of learners work in small groups to maximise their own and each others' learning. Derived from the work of Slavin (1995), the elements in the cooperative learning teaching model are: clear and positive interdependence between learners, face-to-face interaction, individual accountability, an emphasis on interpersonal and small-group skills, and group review to improve effectiveness.

The teaching model in this example has elements of cooperative learning and the strategy employed is the use of a scenario. The learning objective of the session is to use the information provided in a scenario to produce a typical risk assessment. As part of the context for this session, the learners are employed and the activity requires them to draw on their experience to identify the hazards.

### Sequence of activities (syntax)

**Phase 1.** The teacher introduces the session and provides a scenario of a house being built in which there are many hazards.

**Phase 2.** In groups of three the learners complete the first two columns of a chart identifying what the hazards are, who might be harmed and how. They draw on their own knowledge and experience to do this.

**Phase 3.** Each group presents their findings in turn and they are all merged into a single composite document. By the end of the session, they have all contributed, each group providing something different or a new slant on things and the whole class has a detailed document.

The teacher's role in this model is to set up the scenario and environment, then to guide the learners, who then take responsibility for working together and for each others' learning.

In a further example, the teacher draws on the experience of all learners in the workplace. Not only does this increase motivation, by helping learners to see the relevance of what they are doing, it also helps learners to link new knowledge to what they already know.

### Sequence of activities (syntax)

**Phase 1.** The teacher provides the situation of a good company in which there hadn't been any recorded accidents in the last six months to a year.

**Phase 2.** In groups learners are asked to identify what else the company should be doing. The learners, who are all in work, are asked to consider the worst case scenario and to come up with suggestions from their experience.

**Phase 3.** The teacher takes feedback and introduces further questions which elicit a very wide ranging discussion and extends the topic to consider other areas, such as cost. The discussion demonstrates the extent of the learners' knowledge.

### Role play

Role play is a model that focuses on social interaction, improving social skills and developing a personal understanding of values and behaviour. Located in Joyce's social family, the role play model has its roots in both the social and personal dimensions of learning. The purpose of role playing is to assist learners to understand an issue from different points of view by acting it out, either taking different roles or observing. It allows learners to look at a situation through someone else's eyes, to take a different perspective and empathise. Role play offers an effective way of exploring feelings, attitudes, values and solving problems. It actively involves learners' and draws on their experiences.

There are nine stages in role play, as defined by Shaftel (1970): warming up the group, selecting participants, setting the stage, preparing observers, enacting the role play, discussing and evaluating, re-enacting, further discussion, and sharing experiences/ generalisation. Each of these stages has a specific purpose that contributes to the richness and focus of the learning activity. According to Joyce *et al* (2000), role playing provides an opportunity for 'acting out' conflicts, collecting information about social issues, learning to take on the roles of others, and improving learners' social skills. The teaching model of role play emphasises both intellectual and emotional aspects. The analysis and discussion following the role play are as important as the role playing itself.

The teaching model of role play could be found in all the occupational areas covered in this study, however, the model did not appear to be fully implemented in most cases.

The learning objective in this session is to find out about appraisal and the teacher uses the teaching model of role play.

### Sequence of activities (syntax)

**Phase 1.** The teacher uses Power-point slides to introduce the topic of appraisal and the benefits of appraisal followed by questions and answers.

**Phase 2.** The teacher pairs the learners and gives them a card with a scenario on carrying out an appraisal. The scenario requires one of the learners to be the employee and the other to be the employer. The teacher explains why the process is important and also the importance of writing things down formally. She defines what the roles are for the two people taking part in the role play and gives clear instructions about who should be asking the questions and that feedback they provide should be constructive. The teacher shows another Power-point slide with the rules for the appraisal – that it should be motivational, positive and so on.

**Phase 3.** All the learners carry out the role play in pairs.

**Phase 4.** The teacher gives out a handout of an appraisal role play checklist. There are two columns to it – one column involves questions for the employee and one for the employer. They include questions such as, ‘Did the manager praise achievements?’ ‘Did you feel motivated?’ ‘How?’

**Phase 5.** The teacher asks the learners about the role play, including how they felt about it.

**Phase 6.** The teacher recaps on the session.

### 3.2.4 Personal family

This family of models appears only in Joyce’s taxonomy. There is no specific reference to these types of teaching models in the DfES guidance.

Teaching models include:

#### Joyce

Nondirective teaching

Awareness training

Classroom meeting

Self actualisation

Conceptual systems

We found that teachers indicated that they wanted to get to know their learners as individuals – what made them tick and the personal circumstances that could impact on their learning. Teachers also frequently mentioned that they wanted to develop learners’ self-confidence and self-esteem. They often described, as outcomes of learning, the increase in learners’ self-confidence and self-esteem, yet we didn’t find any examples where the primary learning objective

was concerned with developing learners' self-awareness. In our 'Framework for Developing Effective Vocational Teaching and Learning', we have included this particular aspect within 'Teaching Relationships.'

### 3.2.5 Teaching models - comments

From the evidence available, we conclude that vocational teaching is underpinned by learning theories. The theories most frequently mentioned by teachers and what we could infer from the observations of practice, were experiential learning and learning styles theories. These theories inform vocational education teachers' practices although teachers also draw extensively on their own experience of teaching with their particular groups of learners and learning contexts. Teachers also appeared to base their decisions about how to teach on intuition, experience and pragmatism.

Teachers within this study made no reference to teaching models when they described how they made decisions on which to base their teaching. Our attempts to infer whether they were using teaching models in practice suggests that they use a very wide range of teaching strategies and, in some cases, what they do relates to some of the steps in some teaching models. We did not find any evidence of the intention to choose a teaching model based on the nature of the learning objective. Nor did we find that teachers used the particular sequences, episodes or phases of learning that characterise teaching models systematically or in full. We conclude that teaching models are not yet established in vocational learning in either the language or as concepts. Therefore, there is considerable scope for the development of future practice and guidance in which teaching models could play a part.

With regard to teaching models and vocational education, there remain some unknowns, for instance, which learning objectives, and as a consequence, which teaching models, are likely to be the most widely used by vocational teachers? Further research is required to provide robust evidence to establish these. This small scale study offers some indications and it is possible to see from the teaching strategies teachers currently use, that some teaching models might have more immediate appeal than others. Direct interactive teaching is widely used across different vocational areas, along with the strategy of demonstration (also described as a model in its own right by some theorists). In the section that follows we examine the teaching skills and strategies evident and this informs our final conclusions.

The sample size precludes generalisation about whether any particular approach is more applicable in some vocational areas than others. It seems likely that the context and nature of the learning objective may have a big role to play in this respect. For example, customer service aspects of vocational learning apply in most vocational areas and since these are essentially about social interaction and communication skills, they lend themselves to teaching models such as role play. Health and safety knowledge is essential for employees in all occupational sectors, and was included as an explicit or subsidiary objective in several sessions, yet no clear pattern emerged, beyond activity-based learning, as to how this was taught.

There is clearly potential for future development in this area since teachers do not appear to be aware of the use of teaching models in the planning of delivery or the delivery itself. We do not have any direct evidence that teaching models theory as a distinctive topic is included in Initial Teacher Training and/or Continuing Professional Development (CPD).

As Ji-Ping and Collis (1995) assert, it would not be enough for a teacher to know only one or two teaching models, because education has so many different types of approach and context. A thorough knowledge of a number of models could lead to greater teacher flexibility and efficiency. Understanding of several models could facilitate the ability to adapt those models or to combine them with others, and offer valuable approaches that enrich a teacher's repertoire. The study of teaching models is a very powerful way to explore educational issues related to teaching strategies, pedagogical and curricular design, instructional materials and learning sources, and even the design of learning environments.

In developing teaching models in the vocational context, we would need to compare teaching models to find the similarities and differences between the models. This could then serve as a guideline to teachers when selecting or adapting a teaching model or combination of models. The work of Ji-Ping and Collis (1995) offers suggestions for comparing models using a set of appropriate questions to answer against each teaching model. With adaptation, this could provide a useful basis for further work in vocational learning. There are four aspects: teacher aspects, learner aspects, the degree of flexibility or adaptability of the models and aspects related to effective theoretical and technological supports. The following are some specific questions for each aspect that can be used in a comparison of teaching models.

### **Teacher Aspects**

1. How easily can the model be managed by the average vocational teacher?
2. To what extent does the model save teaching time (including preparation time for the lesson)?
3. How likely is it that the model will be accepted and used by the average teacher?
4. To what extent does the model give full play to the teacher's professional knowledge or skill?

### **Learner Aspects**

1. How much initiative is given to learners within the model?
2. How adaptable is the model to individual differences in the learners?
3. How well can the model be adapted for learners of different ages?
4. How well can the model be adapted for different sorts of learning goals?

### **Flexibility and adaptability**

1. How easily can the model be adapted to the present organisational system in the vocational area and to the current standards for learner assessment?
2. Can the model be well adapted to a variety of vocational areas?
3. How easily can the model be combined with other models?
4. To what extent is the model adaptable to cultural expectations for learner and teacher behaviour?

### **Theoretical and Technological Supports**

1. Was the model developed using an appropriate theory?
2. How much research and evidence are available to show the model is internally valid?
3. In what ways might the model be well supported by technologies and media?
4. Are the technologies and media most suitable to the model readily available?



We conclude that this structure for analysis of models could offer a good starting point to begin to identify which teaching models are most appropriate for vocational education and to identify the relevant aspect of each of the teaching models.

We are aware that the use of teaching models is but one component in promoting effective teaching and learning. It may well be a necessary component. Future research will provide evidence to support or refute this assertion. However, a model in itself, as we have defined it, is not likely to be sufficient. This leads us on to consider the remaining components in our initial analysis.

### 3.3 Teaching skills and strategies

In offering guidance on teaching and learning, the Vocational Learning Support Programme states that:

*There are many models and theories to explain how learners learn. In practical terms there is evidence that there are significant differences in the way that learners approach their learning and that they can all benefit from experiencing different approaches. An inclusive learning environment is one where the teacher uses a **range of strategies** to enable all learners to succeed and fulfil their potential.*

(LSIS Excellence Gateway, 2011b)

In other places we have found what we have called ‘strategies’ described as approaches or methods. To avoid confusion, we have used the following definition of teaching skills and strategies.

**Teaching strategies** are the tools that teachers have at their disposal to engage learners and enable learning objectives to be met via effective teaching and learning and **teaching skills** are how they select and use these strategies. Teaching strategies are differentiated from teaching models by using our definition of a model as the sequence of steps or phases (the syntax) used to achieve particular types of learning outcomes. Refer to the introduction to section 3 and section 3.2 for further definitions and explanations.

We have divided our analysis of examples of skills and strategies observed in practice into the following three broad categories that follow the teaching and learning process. These are:

- planning and preparation
  - strategies for differentiation
- managing delivery
  - strategies of presentation and demonstration
  - strategies involving technology
  - strategies for group and individual learning
  - strategies for reinforcing learning
  - strategies for more effective learning
  - using multiple strategies
- assessment
  - strategies for assessing learning.

### 3.3.1 Planning and preparation

Duckett and Tartarkowski (2005) suggest that planning effective teaching and learning sessions should include the following processes: specifying the aims and objectives or outcomes for the session, how to review the previous session and explaining the links to the current and next sessions, identifying appropriate content, activities and strategies by which the learners will learn, identifying strategies by which learning will be assessed, selecting the resources, materials and media to support learning and considering how to summarise at the end of the session.

Differentiation is central in effective planning, ensuring that all learners can learn effectively and are sufficiently challenged. It is identified by LSIS as one of ten approaches to effective teaching and learning (for further detail of these ten approaches, refer to Appendix 2.)

This teacher summarises why planning is important for effective learning and what teachers need to consider in planning.

*We expect every single learner to be completely engaged and participating; they're enjoying their lessons, they're excited about it and that their learning is rigorously assessed. In very simple terms, that's what we want to see but for every learner to travel some distance in a lesson there needs to be very clear learning outcomes set for them. The teacher really needs to know very well where those learners are at and in order to really contextualise the learning, make it relevant and interesting for them, know what they're interested in, what their aspirations are, and develop aspirations in them. Where do they want to work in the future? What are their strengths, how do they prefer to learn? So all of that background information is really important in order to plan learning.*

### Strategies for differentiation

There is no single definition of differentiation, but all definitions are underpinned by a view of learners as individuals. Some approaches to differentiation suggest that differentiation needs to be considered at the planning stage of a session. While the learning objectives and standards should remain the same, time and support given to learners by the teacher should be varied according to individual learner need. There is also the aspect of differences in the way learners prefer to learn – visual, audio or kinaesthetic – to be taken into account when using differentiation in the learning process. Understanding the different learning needs of individual learners, their strengths and weaknesses and how they learn best is of paramount importance to enable effective differentiation. Examples of differentiation utilised during the visits include:

- advising and keeping learners on track by providing individual support, giving the weaker learners individual instruction and taking the stronger learners that bit further so they are not bored
- providing the right amount of 'stretch' for individual learners while also managing the group
- e-learning activity allows for wide differentiation, with for example, board games as an alternative approach for learners who haven't understood
- using group and paired work, with careful selection of those who work together to enable different pace of learning as well as styles, 'I wouldn't generally pair a weak learner with a strong one but there are occasions when this can work with the stronger learner being a mentor and also learning more themselves through explaining to others'

- selection of different resources to reflect the group and individuals within the group, taking account of the learner experiences
- using different forms of assessment to meet the needs of the learners, for example written, filmed or recorded.

This following example illustrates differentiation in an ICT class and seeks to include everyone in the activity at their appropriate level of ability. It describes how a teacher sets a task allowing learners to choose how they wish to complete it according to their different levels of ability.

*I put up on the whiteboard a little letter box that you see on a door and said that people could do a letter box with an envelope going into it or they can put a person putting the envelope through the letter box.*

*It is trying to diversify and encompass the different levels. So they will all achieve but you do not have the strong ones twiddling their thumbs basically. But you do not want the weaker end to feel completely alienated. You have to make sure they are all included in the lesson.*

*Using differentiation within tasks is an important way of enabling learners to succeed especially in a class with a wide range of abilities.*

### 3.3.2 Delivery of teaching and learning

This section includes examples of strategies used in the delivery of teaching and learning. They include:

- strategies for giving information – presentation and demonstration
- strategies involving technology
- strategies for group and individual learning – pairs, group, whole class and individual
- strategies for reinforcing learning – practice/repetition and questioning
- using multiple strategies.

#### Strategies for giving information

##### Presentation

Presentation encompasses giving information in a number of ways including:

- teacher explanation often at the start of a session - ‘this is what we are going to do, these are the objectives for the session’
- giving information/instruction and checking that learners understand by, for instance, use of questioning
- clearly presenting information at the start of a session and then linking to other teaching strategies – presentation followed by immediate activity
- guest speaker input – from the relevant vocational sector
- providing information through different sensory modes: visual, audio, kinaesthetic
- providing information through a variety of mediums – video, board, paper, work-book, actual demonstration, verbal explanation, questions and answers and practical activity
- short PowerPoint or other computer-based presentations for information, recapping on a previous session, setting exercises or structuring a session.

Some teachers use PowerPoint presentations as a convenient way of structuring their sessions and as an aide memoire to ensure that they cover everything. Slides cover the learning objectives for the session and instructions for tasks or activities and can be printed to give to learners during or after the session.

*I always use a PowerPoint, not necessarily to do everything from it but it helps me formulate the lesson. I also like the headings in PowerPoint because when students see them they know what they are doing.*

*I usually email the PowerPoint to them after the lesson, because I do not want them to take notes all the time, I want them to think. So, I tell them to make notes on things that are not written on the PowerPoint, anything they think is relevant.*

There were examples in the observed sessions where teachers had attempted to make the presentation of information more interesting and memorable.

*Auditory presentation: by using a song playing in the background, rapping the names of the bones of the human body during a medical secretaries learning session.*

### **Demonstration**

Demonstration has the added dimension of an explanation by example, a display of some sort, often accompanied by verbal explanation but not always. It is usually important to follow the demonstration with a related activity. Use can be made of a variety of technological aids.

Demonstration examples include:

- the physical demonstration of a skill such as holding and using a blow torch or how to decommission and reassemble a computer
- a means of showing how something is done and that the tools being used are adequate for the job
- demonstration of an activity, showing how to develop a planning process, for instance, with a sample of what the end result could be like
- using technology such as Moodle and/or Storyboard to show what is required as well as giving information to set the scene and use of Smart Board to demonstrate tasks such as putting a joint together in construction
- while showing the way to do something, ensuring that learners understand that there are different ways of doing things and that if the end result is successful then that is alright.

With demonstration, impact is an important factor – the following example described by a senior manager shows how a simple demonstration can really help the learning process.

*I remember one really good example of a teacher who was doing hygiene with a group of entry level students and trying to get across the idea of bugs and how you can spread disease. She was cutting a piece of chicken which she covered in little hundreds and thousands. As she cut the chicken, she moved around the room and as she went you could see the hundreds and thousands everywhere that she went. It was simple, but, to that group of students, suddenly the light came on about this concept of why you need to wash your hands and how easy it is to transfer bacteria from uncooked food to other places.*

Demonstration is a strategy for learning but as described in the previous section, it can also be a teaching model. When used as a teaching model, there would be a structured sequence of activities, related to the objective of acquiring a skill or information. Demonstration as a teaching model is located within the 'acquiring skills/behaviour and cybernetic' family of models.

### Strategies involving technology

**Educational technology** is the study and practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources.

Use of technology in the delivery of teaching and learning for any vocational area is increasing all the time. It is also one of the ten approaches described by LSIS as effective in promoting effective learning. Examples drawn from the visits include:

- interactive whiteboards
- computer(s) in each learning room for various uses
- use of web pages for storing and accessing learner work
- multi-media learning
- Moodle – Modular Object-Oriented Dynamic Learning Environment, providing and organised interface for e-learning, or learning over the internet
- e-learning through applied packages and on-line learning
- m-learning – learning on the move including use of mobile phones
- IT based packages for self-assessment
- computer generated quizzes and games
- internet research
- pod-casts
- mobile phone technology
- computerised tracking.

Learning organisations are changing at different rates. Some have utilised state of the art technology which has been useful in the engagement of learners and some are lagging behind. Funding is one issue here as well as culture change. The following examples illustrate these points.

*I use YouTube now which I wouldn't use before but there is so much out there now that it is great.*

*I would like to use virtual whiteboards more but that's down to funding a lot of the time. I'm in contact with another college and they use virtual whiteboards in the classroom. So when I was doing the demonstrations like that in the classroom, it could also reaffirm it or make it stronger by showing a demonstration, you know, with the whiteboard. So, for instance, any angles that someone can't see, they can say well, you know, with a virtual whiteboard you can actually move an item round in 360 degrees on the board.*

*But with the learning exchange, when that opens, it's just going to be absolutely amazing. We're getting i-Pads, laptops that students can use. We're going to have kiosks, open kiosks for students to access Facebook and social media as well, with limited time and limited areas, but recognising that that's how they communicate now but it is an educational institution at the end of the day and the learners are there for study. But as I say, that recognition of saying, 'We know you're going to use Facebook.' We have a Facebook site now as a college and that's been tough getting people on board with that because when we launched Facebook, initially it was banned in the college so nobody could access it!*

There are a number of examples of the power of using the Virtual Learning Environment, Moodle to provide interesting learning experiences as well as assessment and tracking. Learners are given the task of finding information from Moodle and carrying out tasks. Games and cross-words are generated from Moodle on particular content to provide stimulating ways of assessment for learning. Results can be monitored and individual learners can be tracked. This gives instant progress updates on individual learners for teacher use.

*Because the multimedia unit is more probably a hands-on unit rather than theory, we decided to try and get the students as involved from the start, as much as possible. We find, especially with the level 2 learners, that if they are practically engaged from the start, they learn a lot better. They tend to switch off if they're talked to a lot; if they are given a task that they can be sort of immersed in straight away, they tend to do a lot better.*

### Strategies for group and individual learning

Teachers use their skills in deciding how to manage the learning process. This section includes activity-based learning using the strategies of group work, pairs/peer work, whole group and individual work. Many of the strategies described could be used within teaching models that focus on group and cooperative learning and belong to the 'social' group of teaching models. Group work and cooperative learning can shift the responsibility for learning from teacher to learner.

#### Pairs

Working in pairs is a valuable way of promoting good learning experiences operating along with a set of other ways of learning. Pairings can be learner chosen, friend orientated, random or chosen by the teacher related to abilities – both similar and diverse.

In this first example the group have split into pairs themselves with friends working together.

*I usually let them choose themselves because they'll naturally fall into groups they're comfortable with. I've tried in the past splitting them into groups and found it hasn't worked as well.*



For a role playing session, the teacher picks the pairings having a good knowledge of the learners and enables effective pairings.

*Some of the pairings had to be adjusted. I've got to know that certain people work better together than others, purely because they're comfortable with each other. I wouldn't want to put, say, for example, Helen, who is one of the quieter girls with someone who is quite boisterous and flamboyant because that would've really intimidated her. Because it's quite hard for her, she's just starting to get involved with things and I didn't want to knock that by putting her with somebody who might have been a bit overpowering. It was gauged along the lines of people who would have similar interests or similar approaches. The two boys worked together because John is quite quiet and David's also a nice lad. John sometimes needs a bit of help with understanding things. He hasn't got a learning difficulty specifically but we know that there are issues in terms of his learning. I asked Barbara to work with Lisa because we had an odd number – but Barbara also helps Helen and John keep up with the learning, she's a support.*

Pairing can be used to promote the development of communication and social skills as well as group cohesion as in this example of a plumbing session.

*I think they're individuals when they start in little groups but at the end of it they normally talk with each other. What we normally do is we split them into different groups and sometimes if somebody's nervous you let them stay with a mate. But you'll change these groups so the first couple of times they'll do a job with a certain person and then move them round there so they get to know everybody.*

Sometimes pairing a more able learner with a less able learner can benefit both, as can pairing learners with complementary skills.

*For example if I had a high achieving student who was very good at a concept, I will specifically put them with a less able student to help them out.*

*In IT, at certain times that would become natural, it will take no input from me. People will do it as a second nature. Initially I will say, student X you go and work with student A and explain and collaborate and mentor that student through the process and explain what is happening. It also enhances the mentors' thinking skills as well, because they have to translate what they have done to another student. In week five for example that would have happened naturally. I wouldn't have to say, you have to sit with X, it would happen, it would evolve.*

Pairing can also be used to enable the development of other aspects of learning such as attention to appropriate detail in planning as in this next example.

*Everybody produces an individual plan and then I make them swap, so that they have to take someone else's plan forward. This really highlights the need for planning to be detailed and carefully thought out. Just indicating, that something should be blue in colour, would be insufficient - is it light blue? dark blue?....*

*This also links with industry by, 'replicating someone else following their plan in the workplace'.*



Peer explanation reinforces understanding of learning both for the recipient and the person explaining. It can really help some learners as a supplement to the teacher's information.

*If anybody's really stuck and they still don't understand what I'm trying to get across, a student who does understand can say it in their words rather than my big, technical words. I try to use technical words where needed, the correct terminology, but then sometimes I go too far.*

*I feel that if a student is able to tell their peer something and their peer understands it they're actually learning. They are learning something still and I might not have taught them it but I've actually taught somebody who it's clicked with and they can give an easier explanation. I think the one problem with us as teachers is that we sometimes forget how difficult it is to learn some things. Like CAD – I could be sat there with my mouse, one hand on the keyboard, staring at the screen. I could draw in one lesson what these students have taken six, seven, eight weeks to do because I've been doing it for years and you forget that you've got to slow right down, go back to basics and sometimes the going back to basics is the challenge.*

Peer help can also be as a role model in showing that something can be done – it provides motivation for others.

*To be honest, they'll listen to each other a lot more and if you get one of them who's pretty good and who works hard it tends to pull the others round. So they can be role models and bring the rest around.*

### Small group work

Splitting the whole group into smaller clusters can happen in many ways and is prevalent in vocational education. Apart from the curriculum learning aspects of group work there is also the valuable social interaction and motivation associated with working together. Group activities include:

- production of a presentation with each person playing a part
- putting together a piece of work such as a questionnaire or building something as a group
- discussion to formulate ideas, decisions or content for pieces of work
- groups competing against each other via quizzes, for instance, to promote learning during assessment
- carousel activity where learners move from table to table
- individuals coming together to complete a piece of work as a group
- group work on a project followed by individuals then taking their version forward
- at the end of a session, reinforced learning via questions and answers.

This example illustrates the use of group work to make sure that everyone has all the information they need and interest and concentration is maintained.

*I wanted them to give more input as a class. And one particular group left out quite a lot of important facts and I wanted others to chip in. I think if you do that (ask them to participate and add info beyond their own group), they are more on the ball and they have to listen because they know I will ask them later what they heard five minutes before. And I can tell when their attention is wandering.*

Role play in small groups can be a useful learning tool to reinforce learning as explained in the example below. (Role play can also be used in a larger group with some observing and some playing the parts.)

*Before the holidays we'd done a role play on motivation and that worked really, really well. I know that they've said to me before that they like to be doing activities and I thought if I could actually make it real then it would make more sense to them. As I say, they don't like to be just passively getting information so it was really a way of getting them involved and making it real for them. I could have just dished out a load of hand outs.*

### Whole group

Whole group activity can take many forms and includes:

- discussion on a particular topic facilitated by the teacher, perhaps following a presentation or demonstration
- debate carried out in formal debate mode or more informally
- games (such as the domino illustration below)
- whole group activity following individual, paired or small group activity to bring a topic/activity together, this might be individual research for instance followed by whole group debate
- activity where groups move around a space, for instance moving to different corners of the room to answer questions or vote on a particular topic.

Carrying out a whole group activity can have advantages and disadvantages, as illustrated in the following example. Since all learners are working at more or less the same pace it is easier to keep track of them and easier to control the group but then some of the group may be relying on others and it is harder to ensure that all have understood. The following example involves a game of dominos with each learner having one card carrying a word and a description of a different word. The idea is to link the dominos so that words and their descriptions are next to each other.

*This was a full group task which meant that they were all together. It helps to control the task a bit better because if they're doing things more individual it's harder to make sure that they're on track. It also means that if we're doing whole group activity we've got about two or three quieter students who would sit back and let the others do it all. With this task though they each had a card and nobody could duck out, they all had to do something and it meant that I could review the learning easier. It tends to happen that there are maybe fifteen in the group, nine or ten will be fine and they'll be into it. There's two or three that sit in the corner and you're not really sure whether they've took it in or not.*

*If someone was stuck on their particular card someone else would jump in and they've got the peer support as well.*

Peer observation can be used in a group activity where a small group are demonstrating and the rest are looking on. Not only does the peer observation activity increase the observer's learning it also serves to keep each person in the group actively participating as described in following session where a demonstration is being given for a cabin crew group.

*When we get back to the cabin because a few of them will be doing the safety demonstrations, a lot of them will be just sitting for little while, so I get them to peer observe instead of me, writing down all their observations. It just keeps them a little bit more interactive. Because of the level of the group they need to be doing something all the time, so we do give them peer observations as a method of keeping them busy.*

Another aspect of group work is being able to draw on learners' experiences to enrich the group learning process. In this example there is debate prompted by employee experience.

*Because some of these learners are working learners they are able to use their own 'employer where they work' knowledge and may say, 'Well we would do it this way' and somebody else would add, 'well, no, actually, we would do it this way'.*

The following session provides real motivation for learners and a look at how technologies are developing in the 'real' world.

*We have different ways of motivating learners by taking them places and at the end of each year, I always take my students to the Gadget Show Live in Birmingham so they all look forward to that. It's a chance for them as they're never going to go themselves. We took them down there last year in a coach, twenty three students and they loved it because they were exposed to real technologies rather than just seeing it on TV. They were actually using it and they could come away and say, "Oh yeah, I remember that from last year, we've seen that and this is how it works."*

### **Individual work**

Individuals carrying out learning on their own, is often a part of many other ways of learning. In group learning, part of it will be a learner writing, carrying out research or reading themselves. There might be individual work that is then swapped with another for paired work. Learners might complete an audit sheet, as they carry out an individual task such as installing software onto a computer.

Individual work can also replicate working in industry by carrying out a task alone. Learning carried out outside the classroom/workshop at home or in the library is often an individual task.

This example is a computer aided design (CAD) session where the learners work on their own to become familiar and expert at using CAD for drawing diagrams for construction. Although there would be some collaboration it is essentially a solo task.

*Every student each week has a target of what they've got to achieve by the end of that lesson which makes lesson planning complex. They work individually on a series of drawings in their assignment. The initial first four to six weeks is with input from me at the beginning of the lesson and then they progress. Once they get to a certain level of drawing they get started themselves and if they get stuck they ask a question. I'll go round to each one making sure they're okay, 'are they stuck, do they need any help?'*

Although links with employers can be a group activity it is also something that learners can complete on their own. This enriches the learning and provides experience of working outside the classroom as well as an insight into how the industry works. In this example an employer wants a web site designed and the teacher encourages the learner(s) to take the 'job' from start to finish including the initial contact.

*We get a lot of requests from employers who want websites designing or business documentation doing so I pass that to the students and what I will do is I'll ask the students to make contact with the employer rather than me do it for them. I'll ask them to do it so they're learning those skills, how it works and they meet with the employer and they get the user requirements themselves so it's not me doing it for them, saying, 'Here you are, design that website.' They're actually learning all those skills themselves so I think the more employer contact you get the better.*

### Strategies for reinforcing learning

#### Opportunities to practice/repetition

Practice and repetition help to ensure that the learning undertaken is remembered. Opportunities for this can be provided in different ways and include the examples below taken from the observations and interviews:

- repetition of practice with regard to usage every time learners use computers
- practice combined with questioning to memorise information about, for instance, 49 countries for a geography unit
- facilitating discussion to ensure that everyone understands what they are doing and how they can go back to an example to assist them if they get stuck
- learners writing about what they have achieved to show that they understand what they have learnt and the importance of being thorough when, for example, writing a plan and being able to follow instructions
- the teacher checking on each learner as they progress and each time there is a repetition task the learner should need less intervention
- referencing back to objectives to reinforce learning
- recapping sessions, at the end of lessons to see what knowledge has been retained
- weekly recapping to make sure of correct understanding, for example, through Moodle with creation of crossword questions, automatic marking and assessment grid to show individual progress.

#### Questioning

Effective questioning can be used to reinforce learning and includes a combination of low level and high-order questions for deeper learning and can be used to keep learners at work and to check their understanding (Redfield and Rousseau, 1981). Questioning examples drawn from the fieldwork visits include:

- use at the beginning of session and throughout to ascertain prior knowledge and links to advance organisers
- use to check understanding and identify who is not on task
- use to encourage evaluation by learners of their work and learning using appropriate questions

- questioning in a variety of circumstances, mainly open and not just superficial but going beyond the initial response to probe deeper
- use to check understanding by returning to a learner who may not have fully understood previously
- in response to questions asked the teacher does not supply the answer but challenges the learner to work it out, involving other learners to supply the answer if appropriate.

For questioning, it is helpful to involve all learners, not just the keen ones who want to answer the questions all the time. Sometimes no-one wants to have a go at the answer. One teacher solved these issues, by using learners to nominate someone to answer the next question, as shown in the next example.

Teacher: *'Jodie, nominate someone from the next table to do the knee cap'.*

Jodie: *'Emma'*

Teacher: *'come on Emma show me where is the knee cap?'*

Emma: *'can I put it on this side?'*

Teacher: *'yes on that side if you like. Hold it up Emma and before you go what is the medical term for the knee cap?'*

Emma: *'patella'*

Teacher: *'patella, well done, excellent. Emma, nominate someone from this table please'*

Emma: *'Michelle'*

Teacher: *'Michelle, here you are, do you know where your heel is?'*

Questioning can be used in an elimination strategy so that learners move towards the right answer, as in the example below.

*It's a traffic light and you have three coloured cards, red, amber and green. We are going to put up on the LED some questions and you have a choice of three answers (red – incorrect answer, amber-not sure, or green – correct answer), in your groups you are going to discuss collectively which one is the correct answer. Ok? Then I am going to ask you to hold up the card which will actually say which one you think is the right answer. It is a little like a voting system, we are looking at a process of elimination.*

### Strategies to develop learning skills

Assisting learners to become more effective learners, to 'learn how to learn', enables them to learn knowledge and skills more efficiently and is a valuable skill in itself for life. Active control over the thinking processes involved in learning is referred to as metacognition. Activities such as planning how to approach a given learning task, monitoring comprehension, and evaluating progress toward the completion of a task are metacognitive in nature. Because metacognition plays a critical role in successful learning it is important for both learners and teachers. Metacognition is often referred to as 'thinking about thinking' and can be used to help learners 'learn how to learn'. In some interviews teachers explicitly described their intention to develop higher order thinking skills.

If the culture of the organisation in which learning takes place systematically cultivates habits and attitudes that help learners to be confident of their own learning ability and to be creative, then learners are likely to learn faster, concentrate more, be resourceful, imaginative, collaborative and find learning more enjoyable. Activities that encourage effective learning and higher order thinking include:

- questioning that encourages the development of imagination
- evaluation activities
- research in preparation for an assignment, particularly with peers
- tasks in which learners need to reason and apply learning in a way that requires higher-order thinking
- considering new information and making sense of it
- investigative and experimental tasks
- role playing sessions – looking at it from another person's point of view
- simulations to give experience of work situations
- step by step approaches – building one step at a time cumulatively.

In order for learners to become more effective and develop higher-order thinking they need to be exposed to activities such as research and analysis as in the following example.

*They're given end user needs and they have to work on their own; carry out research, analyse systems, compare systems and they have to justify where they're suggesting improvements to the systems and explain what components could improve the system. So they're the type of skills they'll be using/gaining without really realising they're doing it. They'll be just asked to carry out the task but underpinning that, they're using those higher-order skills when they're researching, they're analysing computer systems and looking at different computer specifications. They're suggesting upgrades, they're justifying the upgrades for it, they're not just listing them, they're justifying why that's a justifiable upgrade for that particular system. Just thinking and pushing them that little bit further rather than just providing the bare evidence, can we make it really, really sound, they then understand the process behind it.*

### Using multiple strategies

In practice teachers define their learning objectives and utilise multiplicity of teaching and learning strategies in their sessions. This enables the objectives to be achieved, the best learning process to take place for each learner and to appeal to different sorts of learners. Delivery was also found to be tailored to the particular group. One teacher puts their view on the use of different strategies to help the learning process in the following example.



*I think we should be using as many different methods as possible. If you walk away at the end of the lesson and think, if I was a student in that lesson, how would I have assessed that, would I have enjoyed it? So I always look and think, if you vary it as much as you can, even if it's little snapshots of different methods, it'll keep them interested, they'll enjoy it. If they come in and just sit in front of a computer for a two hour session, to me, that's not ok.*

*It's trying to get the best activity, best fit and best match for the students. What works for one group of students may not necessarily work for another group and that's key, so it's not being repetitive, it's being adaptive.*

*It's knowing that your learners are exposed to a wide range of teaching methods rather than just doing the same thing week in, week out. I think if we do that, we just stagnate and the methods are not particularly stimulating. It's our duty to get them into the class and to do things a little bit more exciting, expose them to new technologies where we can, let them have experience of it.*

Another organisation was making efforts to increase the effectiveness of their teaching and learning and encourages the use of a variety of teaching and learning strategies.

*We want to make sure that the teaching and learning looks interesting - industry standard, state of the art teaching which encourages active learning. Assessment strategies are built into the lessons and so teachers have good knowledge of what it means to be checking learning but also using assessment for learning, and the mixture of formative and summative. I suppose really making it a seamless blend because if the teachers do not know where their students are up to, they cannot fill in the gaps, they don't know what they need to re-enforce. In practical areas, it is the link between the theory and the practical. The students come here from school and they want to get out of the classroom, so I think the really important thing for our teachers is that they constantly link theory to what is going on in a practical situation. So we have done a lot of work trying to make the theory lessons as exciting as the practical lessons.*

### 3.3.3 Assessing learning

Assessment can be either 'for' or 'of' learning and we found both types of assessment evident in the observations.

Assessment 'of' learning can take a number of forms and may depend on the curriculum design and/or delivery methods. It includes self-assessment, peer assessment and teacher assessment using questioning, paper based or computer generated tests, demonstration and using games. Assessment methods are not always under the control of the teacher as they might be specified by the awarding organisation.

Assessment 'for' learning is recognised as an effective way of assessing that also has a contribution to learning and is 'about assessing progress and analysing and feeding back the outcomes of that assessment positively and constructively to agree actions to help the learner improve and adapt teaching methods to meet the learner's identified needs.' (QIA 2008).



Ten principles of assessment for learning have been identified as: part of effective planning, focussing on how learners learn, central to classroom practice, a key professional skill, sensitive and constructive, fostering motivation, promoting understanding of goals and criteria, helping learners know how to improve, developing the capacity for self-assessment (and peer assessment), and recognising all educational achievement (DfES 2002). It is about the teacher and the learner working together to assess progress and contribute to effective learning.

In practice, teachers tend to use a variety of methods of assessment including:

- using assessment as a learning tool – assessment for learning
- self-assessment and teacher evaluation/feedback with assignments written on Moodle avoiding too much paperwork and automatically generating an achievement grid for learner/teacher assessment of progress and hence feedback
- self-assessment of understanding through the traffic lights method
- use of checklists to self-assess
- use of peer feedback to provide assessment
- use of workbooks
- mock tests
- making assessment and learning fun by the use of quizzes, crosswords and games
- allowing learners to choose their assessment format.

The following example shows effective use of assessment to reinforce learning, track progress and to do assessment for learning. Different modes of testing keep the learners interested as well as the use of incentives.

Many of the teachers do some form of ‘recap’ at the beginning of a session and some employ a ‘test’ for this.

*First of all we are going to be doing your recap test.*

Some teachers like to ensure that some of the assessments are individual and at the learner’s own speed.

*We do tests to see if they have the knowledge. Through questions and answers I might direct a question to a student but someone else will answer it, so I’ll never get a true answer from that individual. With smart response units we set up the test with questions aimed at their level. There are 60 questions in the units and students work at their own pace, there is no rush and they type the answer in to the computer, a, b or c. I get a sheet with their answers, showing who has passed what and the grade they got. When I have tutorials I pull that sheet out and I go through the questions they got wrong and the percentage they got. We do that on an on-going basis with at least 10 assessments per year. It is using direct questioning to re-enforce their learning. Some of them will ask questions to further re-enforce their learning.*

*I have developed theoretical questions with self-marking.*

Making assessment fun can help both the assessment and the learning process.

*It’s enjoyable.*

*They have to put definitions with words. I also use bingo games and ... I do blockbuster with them.*

*We also do group assessment just like a pub quiz. We have four in a group, they have questions to answer and they answer them as a team. They discuss what the right answers might be in their teams. They do not realise but with the quiz they are still learning. They think that the A team is beating the B team and that they are competing with each other but they are actually learning. Whichever team gets the most answers right, gets a prize.*

### 3.3.4 Teaching skills and strategies - comments

We found that teachers use a very wide range of strategies in their practice. The examples shown in this section illustrate a number of strategies and skills that were in evidence. This finding refutes the assertion that vocational teachers use only a limited number of strategies, at least in the examples in this study. There are clearly some overlaps between what we have described as strategies and skills and the other components of the Framework.

Based on the evidence available to us, teachers use a very wide repertoire of strategies skilfully in their teaching. However, while increasing the range of strategies available to teachers and developing their skills in using them is helpful, it is only likely to lead to more effective learning when considered in relation to the other components of the ‘Framework for the Development of Effective Vocational Teaching and Learning’. Knowing which strategies to deploy in which circumstances will be informed by knowledge about how each learner learns best, the nature of the learning objective, the appropriate teaching model to use and the context in which the learning takes place.

### 3.4 Teacher reflection

Effective teachers are reflective; they constantly review their practice, discuss it with their colleagues, consider their learners' responses and seek to develop new and better ways of teaching. The concept of reflective practice was introduced by Donald Schon (1983) and given currency by Kolb (1984) in his experiential learning theory. It involves thoughtfully considering your own experiences as you make the connection between knowledge and practice, under the guidance of an experienced professional within your discipline (Schon, 1996). Moon (1999) defined reflective practice as 'a set of abilities and skills, to indicate the taking of a critical stance, an orientation to problem solving or state of mind.' In essence, it is a readiness to constantly evaluate and review your practice in the light of new learning (which may arise from within the context of your professional practice). After its introduction, many colleges started to incorporate reflective practice into their education and professional development programmes. It was evident from practitioners in this study that reflection was an important and well established part of their professional practice.

In this section examples are provided of reflective practice in terms of responding to learner feedback, improving practice through personal reflection and sharing with colleagues to improve practice. Teachers used a number of different ways of developing their repertoire of skills. These included: learning from experience, observation of teaching and learning and support from colleagues.

#### 3.4.1 Reflective practice

There was considerable evidence from the observations and interviews that good teachers are always learning, building their own skills and teaching themselves. They undertake lots of research to inform their planning and delivery. They are self-critical, recognising when things do not go well, trying to understand why and formulating ideas about how to improve.

Teachers evaluate their practice and reflect on how they might improve aspects of their sessions. One commented that:

*[we are] reflecting on the way that we teach something so that we don't necessarily just teach it the way we were taught but think about how it might be improved.*

In the first of these two examples below, the teacher identifies how in future sessions she would change the way in which feedback was collected after a task. The second example also shows how the teacher, having reflected on how one part of the session has gone, suggests how she would improve it in future.

In a small group activity on risk assessment, learners had to work through a scenario and identify in two columns what the hazards were and who might be harmed and how.

*When asked to present their work, a couple of groups came up to the front and then they got all embarrassed and just sat at the tables and spoke from there. In the class it still worked fairly well because everybody ended up contributing information to each aspect of the task. What I could've done in hindsight is say one group does the first paragraph, one group does the second paragraph, one group does the third and one group does the fourth. That might have worked better but I'll try that next year, because it did take quite a while for them to go through everything.*

By the end of the feedback, the whole class had made a contribution and it was valuable because different groups had a different slant on things.

Everything was brought together at the end and the teacher considered that it had worked quite well.

In a cabin crew session on sales, the teacher wanted learners to be aware of the features and benefits of the products they were selling. She handed out products to the learners and asked them all to list the features and benefits.

*If I do it again, I was thinking about it as I was doing it, if I do it again I will secretly give them an object, ask them to list the features and benefits and ask the others in the class to guess what object it is, and see if they can guess it. That is because some of them listed the features and benefits but didn't put the most obvious things down. For example they didn't say that the perfume is in a glass bottle or the brand of it, and I am sure if you didn't put the products in the front of the class, the rest of the class wouldn't have a clue what they were describing.*

During the study of the observations and interviews it was evident that there was clearly awareness of the need to review practice in response to the differences between groups of learners. This example illustrates this.

*Because I've done this module for a number of years, each week I can look and say, 'Right, that's what we're going to do next week,' but every year, what I'll do is I'll revisit it. I'll look at it and think right, this year the group is different; the dynamics of the group are different so I'm going to change the emphasis slightly. I might bring things up to date; make it more current for the learners.*

### 3.4.2 Responding to learner feedback

The importance of learner feedback was evident from the interviews and below is an example of a teacher sharing practice with colleagues and collecting and using learner feedback.

*It is experience really and assistance from my colleagues. You need to exchange practices so you do not stagnate to the same routine. I also give feedback sheets to students. I want to see through their eyes because sometimes as teachers we think of how we want to learn or what we would like but that doesn't mean that this is what the students like. Some approaches might suit me but that doesn't mean that they suit them.*

Another teacher used learners' reactions during a session to gain instant feedback and to respond to it.

*It's reaction from students that is important. You can walk out of a class and think to yourself, that was brilliant but the students didn't think it was brilliant, so it's not brilliant. The students are your judge so if students are enjoying it and they're taking part, they're keen, they're answering questions, then you can say it's reasonably successful, you've achieved what you need to achieve. If they're not, then there's an issue and you've got to think of other ways.*

The teacher also reflected on the session from a learner's perspective, asking questions such as, 'If I was a learner in that lesson, how would I have assessed it? Would I have enjoyed it? Would I have been interested throughout?'

### 3.4.3 Improving practice through personal reflection

Teachers' personal reflections included observations about their own performance and their use of resources:

*I tend to talk too much, and I know that. It is one of my weaknesses. I need to be asking them more questions.*

*It would be good to have more visual aids and to have a whiteboard to use in the workshop.*

They also mentioned that through reading and research, they came across ideas to try, although they were aware that not everything would work.

*If it doesn't work, it doesn't work. In other areas it might work, so it's trying to get the best activity, the best fit, the best match for the students. What works for one group of students may not necessarily work for another group and that's key. It's not being repetitive, it's being adaptive. So it might be the same sort of process but you've adapted it to suit. I think it's just constantly trying to change and adapt and modify. I don't think you're going to ever get the perfect session because it can always be better. But you can strive towards getting that.*

### 3.4.4 Sharing with colleagues to improve practice

As well as personal reflection, sharing with colleagues was a consistent theme. This could be informal, simply sharing experiences in the staff room, or as structured, formal professional development activity. In this study, there was considerable evidence that staff were encouraged to talk about their teaching, to share good practice and to identify areas needing improvement, however, it was clear that even in outstanding organisations, not every member of staff would participate.

*There are key members of the team that will take this on board, definitely. There are people who are always interested and I'm interested in their techniques as well – taking it and trying it and adapting it. There are members of the team that won't share, it's traditional teaching or nothing but that's up to them. That's the style that if they're interested in that then that's fine but someone will say, "Okay, I like that idea, I'll take that and try this. Have you tried this technique?" There is a certain team element.*

In this example there is a well-established mechanism within the college and departments for sharing practice.

*There is a lot of shared practice around the college. They often have training days together and share practices. Teachers from different departments who are all delivering work skills units come together and share a much wider range of practice and look at the different ways to deliver the units.*

*They use a system within the department where they share their resources and practices. If staff have found any resources they think are particularly good and could be used in other areas, they put them on the 'staff share'. Then anybody can go in and pick up the resources if they thought they would be useful. This approach works quite well.*

### 3.4.5 Developing a repertoire of skills and strategies

Teachers identified a number of ways in which they had developed their skills and improved their practice. These are summarised in the table below.

**Table 2 Methods used to develop a repertoire of skills and strategies**

Examples of developing skills and improving practice	
<b>Learning from experience</b>	<p>their own experience of learning and their preferred methods – <i>I'm a visual learner, I hated taking notes</i></p> <hr/> <p>experience of delivering particular programmes and learning from experience which strategies are most effective</p> <hr/> <p>gained from working in different colleges</p> <hr/> <p>through trial and error</p>
<b>Observations of teaching and learning</b>	<p>peer observation</p> <hr/> <p>observation by quality manager</p> <hr/> <p>external and internal verification – <i>this provided the opportunity to observe others' practice</i></p>
<b>Support from colleagues</b>	<p>sharing with colleagues – from conversations and questions in staffrooms</p> <hr/> <p>through team teaching</p> <hr/> <p>mentoring – not just for initial teacher training but at Masters level</p> <hr/> <p>Subject Learning Coaches – who attended network meetings and brought back new activities and new ideas</p> <hr/> <p>Advanced Practitioners and Teaching and Learning Coaches to assist in the improvement of practice</p>
<b>Professional development</b>	<p>individual research - internet searching to identify new ideas to try</p> <hr/> <p>training and qualifications such as PGCE</p> <hr/> <p>conferences and workshops on teaching and learning and a 'marketplace' to share and disseminate ideas and best practice</p> <hr/> <p>action research projects</p>
<b>From learners</b>	<p>feedback from the learners themselves. <i>They always say they want different ways of doing things rather than a regimented way all the time.</i></p>

### 3.4.6 Learning from experience

Learning from experience was most frequently mentioned by teachers as the way in which they had developed and improved their practice. In one example, a teacher who had delivered sessions in health and safety for a number of years, had learned from experience. She found that the best way to deliver statistics was as a research task. This gained learners' interest and attention, and developed real understanding.

### 3.4.7 Observation of teaching and learning

The observation of teaching and learning has also been widely used as a means of improving practice. In this case, there is evidence that the observation process had led to an improvement in practice. One quality manager described the observation and feedback process used in preparing for an internal inspection:

*The week before the internal inspection, there was a series of learning talks where staff went and spent time with different teams. They looked at their practice and fed back to them at the end of the day what they thought was strong and what they could work on. So teachers had received feedback before there was a formal inspection of the provision. What they found really interesting was that some of the brickwork teachers had introduced the use of a flip camera into their classes. It was a very simple device but it really improved what they were doing because they were just capturing there and then the hand skills or different things. The teachers were able to reflect what they had seen back to learners in theory classes and make links within theory. It was a very useful tool to promote self-assessment and reflection and peer assessment as well.*

In this example, a process of peer observation was developed. A teacher described how it might work in practice:

*It might be that another teacher will say to me, 'I'm really struggling with my level 1 group of hairdressers', and I teach Construction at level 2, but I would say, why don't you come and watch because my group are really switched on, and there might be something that you can pick up from me.*

In this college, observations are organised around themes.

Particular themes such as: differentiation, questioning techniques, functional skills, using technology or how to end a lesson, were the focus of observations.

*Staff were then organised into peer groups of three to five, depending on the model that they were going to work on. They would all get together and just talk about teaching and learning - what had been good and what had not been so good during the term.*



### 3.4.8 Support from colleagues

Support was provided through both informal means such as casual conversations in the staff room and through structured mechanisms. Support from mentoring, Advanced Practitioners and Subject Learning Coaches were also recognised as important. Coaching was identified as one of the most effective and widely used means of delivering professional development.

*In one example a teacher described how the Advanced Practitioner in her organisation had attended a local network meeting and come back with ideas that were shared across the department.*

### 3.4.9 Developing learning organisations

There was considerable evidence that the organisations, within which the effective practice was observed, were ‘learning organisations’, where the culture was established across the organisation. In the example below, the learning to learn model was being used and the challenge was summarised by a manager.

*One of the challenges for us as an organisation is how to engage our teachers in effective practice, it's getting them to constantly work on and develop their practice and to take risks, to really engage in new ways of delivering and to try things out. It's often the more confident teachers that will be experimental with their practice because it takes a lot to try something different with a group of learners. The concept of resilience, which is part of the campaign for learning, learning to learn model, there's five Rs: readiness, resourcefulness, resilience, responsibility and reflectiveness and we've been playing around with those concepts in our teacher development ideas. The first thing's about getting the teacher to take responsibility for developing their practice and that in itself can be a challenge because they are accustomed to their own way of doing things, so it's moving them out of their comfort zones.*

### 3.4.10 Teacher reflection – comments

Teacher reflection is an important component of the framework for vocational teaching and learning and crucial for improving practice. There is evidence of reflective practice of varying kinds by teachers in vocational learning. Some reflection is individual with teachers considering what they have done in a session and how it might be improved. Other reflection is much more team based which might be informal (as in the staffroom where people chat in breaks) or it might be more organised as part of training days and continued professional development.

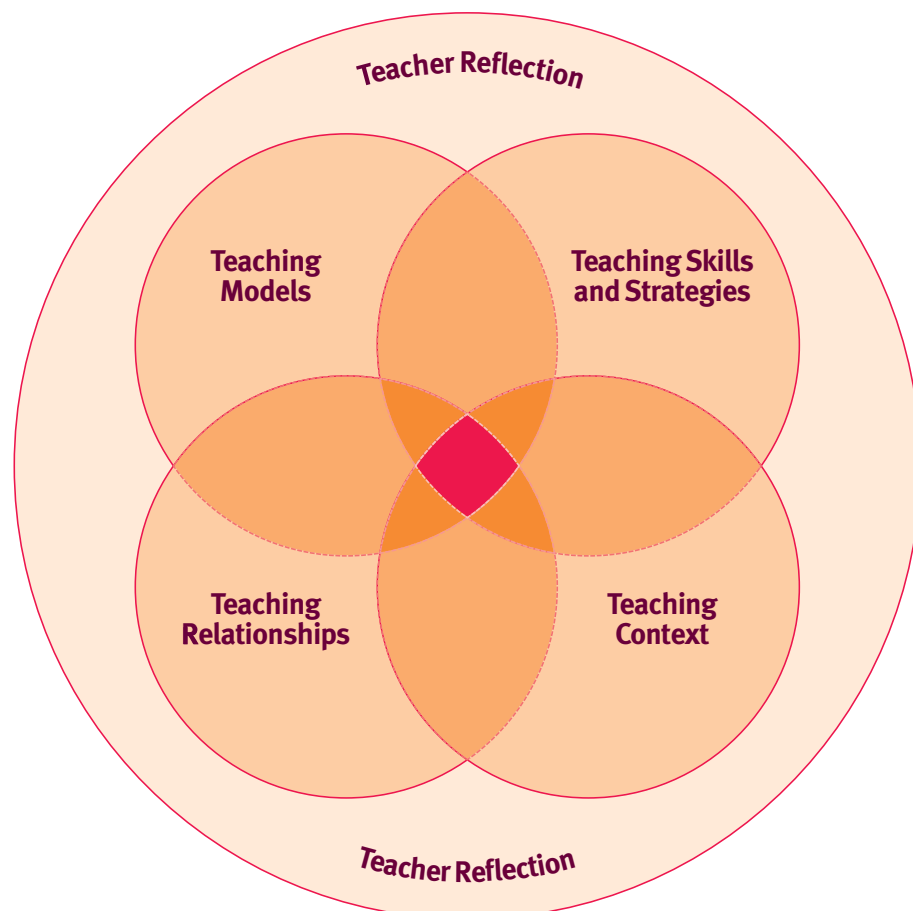
Reflection is an intrinsic part of the improvement process – self-assessment, evaluation including reflection and planning for improvement leading to action – within an organisation and individually. We conclude that although there is evidence of reflective practice in the sessions observed, it is likely that it is an area for improvement for vocational teachers, since Ofsted has identified that there is room to improve overall. It is also likely that reflective practice needs to be highlighted within vocational learning as an area for activity. Since ‘teacher reflection’ is a component of the ‘Framework for Developing Effective Vocational Teaching and Learning’, then this could be a vehicle for highlighting its importance.

## 4 Towards a Framework for Developing Effective Vocational Teaching and Learning

The sessions observed confirmed the findings of research in the literature review; teaching and learning is a highly complex process. Effective practice results from a complex interaction of factors and while we attempted to deconstruct the component parts, it was their interactivity, the ‘gestalt’, or whole that was important.

We found little evidence that vocational teaching and learning was fundamentally different from any other type of teaching and learning except in one respect – that of context. An office, a construction site or an aircraft are fundamentally different environments and much vocational learning takes place in simulated or actual work settings. The setting or learning environment and the facilities or resources within it, have a major impact on decisions about how the subject will be taught. This in turn affects the selection of teaching models and strategies that would be used. Given the importance of context, the Hopkins (2007) framework was developed to provide a new Framework which includes ‘context’ as a separate, specific component. The rationale and our definition of context are explained below.

**Figure 2 A Framework for Developing Effective Vocational Teaching and Learning**



The Framework contains five interrelated and overlapping components: teaching relationships, teaching models, teaching strategies and skills, teaching context and teacher reflection. All components must work in synergy to provide effective teaching and learning that meets the required learning objectives. All components of the Framework are equally important in achieving effective vocational teaching and learning and the central area where teaching models, teaching skills and strategies, teaching relationships and teaching context all overlap (the central diamond) is the point at which the teacher makes choices and decisions about a particular session. The area which represents teacher reflection surrounds all four of the other components since a teacher should reflect on all of these aspects when reflecting on their teaching planning and practice. This Framework could provide a clear basis for thinking about vocational teaching and learning as well as a vehicle for sharing and promoting effective practice.

### Teaching Context

Arising from our analysis, we have identified that context is such an important factor in vocational learning that it warrants separate consideration. It became clear that the vocational context is largely responsible for defining the nature of the learning that will take place. Consequently this new, fifth component emerged to add to the Framework.

In a further review of literature, we found references to context and its importance in vocational learning. In a recent publication, the Institute for learning (IfL) stated that brilliant teaching and training comes from the combination of a deep understanding of learning and the use of ‘learning to learn’ strategies applied within the context of a vocational subject and workplace setting (IfL, 2010). Kerka also commented on the importance of context on the effectiveness of learning, ‘other key features of knowledge construction are functional context, social context and usefulness. The process works most effectively when it is embedded in a context in which knowledge and skills will be used.’ (Kerka 1997). Other research findings support the value of contextualised learning that provides opportunities for knowledge acquisition and construction, practice and reinforcement, in ‘natural settings’ such as the workplace (Billett, 1993). The concept of situated learning, developed by Lave and Wenger (1991), that ‘knowledge is created and made meaningful by the context in which it is acquired’ (Farmer, Buckmaster, and Legrand Brandt, 1992), is clearly deeply embedded in work-based vocational learning and in teaching models derived from constructivism. Two basic principles underlie situated learning: firstly that knowledge needs to be presented in an authentic context, that is, in the setting where knowledge would usually be applied and secondly, that learning requires social interaction and collaboration.

We also consider that the context is a broader concept. In addition to the setting or location where the learning takes place, we include within the context: the learning objectives and desired outcomes for a session or part of a session; the nature of the learning such as the vocational subject area, and whether is it theoretical or practical; the level of the learning; the specification and requirements of the qualification or course; the nature of the learners, how they learn best including their learning styles for instance (see Appendix 8 for further details) or any particular difficulties they might have in learning; the composition and size of the group of learners and the learning environment including the resources and facilities available.

Thus, we can see that ‘teaching context’ is not a new concept within education and training although the addition of it to Hopkins’s (2007) ‘four ways of thinking’ namely teaching relationships, teaching models, teaching strategies/skills and teacher reflection, in order to ‘think’ about vocational learning, is new.

A teacher's choice of teaching strategy or teaching model to enable effective teaching and learning is affected by context in that, for example, it would be difficult to do 'role play' or whole class 'questioning' in a noisy workshop with confined space.

#### 4.1 Using the Framework for Developing Effective Vocational Teaching and Learning

To show how the use of this Framework might work in practice, we provide a worked example of a sequence taken from a session. The example starts from the perspective of the teaching model and demonstrates how the concepts at the heart of the Framework might be used to describe and analyse practice.

1. Teaching model – objectives and sequence of activities (syntax)
2. Teaching relationships – teacher and learner roles, relationships and responses
3. Context – including support systems
4. Teaching skills and strategies
5. Reflection.

The example is taken from the observations and interviews although the analysis is our interpretation of the session. It is provided for illustrative purposes only and does not claim to be comprehensive.

The Framework seeks to provide clear definitions of the components and a shared language for professional dialogue and sharing practice. Using the Framework, practitioners would be able to analyse and review their practice by considering each component and to identify areas for improvement and/or personal development.

#### 4.2 Analysis of travel and tourism session

**Learning objective** – to be able to perform the safety evacuation procedure and to understand why the demonstration of the procedure is important. The learning objective is concerned with **learning a skill**.

The teaching models that are effective in meeting this type of learning objective are: mastery learning; programmed learning; simulation and direct teaching. These models are within the **acquiring skills/behaviour and cybernetic family of models** described in the teaching models section. The types of models DfES (2004a) and Joyce *et al* (2008) identify as particularly effective for this type of learning are: direct interactive teaching; modelling; demonstration; reading and writing sequences; mastery learning and simulation.

This is an example of a **simulation** used in practice. The simulation is constructed from a description of a real-life situation. A nearly-real-life environment is created for the instruction. In this case, the rendition is quite elaborate (an aircraft simulator). The learner engages in activity to achieve the goal of the simulation (to perform the safety evacuation procedure), and has to deal with realistic factors in achieving the goal.

The table below presents an analysis and commentary on the five components from the Framework for developing effective vocational teaching and learning.

1. **Teaching model** – describes the sequence (phases) of activities designed to elicit a particular type of thinking or response, to achieve specific learning objectives and outcomes
2. **Teaching relationships** – teacher and learner roles, relationships and reactions
3. **Teaching context** – including support systems, facilities/resources, learners' individual needs, requirements of the learning programme/ qualification specifications
4. **Teaching skills and strategies** – (shown in the right hand column and relates to the teaching model phases). Teaching strategies' are the repertoire of 'tools for teaching and learning' that teachers have available to them and 'teaching skills' are the ways in which teachers select and use the 'tools' at their disposal to achieve effective learning
5. **Teacher reflection** – what the teacher might consider when reviewing and reflecting on how the session might be improved.

Sequence of activities (syntax) – the model in action	Teaching skills and strategies
<p><i>Before this session learners have had a session detailing the safety demonstration and giving the demonstration themselves.</i></p>	
<p><b>Phase 1</b> The learners enter the cabin and an audio recording is played of the plane's safety demonstration. The teacher then asks each learner to put on a blindfold and to follow the instructions.</p>	<p>The teacher sets clear learning objectives and articulates these at the beginning of the session.</p>
<p><b>Phase 2</b> There is an audio recording of a distressed conversation between the pilot and airport tower, mayday signal, the plane is going down.</p>	<p>Firstly, a strategy for providing information via an audio recording is used.</p>
<p><b>Phase 3</b> The teacher then tells the learners to get all their emergency equipment ready (they have previously seen this in the demonstration on how to put their life jackets on and to find everything). The recording then plays the countdown to crash landing.</p>	<p>A simulation model provides a strategy for more effective learning and this example shows how it is used as an alternative to simply providing information about why the aircraft safety demonstration is important. The teacher chooses simulation to ensure that learners have direct experience through the simulation, from which to learn.</p>
<p><b>Phase 4</b> At the end of the recording the teacher tells the learners to remove their blind folds and to stand if they have all their equipment on correctly.</p>	<p>Teaching skills used throughout the session include: behaviour management and orchestrating opportunities to work outside the formal setting.</p>
<p><b>Phase 5</b> They return to the classroom and the teacher explores with the learners how they felt (scared) and points out why they need to follow instruction, why the cabin crew do the demonstrations and should this happen while they are flying - they could be in complete darkness.</p>	<p>In Phase 4, the strategy used for more effective learning involves evaluation, feedback and corrective action. The strategy for reinforcing the learning used in Phase 5 is immediate exercise after presentation (or in this case, after simulation). The exploration of what has been 'learnt' is used to check understanding and clarify issues and the teacher uses her skills to guide and monitor throughout this phase.</p>
<p><b>Phase 6</b> The teacher facilitates through discussion how learners would do their demonstrations differently, having had the experience. They identify the importance of gaining the passengers' attention and checking that they are listening. Also the importance of checking that safety equipment is actually in the right place and not missing.</p>	<p>In Phases 5 and 6, the strategy to reinforce learning is by use of questioning and the learning is made more effective by use of evaluation, feedback and corrective learning. The teaching skill involved in questioning includes the use of a combination of low level and high level order questions for deeper learning. There is also the skill of making the questions relevant and appropriate for the learner group. Teaching skills for evaluative activity include management of the teacher and learner input to the evaluation resulting in an effective evaluation and feedback process.</p> <p>The impact of this model is increased when there is questioning and discussion that requires learners to reflect on how well they have acquired their new learning and what more they need to do to improve.</p>

Teacher and learner roles, relationships and reactions	Teaching skills and strategies
<p>Throughout the session the teacher is the organiser (high structure) and takes the lead. The learners are required to respond to the stimuli and learn through this experience. In Phases 5 and 6, through questioning and discussion, the teacher's role is that of group facilitator in encouraging learners to learn from each other (medium structure).</p> <p>The teacher adopts different responses to the learners in different parts of the session. In Phase 4, feedback was immediate with the teacher asking the learners to stand up if they had correctly carried out the procedure.</p> <p>In contrast, in phases 5 and 6, the teacher's questioning and discussion focuses on how learners felt and reinforces why their feelings are important. She then encourages learners' responses as to suggest how they might change their own practice in future.</p>	<p>The teachers skills are evident in the planning of the session and the selection of strategies used within it.</p> <p>Questioning is an important strategy that might be used for a variety of purposes, in this case to reinforce learning.</p>
Context including support systems	Teaching skills and strategies
<p>The availability of an appropriate environment with safety equipment and audio technology was a necessary condition for the session. The simulation was completely dependent on this environment.</p> <p>The nature of the learners including how they learned best, their learning styles and any learning difficulties.</p> <p>Although the learners are responding in the simulation, their learning is enhanced by the power of the experience and the emotion it generates. There is also an element of 'something different' from the norm which generates motivation and interest.</p>	<p>The skill of the teacher is important in orchestrating the session and eliciting, through questioning, learners' reflections on how they might improve their performance.</p>
Reflection	
<p>Following the session the teacher might reflect on how this particular simulation worked with this particular group of learners. It might be that the teacher would consider, for example, a further session where peer assessment of the demonstration cemented their learning and tracked improvements.</p>	



## 5 Conclusions

This section identifies our conclusions drawn from the full range of interviews and observations completed and the literature review which set the overall context and framework for the research.

There were many examples of **effective practice** in teaching and learning evident in the sessions observed. Although this study selected organisations known to have effective practice, and thus may not be entirely typical of vocational education as a whole, it is clear that exciting, engaging and effective teaching and learning exists. These findings provide some evidence to challenge the assertion that the repertoire and flexibility of vocational pedagogy is too narrow and that the methods used are too passive and uninspiring, at least, in a good proportion of the sessions observed. While there is evidence from inspection that the quality of teaching and learning in vocational education has improved, there is still scope for further improvement. There is also, clearly, potential to develop useful guidance based on the rich material gathered through the observations and interviews to support improvement.

Effective practice results from a complex interaction of factors. These factors include not only the teaching strategies and skills employed by teachers in planning and delivering sessions, but also the context, teachers' relationships with their learners and their continuous reflection to improve their practice. Teachers were genuinely concerned for their learners; they wanted them to do well. Their enthusiasm was evident and in some cases this enthusiasm had a positive impact on their learners. In providing guidance it would be necessary to stress the importance and inter-relatedness of all these factors.

There were **consistent patterns** evident in the sessions observed, that transcended different vocational areas i.e. 'good practice is good practice'. Teachers believed that in many cases, practice is directly transferable from one vocational area to another. Teachers indicated that they also varied their practice, for example, in response to the different levels of the programmes and ability of learners.

From the evidence available, we conclude that vocational teaching is underpinned by some learning theories. The theories most frequently mentioned by teachers and what we could infer from the observations of practice, were experiential learning and learning styles theories. These theories inform teachers' practices although they also draw extensively on their own experience of teaching with their particular groups of learners and learning contexts. Teachers also appeared to base their decisions about how to teach on intuition, experience and pragmatism.

Teachers within this study, made no reference to **teaching models** when they described how they made decisions on which to base their teaching. Our attempts to infer whether they were using teaching models in practice suggests that they use a very wide range of teaching strategies and in some cases, what they do relates to some of the steps in some teaching models. We did not find any evidence of the intention to choose a teaching model based on

the nature of the learning objective. Nor did we find that teachers used the particular sequences, episodes or phases of learning that characterise teaching models, systematically or in full. We conclude that teaching models are not yet established in vocational learning in either the language or as concepts.

Therefore, there is considerable scope for the development of future practice and guidance indicating which teaching models could be most appropriate to play a part in improving the delivery of vocational education. Teachers do not appear to be aware of the use of teaching models in the planning of delivery or the delivery itself. We do not have any direct evidence that teaching models theory as a distinctive topic is included in Initial Teacher Training and/or Continuing Professional Development (CPD).

We agree with Ji-Ping and Collis (1995) that a thorough knowledge of a number of teaching models could lead to greater teacher flexibility and efficiency. Understanding different models could help teachers to adapt to those teaching models or to combine them with others, and so enrich a teacher's repertoire. The study of teaching models could be a powerful way to explore issues in vocational education including teaching strategies, pedagogical and curricula design, instructional materials and learning sources, and even the design of learning environments.

At present there is insufficient evidence to suggest that particular teaching models might be more effective than others in a particular vocational context. However, we can infer from the observations that some types of learning objectives occur frequently, for example, objectives concerned with acquiring skills, and this might lead us to teaching models such as direct interactive teaching, demonstration, modelling and simulation. Group work and cooperative learning was also widely in evidence and this would lead us toward constructivist approaches such as group learning, social enquiry and role play. Some of these were also widely used strategies for teaching and learning. As we saw, what distinguished a teaching model from, for example, a teaching strategy, was the relationship between the type of learning objective and the particular tightly defined sequence of stages provided to achieve the objective within a teaching model.

Taking this further in vocational learning is where there is considerable potential for future development. We have offered a potential structure for developing, testing and comparing teaching models in the vocational learning context. These areas for comparison are: teacher aspects, learner aspects, flexibility and adaptability and theoretical and technological aspects and these were described fully in the teaching models section. We conclude that the **Framework for Developing Effective Vocational Teaching and Learning** offers a useful starting point for practitioners and teacher educators to begin to apply teaching models and to analyse their use in practice.

With regard to the other components in the Framework, it was possible to identify the common characteristics of the **teaching skills** employed by effective teachers, which were very similar. These related to: planning, differentiation, setting clear objectives, access to and appropriate selection from a wide variety of teaching and learning strategies, making good use of resources including ICT, managing the learning environment, providing feedback and reinforcing learning, continuously reviewing understanding and assessing progress. It was equally evident that teachers had access to a very wide range of **teaching strategies**, often developed over time, including ways of imparting information (e.g. presentation and demonstration, group and individual learning, reinforcement of learning, use of technology to enable and enhance learning, assessment and differentiation). It was evident that a range of strategies were used by teachers within sessions to enable the most effective learning to take place.

Teaching relationships were identified as crucially important in both the literature review and by teachers involved in this study. Effective teachers actively fostered **good relationships** with their learners; a good rapport was evident in sessions. They knew their learners as individuals and understood the differences between learners, whether in terms of level of learning programme, their lives and experience, the differences between young people and adults, learners' learning difficulties, disabilities or language differences, or differences in aspiration, motivation, confidence and lifestyle. Teachers recognised the impact that these factors could have on learning and took account of them. Good teachers sought to build self-confidence and self-esteem in their learners, and these factors were to be found in the personal family of teaching models. The full range of teacher and learner roles and responsibilities was also evident, from teacher directed, through guided learning, to cooperative learning and ultimately independent learning. Providing guidance to vocational teachers on these aspects of learning could enhance the effectiveness of their practice.

In the very best sessions, teachers had high aspirations and sought to stretch their learners, although this was not always evident in the observations. In these sessions, teachers actively and explicitly encouraged learners to develop deep understanding (Entwistle, 2000), not just 'how' to do something (mastery), but understanding 'why.' They planned to **develop a range of learners' skills** beyond just mastering a particular skill or acquiring information to meet a course or qualification specification. These skills included:

- higher-order learning and thinking skills – using techniques such as 'advance organisers' and learning to learn, which leads to learners becoming more independent in their learning
- social and interpersonal skills to communicate effectively, to respect and work with others
- employability skills such as punctuality and attendance.

These are consistent with the skills for the 21st century, as described in the literature review. However, perhaps surprisingly, functional skills were not often mentioned as skills that vocational teachers explicitly sought to promote. Sometimes they were delivering aspects of functional skills but perhaps not recognising them as such. This suggests that guidance might have an important role in addressing this omission, by indicating how functional skills have been or could be embedded in vocational teaching and learning.

Effective teachers were **reflective**; they constantly reviewed their practice, discussed it with their colleagues and sought to develop new and better ways of teaching. The provision of guidance on practical and effective teaching and learning models has the potential to provide a framework to structure their reflection and to enhance individuals' professional development, to develop communities of practice and organisational cultures that promote learning.

In summary, we conclude that:

- while there is evidence of very good practice within vocational education, it is clearly not universal, as evidenced from inspection, so there is a considerable scope for identifying, disseminating and sharing good practice and for further development as a means of improvement
- the whole concept of teaching models in vocational learning could provide a powerful new element in the vocational teachers repertoire. We believe there is a need for substantial further research to be undertaken to further develop teaching models. Teaching models need to be developed further and tested in the vocational context. The Framework we have developed for Developing Effective Vocational Teaching and Learning, as well as the teaching model comparison framework, could provide mechanisms for taking this forward

- there is also scope for using the Framework for the Developing Effective Vocational Teaching and Learning to provide a structure within which to offer guidance - initial guidance should use this Framework to illustrate the inter-relationship between the five components of teaching relationships, teaching models, teaching strategies and skills, teaching context, and teacher reflection
- the implications of the outcomes of this research could potentially be wide ranging. There could be an impact on initial teacher training for vocational teachers and their continuing professional development. This in turn could have consequences for teaching qualification specifications and course design and delivery.

## 6 Bibliography

- Abordo I. and Gaikwad S. (2005). 'Group Investigation: How Does It Work?' in *InFo*. Vol. 8, Nos. 1 & 2, pp. 79-98. [http://internationalforum.aiias.edu/images/volo8noo1/iabordo\\_sgaikwad.pdf](http://internationalforum.aiias.edu/images/volo8noo1/iabordo_sgaikwad.pdf)
- Allen F. and Davies B. (2009). 'Vocational Options: The Impact of a Vocational Context on Teaching and Learning Modern Foreign Languages at Key Stage 4', *Language Learning Journal*. Vol. 37, Iss. 1, pp. 51-70.
- Armstrong E. (1991). 'A Hybrid Model of Problem-based Learning,' in Boud D. and Feletti G. (eds.). *The Challenge of Problem-based Learning*. London, Kogan Page, pp.137-149.
- Ballantine J. and McCourt Larres P. (2007). 'Cooperative Learning: A Pedagogy to Improve Students' Generic Skills?', *Education and Training*. Vol. 49, Iss. 2, pp.126-137.
- Barber M. and Mourshed M. (2008). *How the World's Best Performing School Systems Come out on Top*. [http://www.mckinsey.com/App\\_Media/Reports/SSO/Worlds\\_School\\_Systems\\_Final.pdf](http://www.mckinsey.com/App_Media/Reports/SSO/Worlds_School_Systems_Final.pdf)
- Barnes R. W., Lang N. P. and Whiteside M. F. (1988). *Haistedian Technique Revisited: Innovations in Teaching Surgical Skills*. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1357775/pdf/annsurgo0173-0124.pdf>
- Barr R. D. and Tagg J. (1995). 'From Teaching to Learning – A New Paradigm for Undergraduate Education', *Change: The Magazine of Higher Education*. Vol. 27 Iss. 3, pp.13-25.
- Berk R. A. and Trieber R. H. (2009). 'Whose classroom is it anyway? Improvisation as a teaching tool', *Journal on Excellence on College Teaching*. Vol. 20 Iss. 3, pp. 29-60.
- Billett S. (2003). 'Vocational Curriculum and Pedagogy: An Activity Theory Perspective', *European Educational Research Journal*. Vol. 2 No. 1, pp. 6-21.
- Billett S. (1993). 'What's in a Setting? Learning in the Workplace', *Australian Journal of Adult and Community Education*. No. 1 (April 1993) pp 4-14. (EJ 464 971).
- Brockmann M. (2007). *Qualifications, Learning Outcomes and Competencies: A Review of European Divergences in Vocational Education and Training (VET)*. Draft Working Paper. <http://www.kcl.ac.uk/content/1/c6/01/57/15/literaturereview.pdf>
- Brookfield S. (forthcoming). 'Adult Cognition as a Dimension of Lifelong Learning', to be published in Field J. and Leicester M. (eds.). *Lifelong Learning: Education Across the Lifespan*. Philadelphia: Falmer Press.
- Brophy J. and Good T. (1986). 'Teacher Behaviour and Student Achievement' in M. Wittrock (ed.). *Handbook of Research on Teaching* (3rd edn.). New York: Macmillan.

- Brown H. and Ciuffetelli D.C. (eds.) (2009). *Foundational Methods: Understanding Teaching and Learning*. Toronto: Pearson Education.
- Bruner J., Goodnow J. and Austin G. A. (1967). *A Study of Thinking*. New York: Science Editions.
- Business and Enterprise Committee (2009). *Risk and Reward: Sustaining a Higher Value-Added Economy*. <http://www.publications.parliament.uk/pa/cm200809/cmselect/cmberr/746/74607.htm>
- Campbell Collaboration Systematic Review Group (2003). *A Pilot Systematic Review and Meta-analysis on the Effectiveness of Problem Based Learning*. [http://www.medev.ac.uk/static/uploads/resources/pbl\\_report.pdf](http://www.medev.ac.uk/static/uploads/resources/pbl_report.pdf)
- Carin A. A., Bass J. E. and Contant T. L. (2005). *Methods for Teaching Science as Inquiry*. (9th edn.). Upper Saddle River, NJ: Pearson Prentice Hall.
- Carney R. N. and Levin J. R. (2000). 'Mnemonic Teaching and Learning with a Focus on Transfer', *Journal of Educational Psychology*. Vol. 92, Iss. 4, pp. 783–790.
- Chappell C. (2004). *Contemporary Vocational Learning – Changing Pedagogy*, Australian Vocational Education and Training Research Association Conference: 7th, 2004, Canberra. [http://www.avetra.org.au/Conference\\_Archives/2004/documents/PA013Chappell.pdf](http://www.avetra.org.au/Conference_Archives/2004/documents/PA013Chappell.pdf)
- Chappell C., Solomon N., Tennant M. and Yates L. (2002). *Researching the Pedagogies of the New Vocationalism*. Sydney: University of Technology Sydney (UTS).
- Claxton G., Lucas B. and Webster R. (2010). *Bodies of Knowledge: How the Learning Sciences could Transform Practical and Vocational Education*. <http://www.edge.co.uk/media/uploads/Downloadable/730664ba-8861-4dae-b076-346f70a462ff.pdf>
- Coe R. (2002). *It's the Effect-size, Stupid: What Effect-Size is and Why it is Important*. Paper presented at the Annual Conference of the British Educational Research Association, University of Exeter, England, 12–14 September 2002. <http://www.leeds.ac.uk/educol/documents/00002182.htm>
- Coffield F., Moseley D., Hall E. and Ecclestone K. (2004). *Learning Styles and Pedagogy in Post-16 Learning: A Systematic and Critical Review*. London: Learning and Skills Research Centre.
- Cohen J. (1969). *Statistical Power Analysis for the Behavioral Sciences*. New York: Academic Press.
- Colley H., James D., Tedder M. and Diment K. (2003). 'Learning as Becoming in Vocational Education and Training: Class, Gender and the Role of Vocational Habitus', *Journal of Vocational Education and Training*. Vol. 55, Part 4, pp. 471–498.
- Colley H., Wahlberg M. and Gleeson D. (2005). *Improving Teaching and Learning in Further Education: Towards a Genealogy*. British Educational Research Association Annual Conference, University of Glamorgan, 15–17 September 2005. <http://www.e-space.mmu.ac.uk/e-space/bitstream/2173/14163/2/Genealogy%20of%20improving%20T&L%20in%20FE,%20BERA.pdf>
- Cordingley P. and Bell M. (CUREE) (2007). *Transferring Learning and Taking Innovation to Scale*. London: Innovation Unit.
- Cornelius-White J. (2007). *Learner-Centred Teacher Student Relationships are Effective: a Meta-Analysis*.
- Creemers B. P. M. (1994). *The Effective Classroom*. London: Cassell.



- Cullen J., Hadjivassiliou K., Hamilton E., Kelleher J., Sommerlad E. and Stern, E. (2002). *Review of Current Pedagogical Research and Practice in the Fields of Post-Compulsory Education and Lifelong Learning*. [www.tlrp.org/pub/acadpub/Tavistockreport.pdf](http://www.tlrp.org/pub/acadpub/Tavistockreport.pdf)
- Darwin S. (2007). 'The Changing Contexts of Vocational Education: Implications for Institutional Vocational Learning', *International Journal of Training Research*. Vol. 5, No. 1, pp. 55–71.
- Dewey J. (1897). *My Pedagogic Creed*.
- Dewey J. (1902). *The Child and the Curriculum*.
- DfE (2011). *Wolf Review of Vocational Education Government Response*. <https://www.education.gov.uk/publications/standard/publicationDetail/Page1/DFE-00038-2011>
- DfE (2010). *Participation in Education and Training of 16–18 year olds by Highest Qualification Aim and Institution Type, and Work-based Learning, England, 1985 Onwards*. <http://www.education.gov.uk/rsgateway/DB/SFR/s000938/sfr18-2010ratesv2.xls>
- DfES (2006). *Further Education: Raising Skills, Improving Life Chances White Paper*. <http://www.official-documents.gov.uk/document/cm67/6768/6768.pdf>
- DfES (2004a). *Pedagogy and Practice: Teaching and Learning in Secondary Schools Unit 1: Structuring Learning*. [http://webarchive.nationalarchives.gov.uk/20100612050234/http://nationalstrategies.standards.dcsf.gov.uk/node/95764?uc=force\\_uj](http://webarchive.nationalarchives.gov.uk/20100612050234/http://nationalstrategies.standards.dcsf.gov.uk/node/95764?uc=force_uj) (accessed 23.07.11)
- DfES (2004b). *Pedagogy and Practice: Teaching and Learning in Secondary Schools Unit 2: Teaching Models*. [http://webarchive.nationalarchives.gov.uk/20100612050234/http://nationalstrategies.standards.dcsf.gov.uk/node/95448?uc=force\\_uj](http://webarchive.nationalarchives.gov.uk/20100612050234/http://nationalstrategies.standards.dcsf.gov.uk/node/95448?uc=force_uj) (accessed 23.07.11)
- DfES (2002). *Assessment for Learning: 10 Principles*. National Strategies Assessment Reform Group.
- Dochy F., Segers M., Bossche P.V. and Gijbels D. (2003). 'Effects of Problem-based Learning: A Meta Analysis', *Learning and Instruction*. Vol. 13, pp. 533–568. <http://www.sciencedirect.com/science/article/pii/S0959475202000257>
- Duckett I. and Moore S. (2005). *Just like Real Work: A Work-related Curriculum for 16–19 Year Olds. Vocational Learning Support Programme 16–19*. London: Learning and Skills Development Agency.
- Duckett I. and Tatarkowski M. (2005). *Practical Strategies for Learning and Teaching on Vocational Programmes. Vocational Learning Support Programme 16–19*. London: Learning and Skills Development Agency.
- Educational International (2009). *Literature Review: Vocational Education and Training*. [http://download.ei-ie.org/Docs/WebDepot/091213\\_VET\\_Literature\\_EDITED%20AA.pdf](http://download.ei-ie.org/Docs/WebDepot/091213_VET_Literature_EDITED%20AA.pdf)
- Entwistle N. (2000). *Promoting Deep Learning Through Teaching and Assessment: Conceptual Frameworks and Educational Contexts*. Paper presented at the TLRP Conference, Leicester, November 2000. <http://www.etl.tla.ed.ac.uk/docs/entwistle2000.pdf>
- Evans K., Hodkinson P., Rainbird H., Unwin L., Fuller A., Hodkinson H., Kersh N., Munro A. and Senker P. (2006). *Improving Workplace Learning*. London: Routledge.
- Evans K., Hodkinson P. and Unwin L. (2002). *Working to Learn: Transforming Learning in the Workplace*. London: Kogan Page.



- Farmer J., Buckmaster A. and Legrand Brandt. (1992). 'Cognitive Apprenticeship.' *New Direction in Adult and Continuing Education*. No. 55 (Fall 1992) pp. 41–49. (EJ 456 732).
- Field J. (2009). *Well-being and Happiness. IFLL Thematic Paper 4*. Leicester: National Institute of Adult Continuing Education (NIACE).
- Field S., Hoeckel K., Kis V. and Małgorzata K. (2009). *Learning for Jobs: OECD Reviews of Vocational Education and Training Initial Report*. [www.oecd.org/dataoecd/36/24/43926141.pdf](http://www.oecd.org/dataoecd/36/24/43926141.pdf)
- Feltz D. L. and Landers D. M. (1983). *The Effects of Mental Practice on Motor Skill Learning and Performance: A Meta-analysis*. [http://books.google.co.uk/books?hl=en&lr=&id=IE6IMsD-FhwC&oi=fnd&pg=PA219&dq=teaching+motor+skills+effect+size&ots=dreKTjtPTf&sig=2eHSU2l88q80xtzC8ae\\_Luh7MQ4#v=onepage&q=teaching%20motor%20skills%20effect%20size&f=false](http://books.google.co.uk/books?hl=en&lr=&id=IE6IMsD-FhwC&oi=fnd&pg=PA219&dq=teaching+motor+skills+effect+size&ots=dreKTjtPTf&sig=2eHSU2l88q80xtzC8ae_Luh7MQ4#v=onepage&q=teaching%20motor%20skills%20effect%20size&f=false)
- Fisher D. (2008). *Effective Use of the Gradual Release of Responsibility Model*. Macmillan McGraw-Hill.
- Foster A. (2005). *Realising the Potential. Review of the Future Role of Further Education Colleges*. Nottinghamshire: DfES.
- Fleming N.D. (2001). *Teaching and Learning Styles: VARK Strategies*. Honolulu Community College.
- Flowers J. and Abu R. (1997). 'The Effects of Cooperative Learning Methods on Achievement, Retention, and Attitudes on Home Economics Students in North Carolina', *The Journal of Vocational Education and Training*. Vol. 13, Iss. 2. <http://scholar.lib.vt.edu/ejournals/JVTE/v13n2/Abu.html>
- Fuller A. and Unwin L. (2003). 'Learning as Apprentices in the Contemporary UK Workplace: Creating and Managing Expansive and Restrictive Participation', *Journal of Education and Work*. Vol. 16, Part 4, pp. 407–426.
- Fuller A. and Unwin L. (1998). 'Reconceptualising Apprenticeship: Exploring the Relationship between Work and Learning', *Journal of Vocational Education and Training*. Vol. 50, No. 2, pp.153–172.
- Ginns P. (2005). 'Imagining Instructions: Mental Practice in Highly Cognitive Domains', *Australian Journal of Education*. [http://findarticles.com/p/articles/mi\\_hb6475/is\\_2\\_49/ai\\_n29206620/pg\\_2/?tag=content;col1](http://findarticles.com/p/articles/mi_hb6475/is_2_49/ai_n29206620/pg_2/?tag=content;col1)
- Glass G.V., McGaw B. and Smith M.L. (1981). *Meta-Analysis in Social Research*. London: Sage.
- Grollmann P. and Rauner F. (2007). *International Perspectives on Lecturers and Lecturers in Technical and Vocational Education*. Dordrecht: Springer.
- Guthrie H., Harris R., Simons M. and Karmel T. (2009). 'Teaching for Technical and Vocational Education and Training (TVET)'. *International Handbook of Research on Lecturers and Teaching*. Vol. 21, Iss.10, pp. 851–863.
- Hattie J. A. C. (2002). *Teachers Make a Difference: What is the Research Evidence?* Wellington: New Zealand Council for Educational Research.
- Hattie J. A. C. (2009). *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*. London: Routledge.
- Hayward G. (2006). *Participation, Progression and Success in Vocational learning: A Qualitative System Performance*. London: Learning and Skills Research Centre.

- Hayward G., Hodgson A., Johnson J., Keep E., Oancea A., Pring R., Spours K. and Wright S. (2005). *The Nuffield Review of 14–19 Education and Training – Annual Report 2004–5*. Oxford: University of Oxford Department of Educational Studies.
- Howieson C., Raffe D., Spours K. and Young M. (1997). ‘Unifying Academic and Vocational Learning: The State of the Debate in England and Scotland’, *Journal of Education and Work*. Vol. 10, No. 1, pp. 5–36.
- Hmelo-Silver C. E. and Barrows H. S. (2006). ‘Goals and Strategies of a Problem-based Learning Facilitator’, *Interdisciplinary Journal of Problem-based Learning*. Vol. 1, Iss. 1, pp. 21–39.
- Hmelo-Silver C.E. and Duncan & Chinn (2007). ‘Scaffolding and Achievement in Problem-Based and Inquiry Learning: A Response to Kirschner, Sweller, and Clark’, *Educational Psychologist*. Vol. 42, Iss. 2, pp. 99–107.
- HM Government (2010). *The Coalition: Our Programme for Government*. [http://www.cabinetoffice.gov.uk/sites/default/files/resources/coalition\\_programme\\_for\\_government.pdf](http://www.cabinetoffice.gov.uk/sites/default/files/resources/coalition_programme_for_government.pdf)
- Honey P. and Mumford A. (1992). *The Manual of Learning Styles*. Maidenhead: Peter Honey Publications.
- Hopkins D. (2007). *Every School a Great School*. Maidenhead: McGraw Hill/Open University Press.
- House of Commons Public Accounts Committee (2010). *Skills for Life: Progress in Improving Adult Literacy and Numeracy. Third Report of Session 2008–09*. London: The Stationery Office.
- Huddleston P. and Unwin L. (2007). *Teaching and Learning in Further Education: Diversity and Change* (3rd edn.). London: Routledge.
- Ince M. (2005). ‘Vocational Education still Needs Reforming’, *The Edge*. Iss. 19, pp. 14–23.
- Institute for Learning (2010). *Brilliant Teaching and Training in FE and Skills: A Guide to Effective CPD for Teachers, Trainers and Leaders*. [http://www.ifl.ac.uk/\\_\\_data/assets/pdf\\_file/0011/16400/IfL2010-BrilliantTeachingAndTrainingGuide.pdf](http://www.ifl.ac.uk/__data/assets/pdf_file/0011/16400/IfL2010-BrilliantTeachingAndTrainingGuide.pdf) (accessed 18.06.11)
- Ji-Ping Z. and Collis B. (1995). *A Comparison of Teaching Models in the West and in China Journal of Instructional Science and Technology*. Vol. 1, No. 1, Article 3. <http://www.ascilite.org.au/ajet/e-jist/docs/vol1no1/article3.htm> (accessed 19.06.11)
- Johnson D., Johnson R. and Smith K. (1998). ‘Cooperative Learning Returns To College: What Evidence Is There That It Works?’ *Change: The Magazine of Higher Education*. Vol. 30, Iss. 4, pp. 26–35.
- Johnson D.W., Johnson R.T. and Stanne M.B. (2000). *Cooperative Learning Methods: A Meta-Analysis*. <http://www.tablelearning.com/uploads/File/EXHIBIT-B.pdf>
- Jones C. A. (2009). *Moving your 14–19 Curriculum Forward*. Vocational Learning Support Programme LSN, LSIS Excellence Gateway. <http://www.excellencegateway.org.uk/page.aspx?o=226225>
- Jones K. and Jones J. (2008). ‘Making Cooperative Learning Work in the College Classroom: An Application of the ‘Five Pillars’ of Cooperative Learning to Post-Secondary Instruction’, *The Journal of Effective Teaching*. Vol. 8 No. 2, pp. 61–76.
- Joyce B., Calhoun E. and Hopkins D. (2008). *Models of Learning, Tools for Teaching*. (3rd edn.). Berkshire: Open University Press.

- Joyce B., Weil M. and Calhoun E. (2000). *Models of Teaching* (6th edn.). Needham Heights, MA: Allyn & Bacon.
- Kehoe D. (ed.) (2007). *Practice Makes Perfect: The Importance of Practical Learning*. [http://www.smf.co.uk/assets/files/publications/Practical\\_Learning.pdf](http://www.smf.co.uk/assets/files/publications/Practical_Learning.pdf)
- Kerka S. (1997). *Constructivism, Workplace Learning and Vocational Education*. ERIC Digest No. 181.
- Koh G.C., Khoo H.E., Wong M.L. and Koh D. J. (2008). 'The Effects of Problem-based Learning during Medical School on Physician Competency: A Systematic Review', *CMJA*. Vol. 178, Iss.1, pp. 34–41.
- Kolb D. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. London: Kogan Page.
- Kolb D. (1999). *The Kolb Learning Style Inventory*. Version 3. Boston: Hay Group.
- Krajcik J., Blumenfeld P.C., Marx R.W., Bass K.M., Fredricks J. and Soloway E. (1998). 'Inquiry in Project-based Science Classrooms: Initial Attempts by Middle School Students', *The Journal of the Learning Sciences*. Vol. 7, Iss. 3/4, pp. 313–350. <http://www.tandfonline.com/doi/abs/10.1080/10508406.1998.9672057>
- Lave J. and Wenger E. (1991). *Situated Learning. Legitimate peripheral Participation*. Cambridge: University of Cambridge Press.
- Leitch S. (2006). *Leitch Review of Skills. Prosperity for all in the Global Economy – World Class Skills, Final Report*. London: HM Treasury.
- Lloyd C. and Steedman H. (2000). *Intermediate Level Skills – How are They Changing?* [www.eric.ed.gov/ERICWebPortal/recordDetail?accno=ED450272](http://www.eric.ed.gov/ERICWebPortal/recordDetail?accno=ED450272)
- Loyens S., Magda J. and Rikers R. (2008). 'Self-Directed Learning in Problem-Based Learning and its Relationships with Self-Regulated Learning', *Educational Psychology Review*. Vol. 20, Iss.4, pp. 411–427.
- Lokkitt B. (1997). *Learning Styles in the Future*. FEDA: London.
- LSC/QCDA (2009). *Foundation Learning Tier: 14–19 Delivery Guidance for 2009/10*. London: DfE. [http://readingroom.lsc.gov.uk/lsc/National/provider\\_delivery\\_guidance\\_august\\_2009\\_final\\_version.pdf](http://readingroom.lsc.gov.uk/lsc/National/provider_delivery_guidance_august_2009_final_version.pdf)
- LSIS Excellence Gateway (2011a). 'Effective Teaching and Learning: Introducing Ten Pedagogy Approaches', *Teaching and Learning Programme*. <http://tlp.excellencegateway.org.uk/tlp/pedagogy/introducingthe1/introducingthe1/index.html> [http://tlp.excellencegateway.org.uk/tlp/pedagogy/assets/documents/tltl\\_cards.pdf](http://tlp.excellencegateway.org.uk/tlp/pedagogy/assets/documents/tltl_cards.pdf) (accessed 16.6.11)
- LSIS Excellence Gateway (2011b). 'Teaching and Learning: How Learners Learn', *Vocational Learning Support Programme*. <http://www.excellencegateway.org.uk/page.aspx?o=131200> (accessed 17.06.11)
- LSN (2006). *Learning Styles for Vocational Teaching and Learning*. LSIS Excellence Gateway. <http://www.excellencegateway.org.uk/VLSP-13112>
- Lucas B., Claxton G. and Webster R. (2010). *Mind the Gap: Research and Reality in Practical and Vocational Education*. University of Winchester and Edge Foundation.
- Lucas B., Claxton G. and Webster R. (2009). *Practical and Vocational Education in the UK: A Health Check*. London: Edge and Centre for Real-World Learning.
- Manz C.C. and Neck C.P. (1999). *Mastering Self-Leadership: Empowering Yourself for Personal Excellence*. New Jersey: Prentice Hall.

Martinez P. (2001). *Effectiveness and Improvement: School and College Research Compared*. <http://www.leeds.ac.uk/educol/documents/00001835.htm>

Marzano R. J. (1998). *A Theory-based Meta-analysis of Research on Instruction*. Aurora, CO: Mid-continent Research for Education and Learning. [www.mcrel.org/pdf/instruction/5982rr\\_instructionmeta\\_analysis.pdf](http://www.mcrel.org/pdf/instruction/5982rr_instructionmeta_analysis.pdf)

Marzano R. J., Marzano J. S. and Pickering D. J. (2003). *Classroom Management that Works: Research-Based Strategies for Every Teacher*. Alexandria: ASCD. <http://www.ascd.org/publications/books/103027.aspx>

Marzano R. J., Pickering D. J. and Pollock J. E. (2001). *Classroom Instruction that Works: Research-based Strategies for Increasing Student Achievement*. Alexandria, VA: Association for Supervision and Curriculum Development.

Mayer R.E. (2003). *Learning and Instruction*. Pearson Education: Upper Saddle River.

Merriam S. B. and Caffarella R. S. (1991). *Learning in Adulthood*. Oxford: Jossey-Bass Publishers.

Moon J. (1999). *Learning Journals: A Handbook for Academics, Students and Professional Development*. London: Kogan Page.

Moore S. (2001). *Get Real: Work-Related Teaching and Learning*. London: Learning & Skills Development Agency.

Mortimore P. (ed.) (1999). *Understanding Pedagogy and its Impact on Learning*. London: Paul Chapman Publishing Ltd.

Murgatroyd S. (2010). 'Wicked Problems' and the Work of the School', *European Journal of Education*. Vol. 45, Iss. 2, pp. 259–279.

Nash I., Jones S., Ecclestone K. and Brown A. (eds.) (2008). *Challenge and Change in Further Education. A commentary by the Teaching and Learning Research Programme*. <http://www.tlrp.org/pub/documents/FEcommentary.pdf>

Nilson L. (2003). *Teaching at its Best: A Research-Based and Inquiry for College Instructors*. Bolton: Jossey-Bass.

OECD (2005). *The Definition and Selection of Key Competencies, Executive Summary*. <http://www.oecd.org/dataoecd/47/61/35070367.pdf>

OECD (2010). *United Kingdom Policies for a Sustainable Recovery*. [www.oecd.org/dataoecd/57/11/45642018.pdf](http://www.oecd.org/dataoecd/57/11/45642018.pdf)

Ofqual (2009). *Annual Qualifications Market Report*. [www.ofqual.gov.uk/files/2010-03-19-Annual-Market-Report.pdf](http://www.ofqual.gov.uk/files/2010-03-19-Annual-Market-Report.pdf)

Ofsted (2009). *Common Inspection Framework for Further Education and Skills 2009*. Manchester: Ofsted.

Ofsted (2005). *Increased Flexibility Programme at Key Stage 4: The First Two Years*. <http://www.ofsted.gov.uk/Ofsted-home/Publications-and-research/Browse-all-by/Education/Key-stages-and-transition/Key-Stage-4/Increased-Flexibility-Programme-at-Key-Stage-4-the-first-two-years>

Ofsted (2007). *Initial Teacher Training in Vocational Subjects*. <http://www.ofsted.gov.uk/Ofsted-home/Publications-and-research/Browse-all-by/Education/Leadership/Management/Initial-teacher-training-in-vocational-subjects>

Ofsted (2010). *The Annual Report of Her Majesty's Chief Inspector of Education, Children's Services and Skills 2009/10*. <http://www.ofsted.gov.uk/Ofsted-home/Publications-and-research/Browse-all-by/Annual-Report/2009-10/The-Annual-Report-of-Her-Majesty-s-Chief-Inspector-of-Education-Children-s-Services-and-Skills-2009-10>

- Ofsted (2003). *The Initial Training of Further Education Teachers*. <http://www.ofsted.gov.uk/resources/initial-training-of-further-education-teachers-2003>
- Ofsted (2009). *The Initial Training of Further Education Teachers*. <http://www.ofsted.gov.uk/Ofsted-home/Publications-and-research/Browse-all-by/Documents-by-type/Thematic-reports/The-initial-training-of-further-education-teachers2>
- Ofsted (2010). *Twelve Outstanding Providers of Work-based Learning*. <http://www.ofsted.gov.uk/Ofsted-home/Publications-and-research/Browse-all-by/Documents-by-type/Thematic-reports/Twelve-outstanding-providers-of-work-based-learning>
- Ofsted/ALI (2005). *Further Education Matters – The First Four Years of Ofsted/ALI College Inspections*. <http://www.ofsted.gov.uk/Ofsted-home/Publications-and-research/Browse-all-by/Post-16-learning-and-skills/Read-about-this-new-section/Colleges/Further-education-matters>
- Petty G. (2009). *Evidence-Based Teaching: A Practical Approach*. (2nd edn.). Cheltenham: Nelson Thornes Ltd.
- Petty G. (2009). *Teaching Today* (4th edn.). Cheltenham: Nelson Thornes Ltd.
- Petty G. (undated) *What has the greatest influence on student learning?* [http://www.aberdeen-education.org.uk/files/Research/3%20What%20has%20the%20greatest%20influence%20Geoff\\_Pettie\\_on\\_Hattie.pdf](http://www.aberdeen-education.org.uk/files/Research/3%20What%20has%20the%20greatest%20influence%20Geoff_Pettie_on_Hattie.pdf) (accessed 9.06.11)
- Polya G. (2009). *Mathematical Discovery: On Understanding, Learning, and Teaching Problem Solving*. Vol. I, and II, New Jersey: Princeton University Press.
- QIA (2008). *Guidance for Assessment and Learning*. [http://sflip.excellencegateway.org.uk/pdf/4.2sflguidance\\_5.pdf](http://sflip.excellencegateway.org.uk/pdf/4.2sflguidance_5.pdf)
- Rainbird H., Fuller A. and Munro A. (2006). *Workplace Learning in Context*. London: Routledge.
- Rauner F. and Maclean R. (2008). *Handbook of Technical and Vocational Education and Training Research*. Dordrecht: Springer.
- Redfield D. L. and Rousseau E. W. (1981). A Meta-analysis of Experimental Research on Teacher Questioning Behavior. *Review of Educational Research*. 51(2), 237–245.
- Rush S., Acton L., Tolley K., Marks-Maran Di and Burke L. (2010). ‘Using Simulation in a Vocational Programme: Does the method support the theory?’, *Journal of Vocational Education & Training*. 62:4, pp. 467–479.
- Sahlberg P. and Oldroyd D. (2010). ‘Pedagogy for Economic Competitiveness and Sustainable Development’, *European Journal of Education*. Vol. 45, No. 2 Part I, pp. 280–299.
- Savoy C., Hodgson A. and Spours K. (2003). *The Advanced Vocational Certificate of Education (AVCE): A General or Vocational Qualification?* IOE/Nuffield Series No.7. London: Institute of Education, University of London.
- Schon D. A. (1983). *The Reflective Practitioner: How Professionals Think in Action*. Boston: Arena Publishing.
- Schon D. A. (1996). *Educating the Reflective Practitioner: Towards a New Design for Teaching and Learning in the Professions*. San Francisco: Jossey-Bass, Inc.
- Sennett R. (2008). *The Craftsman*. London: Penguin Books.
- Shaftel F. (1970). ‘Role Playing: An Approach to Meaningful Social Learning’, *Social Education*. 34(5), 556–559.



- Sharan Y. and Sharan S. (1989). 'Group Investigation Expands Cooperative Learning', *Education Leadership*. December 1989/January 1990.
- Shury J., Winterbotham M., Davies B. and Oldfield K. (2010). *National Employer Skills Survey for England for 2009, Evidence Report 23*. August 2010. UKCES. <http://www.ukces.org.uk/assets/bispartners/ukces/docs/publications/evidence-report-23-ness-main-report-2009.pdf>
- Skills Commission (2009). *Teacher Training in Vocational Education*. <http://www.policyconnect.org.uk/sc/research>  
[http://www.policyconnect.org.uk/fckimages/skills\\_report.PDF](http://www.policyconnect.org.uk/fckimages/skills_report.PDF)
- Slavin R. E. (1995). *Cooperative Learning: Theory, Research and Practice*. (2nd edn.). Boston: Allyn & Bacon.
- Smith R. M. (1982). *Learning How to Learn: Applied Theory for Adults*. Chicago: Follet.
- Statz C., Hayward G., Oh S. and Wright S. (2004). *Outcomes and Processes of Vocational Learning: A Review of the Literature*. London: Learning and Skills Development Agency.
- Stevenson J. (2003). 'Vocational Teaching and Learning in Context' in J. Stevenson (eds.). *Developing Vocational Expertise: Principles and Issues in Vocational Education*. NSW: Allen & Unwin, pp. 26–47
- Stevenson J. (2005). 'The Centrality of Vocational Learning', *Journal of Vocational Education and Training*. Vol. 57, No. 3, pp. 335–354.
- Teaching and Learning Research Programme and Economic and Social Research Council (2006). *Improving Teaching and Learning in Schools*. London: Institute of Education.
- Teaching and Learning Research Programme and Economic and Social Research Council (2008). *Challenges and Change in Further Education*. London: Institute of Education.
- Unwin L. (2009). *Sensuality, Sustainability and Social Justice: Vocational Education in Changing Times*. Based on an Inaugural Professorial Lecture delivered at the Institute of Education, University of London, 4th February 2009. London: Institute of Education, University of London.
- Unwin L., Fuller A., Turbin J. and Young M. (2004). *What Determines the Impact of Vocational Qualifications? A Literature Review*. <http://publications.education.gov.uk/eOrderingDownload/RR522.pdf>
- UKCES (2010a). *Ambition 2020: World Class Skills and Jobs for the UK*. [http://www.ukces.org.uk/upload/pdf/UKCES\\_FullReport\\_USB\\_A2020.pdf](http://www.ukces.org.uk/upload/pdf/UKCES_FullReport_USB_A2020.pdf)
- UKCES (2010b). *Skills for Jobs: Today and Tomorrow – The National Strategic Audit for England 2010 Volume 1: Key Findings*. [http://www.ukces.org.uk/upload/pdf/NSSA\\_Volume%201\\_FINAL\\_BOOKMARKED\\_110310.pdf](http://www.ukces.org.uk/upload/pdf/NSSA_Volume%201_FINAL_BOOKMARKED_110310.pdf)
- UNESCO (2001). *Revised Recommendation Concerning Technical and Vocational Education and Training*. PARIS: UNESCO.
- Walker A. and Leary H. (2009). 'Problem Based Learning Meta Analysis: Differences Across Problem Types, Implementation Types, Disciplines, and Assessment Levels', *The Interdisciplinary Journal of Problem-based Learning*. Vol. 3, No. 1, pp. 12–43
- Weeden P., Winter J. and Broadfoot P. (2002). *Assessment: What's in it for Schools?* London: Routledge.

Whitton D., Sinclair C., Barker K., Nanlohy P. and Nosworthy M. (2004). *Learning for Teaching: Teaching for Learning*. Victoria: Thomson Learning.

Wolf A. (2011). *Review of Vocational Education – The Wolf Report*. DfE. <https://www.education.gov.uk/publications/standard/publicationDetail/Page1/DFE-000312011>

Young M. (2004). *The Importance of Vocational Pedagogy*. Paper for a research seminar on Vocational Pedagogy, 22nd September 2004.

Young M., Spours K., Howieson C. and Raffe D. (1997). 'Unifying Academic and Vocational Learning and the Idea of a Learning Society', *Journal of Education Policy*. Vol. 12, No. 6, pp. 527–538.



# Appendix 1 Methodology and approach

## Phase 1 Exploration of literature

The literature review aimed to provide the contextual background for the research and to understand issues around vocational teaching and learning. It also aimed to identify the key elements of teaching and learning that have been found to be effective in improving learner outcomes in vocational education and training and beyond.

The literature review drew from a range of sources including policy documents, books, journal articles and reports (sources can be found in the bibliography), using access to online academic search facilities, academic libraries, and publically available reports and documents.

A review of these sources took place using key criteria such as: vocational skills, 21st Century skills and skills needs, vocational learning and education, teacher training, quality in teaching and learning, impact of vocational learning, learning approaches, learning strategies and styles, teacher skills, teacher relationships, teacher reflection, teaching and learning models, pedagogy and pedagogic strategies and effect-size research in education.

### Effect – size research

Educational research has increasingly employed effect-size to describe the magnitude of gains from any given change in educational practice (Glass in Joyce *et al*, 2008, p.130). Effect-size research,

*allows us to move beyond the simplistic, ‘Does it work or not?’ to the far more sophisticated, ‘How well does it work in a range of contexts?’ Moreover, by placing the emphasis on the most important aspect of an intervention - the size of the effect - rather than its statistical significance ..., it promotes a more scientific approach to the accumulation of knowledge. For these reasons, effect-size is an important tool in reporting and interpreting effectiveness*

(Coe, 2002, p.1).

The literature review draws from effect-size work plus a range of other well established authorities on teaching and learning skills, strategies and theory to explore effective teaching and learning models for vocational teaching and learning. The process of effect-size research is described in Appendix 3 for further clarification.

## Phase 2 Visits to colleges

### The sample and arranging visits

In order to ensure that best practice in vocational teaching and learning was captured, a review of Ofsted reports was conducted, selecting institutions which were judged to be outstanding. These were selected since they represented the most efficient method of identifying and observing effective practice. A total of 25 institutions were initially approached to take part in the research, as identified below.

**Table 3 Sample of colleges contacted initially across regions**

Region	Number of FECs contacted
East Midlands	2
East Of England	5
London	4
North East	3
North West	7
South West	2
West Midlands	1
Yorkshire & Humberside	1
<b>Total</b>	<b>25</b>

An invitation was sent by email to principals of each of the institutions, outlining the research and asking if they would be willing to support the study by allowing one of our researchers to visit and observe teaching and learning in vocational education in practice, followed by interviews with the teachers of the vocational subject areas observed. The invitation also reassured the institutions that the burden of participating in the research would be minimal as we were very much aware of their busy work commitments.

The majority of providers who accepted the invitation to participate in the research were in the North West and North East regions. Final acceptance was received from 8 providers as outlined below:

- 1 in London
- 2 in the North East
- 5 in the North West

Telephone calls were made to those who responded and a telephone discussion arranged with the research project manager and Vice/Assistant Principals of Quality, Teaching, Learning and/or Curriculum. The preliminary discussion was to introduce LSN, clarify the project and aims and to confirm which vocational subject areas would be suitable to observe.

Dates and times for the visits were arranged with each institution sending a visit schedule for the day showing which classes, subjects and qualifications would be covered in the observations, along with times for the interviews with the subject teachers and other teachers of the selected subject areas.

As time was an issue for some of the visits, second visits were arranged and telephone interviews with Quality/Curriculum managers, in some cases, were carried out by telephone at a mutually convenient time.

### Conducting observations and interviews

To ensure best practice was captured, a total of 20 sessions were observed and 39 informal interviews with key staff, including one focus group, took place to support the sampling. The interviews included: teachers of the observed lessons, Quality and Curriculum managers, and other teachers/heads of department from the observed curriculum areas and members of the Senior Leadership Team. The table below shows the number of visits and interviews by vocational subject area.

**Table 4 Sample of observations and interviews completed**

Case Studies	Number	Totals
<b>Observations</b>		
Business Administration	5	20
Construction	6	
Travel & Tourism	4	
Information Technology	5	
<b>Interviews – teachers of observed sessions, other teachers, curriculum leads</b>		
Business Administration	5	39
Construction	9	
Travel & Tourism	6	
Information Technology	6	
Quality Managers and SLT and Teacher Training Heads	13	

A consent form to obtain the consent of all teachers participating in the research was sent to all institutions prior to the visit, which provided a brief description of the project and our ethical approach to conducting the research. It also asked permission to record the observations and discussions to help with the analysis of the data. Also highlighted was that all data collected would be kept confidential and all participants would remain anonymous. The signed forms were either emailed back to LSN or collected on the day of the visit by the researcher.

To record the data a number of different interview templates, appropriate for the research participants, were used. Data collected was also tape recorded with permission granted. The transcriptions complemented researchers' hand written notes.

Scrutiny of schemes of work and lesson plans, where they were made available, helped inform the researcher about the teaching and learning planned to be observed in advance of the interviews.

On average, observations and interviews lasted one to two hours and telephone interviews 45 minutes. Four different vocational education subjects and different qualifications at level 2 were chosen to gain a view of the pedagogy used across the spectrum (selected through research conducted for the literature review):

- Business Administration
- Construction
- Information Technology
- Travel and Tourism

**Observations** were non-participatory in nature. The teacher introduced the researcher to the class and gave a brief explanation of why the researcher was present, to put the class at ease; pointing out to the learners that it was not an inspection by an outside agency but that the researcher was there purely to observe the session and record the activity they were performing that day, by taking notes. The researcher also briefed the teacher prior to the session to ensure that the teacher was at ease with their presence.

During the session the researcher recorded, for example, the nature of activities, the learning environment, the relationship and interactions between the teacher and learners and the dialogue throughout the sessions.

Any concerns around ethical issues were avoided by making sure the researcher was discreet, did not disrupt the normal activity of the class and that the researcher's presence didn't compromise their privacy.

A potential weakness of all observations is that it is susceptible to observer bias – subjective bias on the part of the observer, thus undermining the reliability and hence the validity of the data gathered. This can be because the observer records not what actually happened, but what they either wanted to see, expected to see, or merely thought they saw. Recording the observations during or immediately after the event minimised selective memory issues. Another potential weakness of observation is reactivity effects, when the presence/behaviour of the researcher may influence the participants' observed behaviours, quite often unintentionally, and a recording of the session may be unreliable. By explaining the purpose of the observation and the overarching aims of the project, the researcher was able to reduce the risk of this happening. However, as with all observation work of this nature, we cannot be fully confident that no teachers or learners (no matter how natural their behaviour seemed) were not adapting their behaviour due to the presence of the researcher.

**Interviews with teachers** of the observed lessons were undertaken to gain a deeper understanding of the purpose of the lesson observed, the aims and outcomes, how the activities included in the lesson achieved these aims and to gain a detailed step by step explanation of planning of the lesson. The questions also allowed us to gain a better understanding of what main influences had helped them to develop a repertoire of teaching strategies or models and how the institution had supported them in developing their practice.

**Interviews with quality managers, senior leadership teams and teacher training heads** were used to examine the teaching strategies or model(s) promoted in vocational teaching and learning practice in the college and how teachers are supported in developing a wide repertoire of teaching strategies or models. Also explored was the use of strategies or models to develop different skills and to gain an understanding of how teachers are supported to choose from their teaching repertoire the appropriate teaching strategy or model so as to achieve a desired outcome.

All of the interviews were semi-structured to allow a certain degree of comparability across all interviews, to ensure that important criteria were addressed and importantly, to allow the respondents the freedom to express their views and experiences without being overly restricted. The interviews complimented the observations, providing detailed background as to teachers' planning and delivery and thought processes around this in relation to vocational pedagogy.

**Phases 3 and 4** of the research are not covered by this report. They involved a formative seminar with some of those involved in the observations and interviews to provide feedback on the findings and suggestions for resulting guidance (phase 4).

## Appendix 2 Effective vocational teaching and learning – a brief review

### Introduction

The value of vocational education was explicitly recognised by the Department for Education (DfE) in its recent response to the Wolf Review. It stated that ‘vocational education is a vital underpinning for our economy’ (DfE, 2011) and recognised that the future of the UK’s economy relies on high-level technical skills and its ability to remain at the forefront of technological change. The DfE called for education system to address the long term weakness in practical teaching and learning.

The purpose of the Wolf Review (2011), published during the course of this research, was to consider how to improve vocational education for 14–19 year olds and thereby promote successful progression into the labour market and into higher level education and training routes. The report’s recommendations have been accepted by the Government and thus set the context for the future of vocational teaching and learning. It is therefore important to consider the implications of the findings and recommendations for systemic change in relation to effective vocational teaching and learning. As Wolf states, the removal of micro-management and bureaucracy in vocational education will ‘free up resources for teaching and learning’, which is an essential part of the vocational education improvement plan (Wolf, 2011).

The Wolf Review has enabled vocational teaching and learning to be brought to the forefront of education policy and debate. It has highlighted the need to consider how the vocational system can be improved and within this, the need to explore the quality of vocational teaching and learning. Extensive research has concluded that quality in teachers and teaching and learning practice is crucial to improving learner outcomes (Barber and Mourshed, 2008). With this in mind, we explore the quality of vocational teaching and learning and what effective teaching and learning is for vocational education in the following section. This literature review sets out:

- the overall context for vocational education – an overview of the sector, the policy focus on vocational education and its role in fulfilling the skills demands of the UK economy
- current vocational provision – the quality of current provision, the need to improve teaching and learning and vocational pedagogy
- effective teaching and learning – drawn mainly from evidence based research and exploring a range of elements of effective teaching and learning.

Vocational education in England is diverse and complex with numerous types of providers offering a wide range of qualifications in different specialist subject areas. The scope of this literature review, and overall report, is the application of vocational teaching and learning in Further Education Colleges (FECs) and work-based learning (WBL) providers, because FECs and WBL providers are the main deliverers of vocational education in state-funded education.

## Overall context for vocational education

An important starting point is to define the terms ‘vocational education’ and ‘vocational pedagogy’ as these underpin the foundations of this research.

UNESCO for its recommendations on Technical and Vocational Training define vocational education as:

*those aspects of educational process involving, in addition to general education, the studies of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life.*

(UNESCO, 2001)

Educational International (2009) recognises that vocational education is often distinguished from ‘general or academic education’. It defines academic education as that which enables the learner to build analytical and critical thinking skills and knowledge and vocational education – that which develops craftsmanship, practical experience and practical problem solving. As Educational International asserts however, this understanding ‘does not hold up to scrutiny’ and in fact it is now contested that analytical and critical thinking skills are no less needed by vocational learners than their academic counterparts and that vocational learning is no less intelligent (see Lucas B et al., 2010).

In research and education policy, vocational education is usually distinguished as education that leads to various occupations. It prepares people to function at a specified level in specific roles in the context of usually paid employment (Lucas, et al. 2010). The importance of which, was recognised by the Wolf Review (2011), in its urge for English vocational qualifications to properly prepare young people for the labour market.

This literature review thus accepts this definition and uses the term ‘vocational education’ in two ways: (a) as the route that enables individuals to gain vocational qualifications; and (b) as work related education that can occur across the curriculum and in a variety of settings, including the workplace.

## Pedagogy

The LSIS Excellence Gateway (2011b) suggests that the term pedagogy ‘denotes more than just a set of teaching techniques. Pedagogy encompasses:

- what is taught/learned – the content
- how it is taught or learned – approaches to teaching and learning
- why it is taught or learned – the underpinning values, philosophy or rationale.’

These three elements work in synergy and so, for example, the ‘why’ will have a strong influence on what is taught or learned and how. Cullen et al (2002) suggested that pedagogy is synonymous with ‘teaching methods’ and ‘teaching styles’. In short, it is suggested that pedagogy can be taken to mean what teachers do to ensure effective teaching and learning takes place.

### Providers, learners and teachers

There are a wide range of providers of vocational education in England. Historically, in state funded education, Further Education Colleges (FECs) had a monopoly on delivery. Today, they remain the main provider, but notably, as vocational education policies have become cross-sectoral and more market-oriented, colleges now compete with other public sector providers such as schools, WBL providers, adult and community education and universities. Vocational education is also delivered through private training providers including employers and consortia of employers and third sector providers.

The learner body is exceptionally diverse in terms of age, previous learning experience and aspirations. In addition, attendance is not mandatory and the life circumstances of many can mean that it is often difficult for them to pursue a course to its conclusion. This presents particular challenges for teachers in terms of motivating, sustaining and supporting the learner body.

The teaching workforce is as varied as the learners. Many teachers have had valuable previous experience in industry which needs to be combined with an up-to-date vocational pedagogy in order that the learners' experience is of a high quality, whilst others might have pedagogical knowledge but may lack up-to-date industrial knowledge. Furthermore, vocational teachers seem to enter the profession at different stages in their career and many hold a degree whilst others do not. The right kind of involvement with employers is also an important issue that influences the effective delivery of vocational education.

Vocational teaching and learning in FECs and in WBL, therefore, has a number of challenges that are particular to the sector and which influence teaching and learning in practice. In addition, vocational education has a wider social economic purpose that it must fulfil. This is discussed below.

### Skills needs of the UK and Government Policy

The skills needs of the UK workforce are rapidly changing, and this need has become particularly apparent in the context of the current economic crisis. Workers must move beyond low level skills previously required by industry and be able to employ a wide repertoire of skills. Appendix 5 shows the wide range of skills frameworks that have been developed across the world to define the skills needed for the 21st Century. To accommodate the skills needs of the UK, the government has shifted attention to the quality of its vocational education system to ensure the learners of today's world will be the appropriate workers of the future.

Historically, low level skills were mainly required in the UK, reflecting the large numbers of firms that were pursuing relatively low skilled, low quality product market strategies (Lloyd and Steedman, 2000). Examples of such skills include learning how to control machines and processes, documenting/recording information, handling and moving objects, monitoring processes, materials, or surroundings, monitoring and controlling resources and performing physical activities.

In the 21st Century, however, in order for individuals to play an active role in the UK's future economic competitiveness, they have to be able to employ a wide repertoire of skills in order to respond effectively to rapid world changes and demands. This requires individuals to understand the knowledge they acquire, play with new ideas, communicate effectively, collaborate and relate well to others. They also need to be adaptive to change, be able to form plans, assess their progress and set new goals, use technology and solve problems creatively to find solutions to 'wicked problems' (Murgatroyd, 2010).



Achieving the development of these kinds of skills has been part of the public policy agenda for some time. Although progress has been made towards these objectives, further improvements are required. For this reason, the development of skills is still in the forefront of government policy. In 2010, the UK Commission for Employment and Skills (UKCES) confirmed that this is the case by stating:

*Skills are vitally important to individuals, employers, communities and the country as a whole. Rightly, England has ambitious objectives to be one of the best skilled countries in the world... If such skills development is to have maximum impact on employment and productivity, as well as business and individual success, we need to seek to ensure that the skills we develop are those that we really need: the skills required to meet the needs of the economy and labour market.*

(UKCES, 2010b, p5)

Good vocational education practice is fundamental to the development of the 21st Century skills and, in turn, sustainable economic growth and prosperity. The issue of quality in vocational education has been fully recognised by David Willetts, who in his first speech as the Minister for Universities and Science stated:

*In the current economic climate it has become crucial to provide a high quality and appropriate vocational education system to help the country through the recession and improve the competitive position of the UK within the modern global economy.*

The Government has already started to address the quality of vocational education in line with the Wolf Review's (2011) recommendations, which focus on systemic change. Wolf examined a number of issues including the relevance of courses and the need to ensure that they truly prepare young people for the labour market, the transparency of the system and the ease in which informed decisions can be made regarding course choice and place of study. The recommendations therefore concern organisation, oversight and funding mechanisms (Wolf, 2011). The Government has thus pledged to deliver on three key themes:

- *ensure that all young people study and achieve in English and mathematics, ideally to GCSE A\*–C, by the age of 19*
- *reform performance tables and funding rules to remove the perverse incentives which have served only to devalue vocational education, while pushing young people into qualification routes that do not allow them to move into work or further learning*
- *look at the experience of other countries to simplify Apprenticeships, remove bureaucracy and make them easier for employers to offer.*

(DfE, 2011).

The Government is therefore making plans to support improvement in vocational education across the sector and thus address issues in quality. In more detail below, is a discussion of the quality of current provision, including steps taken already to improve teaching and learning in vocational education, and areas where there remains room for improvement.

## Current provision

The various qualifications available in vocational education (exemplified in Appendix 4) are subject to change and development dependent on government policy. Furthermore, the recommendations by the Wolf Review (2011) and DfE response (2011) indicate that such changes are certainly possible in the near future. As stated previously, it is the quality of teaching and learning which remains the consistently important factor in determining learner outcomes. In considering the state of current vocational provision in the UK therefore, there are two key considerations. Firstly, the quality of provision and secondly, the pedagogy used by vocational teachers to deliver this provision.

Evidence on the quality of vocational provision has been mainly drawn from Ofsted inspection reports. In previous years other public bodies would have been appropriate such as the Adult Learning Inspectorate (ALI), but in 2007 ALI merged with Ofsted. In this review, where inspection reports from 2004/05 are referred to, data was taken from a joint Ofsted/ALI report. The focus on Ofsted has been taken because of the gravitas it holds in the sector and its importance to practitioners. Ofsted's judgements on the quality of provision, influences directly what practitioners do in the classroom.

## The quality of provision

Evidence shows that there is still room for improvements to be made in the quality of teaching and learning, despite significant improvements already made in the sector. The quality of vocational provision has been emphasised on the government agenda recently because of the UK's economic circumstances. Of course, seeking to improve quality has a continual presence and an instrumental role to play in education – as it ultimately serves the learner, by striving to improve their learning experience and outcomes.

It is worth noting that already there has been a considerable focus on improving the quality of teaching and learning at system level. Innovations have included a reform of teacher training in FE in 2006 to support improvements in teaching and learning, new pedagogies and curriculum development. The reform also included the requirement for all those teaching in FE to acquire a teaching qualification - previously not a prerequisite - and to complete at least 30 hours of Continuing Professional Development (CPD) per year. Another major initiative introduced was the establishment of regional Centres for Excellence in Teacher Training (CETTs), which aim to support the quality of Initial Teacher Training (ITT) provision in their region and provide CPD that responds to the needs of the practitioners it serves.

These policies and initiatives have brought some positive results in both initial teacher training in FE and vocational education providers' teaching and learning. For example, in 2009, after a four year inspection-cycle, Ofsted reported that the overall quality of teacher training in the providers visited was mostly judged satisfactory or better, with much of the taught element judged to be good. The Ofsted report also suggested that:

- trainees' understanding of the relevance and importance of the minimum core subjects of literacy, numeracy and information and communication technology was better than that seen in previous years
- the overall quality of the assessment of trainees was good or better in just under half of the partnerships inspected
- providers gave greater attention to the development of trainees' subject specialist knowledge and skills
- the quality of mentoring was still too variable.

However, much still remains to be done. According to the 2010 Ofsted report, in FECs, too much teaching and learning is still mediocre; more emphasis is required on learning and progress and on meeting individual needs through suitable teaching methods.<sup>2</sup> Ofsted suggested that colleges with inadequate and unsatisfactory teaching and learning:

- exhibit insufficient focus on the effectiveness of teaching and its impact on learning
- focus on checking that tasks have been completed rather than assess learners' understanding
- have low expectations and insufficient challenges particularly for the most academically able
- show a lack of clear learning objectives
- design action plans to help learners reach their target grade which are not sufficiently specific to support them to improve and learners' progress is not monitored closely enough
- often involve routine work such as gathering information and note-taking, rather than more challenging activities in their lessons.

In WBL, the annual Ofsted report of 2010 identified much uninspiring teaching and training especially in class-based lessons and inadequate feedback on learner progress in the work place. (Field in 2009, has also suggested that there is poor quality teaching in WBL settings, that they are not always geared up for learners and that course materials can be boring, repetitive and undemanding.)

Well-taught subject areas in the 2010 annual Ofsted report of the quality of FECs' provision included: Health, Public Service and Care, Arts, Media and Publishing, Engineering and Manufacturing Technologies. Subject areas where improvements were identified as being needed in teaching and learning included: Business, Administration and Law, Science and Mathematics, Construction, Planning and the Built Environment. Subject areas 'well' taught' in work-based learning included Engineering and Manufacturing Technologies. In contrast, Preparation for Life and Work, Construction, Planning and the Built Environment and Retail and Commercial Enterprise were identified as needing further improvements. In addition, inspection evidence suggests that teaching and learning at Levels 1 and 2 is more problematic than teaching and learning at Levels 3 and 4.

From inspection data available, from 2004/05 to 2009/10, the table in Appendix 6 provides a summary of the subjects 'well taught' and those that need 'further improvement' in FECs and WBL providers. In short, subjects which were consistently reported as needing further improvements include Construction, Business Administration, Leisure, Travel and Tourism and Preparation for Life and Work.

Although Ofsted has identified specific subject areas that need improvements there is also evidence that across vocational education, the development of low level skills as opposed to higher level skills is prevalent. For example, in 2002, a review of pedagogical research and practice in the fields of post-compulsory education and life-long learning suggested that, in WBL contexts, there is a dominant teaching and learning approach for delivering low level/technical skills (Cullen et al, 2002).

<sup>2</sup> In 2008/09, inspections were carried out in 59 of 234 general further education or tertiary colleges, 27 of 93 sixth form colleges and three of 20 specialist further education colleges in England. In 2008/09, Ofsted has carried out 16 short inspections of colleges judged to be good or outstanding at their previous inspections; in 2007/08, the corresponding figure was 32.

Furthermore, there has been considerable debate over whether the nature of some qualifications and their specifications can lead to a narrow approach to delivery of vocational learning. For example, some researchers, when discussing the outcome-based National Vocational Qualification (NVQ) system, highlight the typically very narrow, task-specific approach and the limited use of underpinning theory around delivery of skills in England (see for example Brockmann, 2007).

## Effective teaching and learning from evidence based research

An improvement in the effectiveness of teaching and learning is likely to result in an improvement in learner outcomes. As indicated in the *Introduction* section of this report, research tells us that the quality of teaching is the main factor affecting learner achievement (Barber and Mourshed, 2008). Providers are judged on a number of factors during Ofsted Inspections, but the quality of the teaching and learning is considered to be a major consideration both for that area of inspection and the overall inspection grade. The Common Inspection Framework for further education and skills, (relevant for FECs and WBL providers) includes four key factors used to evaluate a provider's effectiveness and efficiency in meeting the needs of learners and other users (Ofsted, 2009):

- outcomes for learners
- the provider's capacity to make and sustain improvements
- the quality of provision
- leadership and management.

These four factors have their own subsets of criteria and for the 'quality of provision', the quality of teaching and learning is evident within the subset (Ofsted, 2009):

- learning and assessment are linked to initial and current assessment and related activities are adapted to make sure they build on and extend learning for all learners
- interesting and appropriate teaching and learning methods and resources inspire and challenge all learners and enable them to extend their knowledge, skills and understanding
- technology is used effectively to promote and support learning, where appropriate
- staff have appropriate skills and expertise to provide good quality teaching, learning, assessment and information and support services for each learner
- assessment of learners' performance and progress is timely, fair, consistent and reliable
- learning, teaching, training and assessment promote equality and recognise diversity.

From such criteria, it is evident that effective teaching and learning is a result of a number of features including how the curriculum is delivered and how assessment takes place.

The Teaching and Learning Research Programme's (TLRP, 2006) ten principles of effective teaching and learning can be applied to both academic and vocational education. The ten principles (shown below) originally constructed in TLRP's school-focused portfolio, were found to also resonate with their other projects in pre-school, FE, HE, workplace learning, adult learning sectors (TLRP, 2006 and TLRP, 2008). Equally however, vocational pedagogy must cater for the teaching and learning issues that are specific to the vocational context, for example:

- the need to balance formal knowledge and knowledge of workplace procedures and practices
- the need to develop generic pedagogic skills that are common across different vocational areas and how they can be translated into the curriculum
- co-ordination of learning that takes place in a number of contexts
- the development of skills, and application in different contexts (Young, 2004).

These ten principles of effective teaching and learning, however, are relevant across schools and further education (TLRP 2006):

1. equips learners for life in the broadest sense
2. engages with valued forms of knowledge
3. recognises the importance of prior existence and learning
4. requires the teacher to scaffold learning
5. needs assessment to be congruent with learning
6. promotes the active engagement of the learner
7. fosters both individual and social processes and outcomes
8. recognises the significance of informal learning
9. depends on teacher learning
10. demands consistent policy frameworks with support for teaching and learning as their primary focus.

Recent guidance provided by the Excellence Gateway on effective teaching and learning identifies ten approaches to effective pedagogy which have been shown through evidence based research to support improvement in professional practice:

1. experiential learning
2. multi-sensory learning
3. cooperative learning
4. differentiation
5. embedding literacy, language and numeracy
6. assessment for learning
7. learning conversations
8. relating theory to practice
9. e-learning and technology
10. modelling.

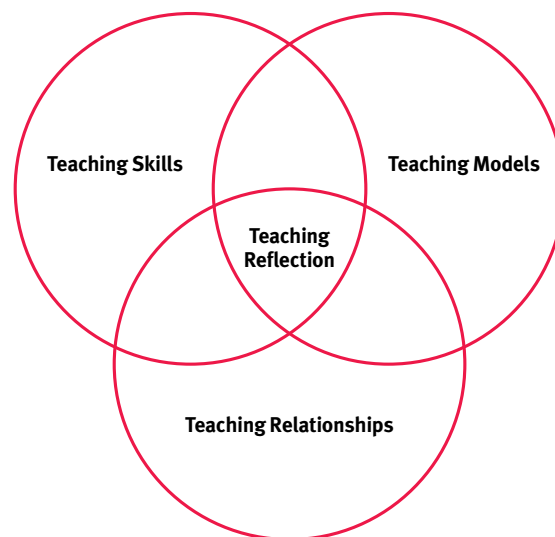
Such principles as those highlighted above provide the broad aims for teachers to guide their practice and again highlights the importance of how teaching and learning is delivered and how assessment takes place with synergy between a range of interconnecting features.

This review aims to support teachers in the improvement of teaching and learning and takes consideration of the criteria and frameworks set out above. All of those features discussed above can however, be incorporated into a wider and higher level framework for thinking about effective teaching and learning. We therefore present here a higher level framework to explore what effective teaching and learning is. Creemers' definition of effective teaching and learning which is, directed to 'find' the factors and variables in the teaching and learning process that can explain the differences in the intended outcomes of comparable groups of learners (Creemers, 1994, p 12). Creemers' framework is described below.

### **A framework to think about effective teaching and learning**

To discuss effective teaching and learning, it is helpful to use a framework and the one illustrated in Figure 3 below was developed from the Improving the Quality of Education for All (IQEA) research project. This framework encompasses four different elements of effective teaching - Teaching Skills, Teaching Relationships, Teacher Reflection and Teaching Models. Importantly, it is only when these four elements are in synergy that they are able to support effective teaching as Creemers informs us, 'isolated components or effective elements of individual components do not result in strong effects on student achievement' (Creemers, 1994, p93).

**Figure 3 Four ways of thinking about teaching, (Hopkins, 2007, p 76)**



Each of these components will be explored in turn drawing primarily from effect-size research, and where appropriate, findings from the TLRP and others. Effect-size research is often used in education studies to quantify the size of difference between two control groups. Effect-sizes are given as a decimal figure (e.g. 0.78) and are calculated by comparing the mean score of the two control groups and dividing by the standard deviation (please see Appendix 3 for a more detailed explanation).

The effect-size scores quoted in the below analysis are taken from meta-analyses. A meta-analysis is a synthesis of all relevant research findings and therefore provides a summary on a particular area of research; it is literally an analysis of all analyses. John Hattie's (2009) meta-analyses, referred to below, is a synthesis of 800 meta-analyses of 50,000 quantitative studies, which examine variables that affect learner achievement. Importantly, Hattie plotted along a continuum from very low effect-size to high effect-size; and calculated average effect-size scores. Hattie considers 'effect-sizes' are the best way of answering the question, what is the greatest influence on student learning? Interpreting the actual value of the decimal figure is slightly problematic. Scores of 0.2 may be described as 'small', 0.5 'medium' and 0.8 as 'grossly perceptible and therefore large' (Cohen, 1969). In more detail an effect-size of 1.0 is typically associated with:

- advancing learner's achievement by one year or improving the rate of learning by 50 per cent
- a correlation between some variable (e.g. amount of homework) and achievement of approximately 0.5
- average learners receiving that treatment exceeding 84 per cent of learners not receiving that treatment
- a two grade leap in GCSE, e.g. from C to an A grade. (Petty, undated).

To put in context, most innovations that are introduced in schools have an effect-size of 0.4 or higher (Petty, undated). effect-sizes of 0.4 or higher are evidenced below for Teaching Skills, Teaching Relationships, Teacher Reflection and Teaching Models.

### Teaching skills

Teaching skills refer to the everyday competences of teachers. Research on teacher effects has consistently identified a set of teaching skills used which support learner achievement and their improvement over time.

However, throughout the process of this literature review, it has become clear that within current literature, definitions of teaching skills can often be used interchangeably with teaching strategies and sometimes teaching models. This results in terminological and conceptual confusion which we have attempted to unravel in Chapter 3. As a starting point, we have summarised teaching skills, as identified in literature, in the table below and further explained their use in practice with evidence of their positive- effect-size following this table.



**Table 5 Consistently high correlations are achieved between student achievement scores and classroom processes (Brophy and Good in Wittrock, 1986).**

**Summary of Teaching Skills associated with Learner Achievement Gains**

**Behaviour management** – creates a situation where learning can take place, implying an orderly and quiet atmosphere. Moreover, effective teaching itself contributes to behaviour management.

**Opportunities to work outside the formal learning setting** – if properly organised, homework contributes to effectiveness. This implies a clear structure of assignments and provision and evaluation of homework.

**Pace** – time and support should be varied according to individual learner need.

**Clear goal setting** – includes a restricted set of goals and an emphasis on basic skills and on cognitive learning and transfer. The content should be chosen in line with these goals.

**Structuring the content** – includes ordering of the content according to the hierarchy of ordered goals. The use of advanced organisers can also structure the content for learners. The use of prior knowledge can increase learners' own contributions and responsiveness for learning.

**Clarity of presentation** – implies the elements mentioned above but also refers to the transfer process itself (avoiding vagueness and incomplete sentences).

**Questioning** (by means of low – and higher-order questions) – keeps learners at work and can be used to check their understanding.

**Immediate exercise after presentation** – like questioning, exercises provide a check for understanding and can be used to clarify problems.

**Evaluating** – suggests the evaluation of whether the goals are obtained, by means of testing, providing feedback and corrective instruction.

Hattie (2009) and Marzano (1998) conducted meta-analysis on the teaching skills summarised in the table above and produced interesting results with regard to effect-size of some of these teaching skills. A description of the teaching skills with their positive effect-size is outlined below.

- **Behaviour management<sup>3</sup>** – in Hattie's meta-analyses (2009), well managed classes are found to have a high mean effect-size of 0.71. Whilst, Marzano's studies (1998) give effect-sizes of 0.52 and 0.62 on engagement. Well managed classes are typified by an orderly and quiet atmosphere, where teachers guide learner behaviour verbally or non-verbally; abrupt transition of learner activities do not occur and pacing is maintained (Kounin, 1970 in Creemers). To achieve this however, a combination of management and characteristics of effective teaching and learning have to occur in order for effective classroom management to take place (Creemers, 1994).
- **Opportunities to learn and practice outside the formal learning setting<sup>4</sup>** – studies have shown that 'homework' has higher effects for older learners (effect-size for high-school learners is 0.64) (Hattie, 2009). In a vocational setting 'homework' could mean for example the independent practice that learners have to complete in order to master a particular technique or style.

<sup>3</sup> Adapted from the original – from classroom management to behaviour management.

<sup>4</sup> Adapted from the original – from homework to opportunities to learn and practice outside the formal learning environment.

- **Clear goal setting** – refers to the set of goals to be identified at the beginning of the lesson. This involves a restricted set of goals that are hierarchically ordered, with emphasis on basic skills, cognitive learning and transfer in practice. The content is chosen in line with these goals (Creemers, 1994). Merzano has identified an average effect-size of 0.97 when teachers specified goals, with the most effective being the less specific goals, some of which were set by learners (Merzano, 1998).
- **Pace** – given the right time and support, almost all learners can become proficient. While the standards should remain the same, time and support should be varied according to individual learner need.
- **Structuring the content** – structuring the content includes the ordering of the content according to the hierarchically ordered goals. It is here that teachers present the content of what it is to be learnt, provide explanations and concrete examples, and demonstrate the practical and intellectual skills to be learnt. The use of advance organisers can support the ordering of the content (effect-size of 0.42 Hattie; and 0.78 Merzano).
- **Clarity of presentation** – clarity of presentation implies the elements mentioned above but also refers to the transfer process itself (avoiding vagueness, clarity of speech and incomplete sentences) (Creemers, 1994).
- **Questioning** – effective questioning includes a combination of low level and high-order questions for deeper learning (Redfield and Rousseau, 1981) and can be used to keep learners at work and to check their understanding (Creemers, 1994). The ratio between low – high level questions, the quality of the questions in terms of relevance, timing and appropriateness, the post-question timing allowed before calling on one of the learners to respond and analysing learner questions (Hattie, 2009), are also important factors of effective questioning.
- **Immediate exercise after presentation** – involves the immediate application/ exercise of what has been ‘learnt.’ It is used to check understanding and clarify issues and is guided and monitored by the teacher. Tasks are challenging and suit learners’ needs. Teachers allow sufficient time for application to take place and practice is directly linked to the new content or skill to be learnt. Practice is best when it takes place in realistic settings and with the appropriate resources available. Practice also needs to be repeated in order for knowledge to be gained and technical skills to be perfected. Trial and error is crucial in this process (Sennett, 2008).
- **Evaluation, feedback and corrective teaching and learning** – refers to judgments on whether goals have been obtained by means of ‘testing.’ Evaluation involves feedback (or formative assessment, or assessment for learning) and corrective instruction. Both Hattie (2009) and Merzano (1998) found high effect-sizes in relation to feedback. Hattie found an effect-size of 0.81 when learners received feedback, and Merzano, 0.74 when feedback was given to learners on the process and strategies they were using to complete specific tasks.

Feedback in the above studies was defined in a number of ways and included a number of different approaches (amongst others, teacher, peer and self assessment, praise, and physical rewards). Importantly, formative assessment which involves processes by which teachers, peers and learners themselves identify where they are in their learning, where they are going and what needs to be done to get them there (Weeden *et al*, 2002) is one of the most effective approaches for delivering feedback, as is feedback from peers and self-assessment. The TLRP (2006) also outlined, as one of their ten principles to support effective further education, the need for assessment to be ‘congruent with learning’; meaning that assessment should support the advancement of learning and determine the direction of learning.

## Teaching relationships

Teaching relationships include the relationships that teachers develop with their learners and the relationships that learners develop with each other. In FE teacher-learner relationships are listed as *'the most important link in the process'* by the TLRP (2006) and it was described as particularly important that support be given to learners from disadvantaged backgrounds or with a precedent of under-achievement in education (TLRP and ESRC, 2008). Cornelius-White (2007) conducted a meta-analysis of learner-centred teacher-learner relationships and confirmed the importance of teaching relationships. He went on further to report that positive teacher-learner relationships give rise to optimal, holistic learning with above average mean correlations when compared with other educational innovations for cognitive and behavioural outcomes.

## Teacher reflection

Reflection is the process by which practice is evaluated and improved. Reflective practice in education, introduced first by Donald Schon (1983) and taken further by Kolb (1984) in his experiential learning theory, comprises: teacher consideration of their own experiences and the connection of knowledge with practice with reference to experienced teachers within the same curriculum area (Schon 1996). Moon (1999) went on to discuss how reflection was the ability in teachers to continuously evaluate and review their practice so that reflective practice was defined as *'a set of abilities and skills, to indicate the taking of a critical stance, an orientation to problem solving or state of mind.'*

So, effective teachers are **reflective**; they constantly assess and re-evaluate their practice, discuss it with their colleagues, consider their learners' responses and seek to develop new and better ways of teaching.

## Teaching models

Exploring learning theories will help us to understand where teaching models are derived from as it is learning theory that underpins the teaching models that are conceptualised in literature.

Learning theories hold different assumptions about knowledge, learners and learning and importantly underpin pedagogical practices. Learning theories which are commonly discussed include:

- **Behaviourist** – learning is behavioural change and focuses on the changes which can be brought about and observed in learners' behaviours. In addition, it is believed, learning can be enhanced through the manipulation of environmental stimuli. For example, asking learners to leave the classroom after speaking at inappropriate times to their peers will inhibit them to do it again, whilst praising learners for submitting their work on time will encourage them to continue to do so. Thus, teachers plan and implement pedagogical strategies such as behavioural objectives, positive feedback mechanisms, re-enforcement and demonstrations of approval.
- **Cognitive** – learning is a mental process in which information is processed and understood by the development and use of cognitive strategies. These strategies allow learners to link previous and new knowledge in a meaningful way and include concept mapping, advanced organisers, framing and outlining.
- **Social/Situational** – learning is embedded within activity, context and culture – it is situated (Lave and Wenger, 1991). Situated learning is learning that takes place in the same context in which it is applied and involves social interaction and collaboration in a particular physical environment. Learners become involved in a 'community of practice' which embodies certain beliefs and behaviours to be acquired.

- **Humanistic** – learning should also be understood in terms of the personality of the learner as well as behavioural change and the extent of information processing. This approach views learning as a personal act to fulfil the potential and development of the whole person. The aim of this learning is for learners to become autonomous.
- **Constructivist** – learning involves the active construction of meaning, knowledge and skills by learners which is dependent on context. It is socially mediated and is situated in the ‘real-world’ of the learner. (Merriam and Caffarella, 1991)

In practice, behaviourist and cognitive theories have acted as the theoretical cornerstones of vocational pedagogy. The kinds of pedagogical strategies that are based on behaviourist theories include instructional cues, demonstration, practice, reinforcement, behavioural objectives and positive feedback mechanisms. Strategies based on cognitive learning theories include framing, outlining, concept mapping and advance organisers to help learners connect new information with existing knowledge in meaningful ways.

Both cognitive and behaviourist learning theories however are criticised for assuming that learning is essentially an individual activity. They also assume the transition model of learning in which the teacher or trainer selects pedagogical strategies that enable the effective transmission and accumulation of knowledge and skills by the learner.

The ‘new’ dominant theory in the literature is the *constructivist theory*. Pedagogical strategies include discussions, group work, theoretical and practical problem solving, the sharing of information, reflection, presentation of alternative perspectives, modelling, coaching and mentoring. Importantly, adult learning theories, experiential, problem-solving and project-based approaches base their learning and teaching practices in constructivist theory. Indeed, the interest in ‘communities of practice’, work-based learning and situated learning theories demonstrate the influence of constructivist theory (Chappell, 2004).

However as Cullen et al (2002) highlights, most of these debates on the supremacy of different learning theories are ‘*value-laden; arguing for the primacy of one approach over another rather than the appropriateness of different practices for different settings and purposes*’. In Australia, vocational education pedagogy draws on a mix of educational assumptions and theories about teaching and learning. Thus good vocational pedagogy has taken a more pragmatic position in the constructivist camp or arguably draws from many learning theory traditions where appropriate (Chappell, 2004).

There are many different learning styles theories and tools derived initially from Kolb’s (1984) experiential learning theories. Critics of learning styles theories have argued that the underpinning research was highly contestable and that labelling or pigeonholing learners with their preferred learning style is unhelpful. Other writers assert that knowledge of the learning process and learners ‘preferred learning styles’ is an important part of delivering good teaching and learning. Examples of learning styles include: Kolb’s (1984) four basic learning styles of: diverging, assimilating, convergent and accommodating learners; Honey and Mumford’s (1992) activists, reflectors, theorists, and pragmatists and Dunn and Dunn’s model of visual, audio and kinaesthetic (VAK) learning styles. Entwistle (2000) has argued that learners need to adopt both deep and surface approaches for effective learning. Appendix 8 provides further detail references and commentary on learning styles. The importance of learning styles theory is in showing that learners learn in different ways and therefore teachers need to consider this when planning their teaching and when selecting teaching models.

In the section below, it will become clear that that different learning theories underlie different teaching models and that different teaching models are used in teaching and learning with different types of learning objectives. We therefore explore a range of teaching and learning models below.

The Department for Education (DfE) website states that research and practice suggest that learners' attainments can be enhanced by the consistent use of specific teaching and learning models. These models have been developed directly from theories about learning and may be defined as:

*a tightly structured sequence that is designed to elicit and develop a specific type of thinking or response.*

The use of teaching models has the potential to be valuable in vocational education as a means of improving practice. Some models bring together strategies for learning that have been grouped according to the outcomes learners need to achieve, relating to the knowledge and skills to be achieved as well as the level of knowledge and skills to be achieved. The models can indicate a way forward and can contribute to the improvement of practice in teaching and learning.

For the purposes of this discussion, we present here the work undertaken by Joyce *et al* (2008) who have produced a taxonomy of teaching models. They have grouped these models based on the type of learning they promote and on the orientation towards people and how they learn. All four families of models are relevant to vocational education. The models grouped under each family were selected according to how practical they were in a variety of teaching and learning settings (Joyce *et al*, 2008, p. 124). These families are (see Appendix 7 for more details):

- **the information processing family of models** – relevant to vocational education in that they enhance learners' ability to make sense of new information and construct knowledge. The models in this family include, inductive thinking, concept attainment, inquiry training and advance organisers.

Each model in this family is developed to support different types of thinking. Information processing models support the individual in forming concepts (inductive teaching), understanding them (concept attainment), memorising information (e.g. mnemonics and link word approaches), thinking metaphorically (syntectics – a model developed from industry) and absorbing information easier (advance organisers). Inquiry-based models are an important part of the information processing family.

- **the social family of models** – uses group inquiry and problem-solving strategies; they encourage assimilation and understanding and rely on learners' personal and social values. These models include group investigation, social inquiry and role playing. Overall, they facilitate, cooperative learning and the study of values.

In cooperative learning, learners work together in groups; they are positively interdependent; tasks are structured so that learners need each other to accomplish their common goals or activities and they take individual responsibility for their work and learning. Furthermore, the overall effect of peer tutoring and peers as co-teachers is also powerful. Peer tutoring has many academic and social effects for those tutoring and those being tutored. Peer tutoring is most effective when it is cross-age, is used as a supplement rather than substitute for the teachers' roles and is more learner controlled with learners involved in the setting of goals, monitoring and evaluating performance and selecting awards (Hattie, 2009).

In addition, the TLRP (2006) argues that effective teaching and learning encourages social process and outcomes. Learners should be encouraged to work together, share ideas and build knowledge together. TLRP argues that this principle is essential in supporting effective FE.

- **the personal family of models** – supports learners’ mental and emotional health by developing self-confidence, forming a realistic sense of self and building empathetic reactions to others. Examples of personal models include, nondirective learning, awareness training, classroom meeting, self-actualisation and conceptual systems.

Using these models, teachers’ help learners feel good about themselves, ‘own’ their own development and have a sense of self-worth. If self-efficacy, as we saw earlier has such an impact in learner achievement, the incorporation of personal models into teaching becomes crucial.

- **the behaviour family of models** – seeks specific behavioural changes in learners. Examples from this family include mastery learning, directed teaching, simulations-based learning and feedback-centred models.

This family of models supports learners in mastering subject matter and acquiring technical skills. Behaviourism believes that human beings are self-correcting and modify their behaviour according to the success of their actions. The models therefore assume that learners will adjust their behaviour or approach to an action, according to the feedback they receive.

Each teaching model has the potential to deliver different outcomes. The models are highly structured and involve a series of steps of teaching and learning practice. All the different steps of the models are crucial and in order to achieve successful outcomes all have to be used systematically (Joyce *et al*, 2008).

Research and meta-analyses undertaken by a range of researchers, including Hattie (2009) and Merzano (1998) on effective teaching and learning, suggests that of the teaching models mentioned above, a number can be identified as having a positive effect on learner outcomes and skills:

- **Cooperative learning** models have been developed which enable learners to work together, using a variety of learning activities to improve their understanding of a subject. Each member of a team is responsible not only for learning what is taught but also for helping team mates learn, thus creating an atmosphere of achievement. Learners work through the activity until all group members successfully understand and complete it.
- Opportunities (including ‘**compare and contrast**’ tasks) for learners to identify similarities and differences between two or more concepts - with the best strategy involving learners developing analogies that link new content with old.
- **Deductive strategies** are where a teacher typically provides information and examples of the concept or skill being taught, then, allows learners to practice the skill being taught. This involves the learners in reasoning and applying learning in a way that requires higher order thinking (e.g. evaluating a case study)
- **Experimental enquiry** enables learners to experience the processes of knowledge creation. In essence the learning is stimulated by enquiry, it can therefore be driven by questions or problems, based on a process of seeking knowledge and new understanding; a learner-centred approach to teaching in which the role of the teacher is to act as a facilitator. It is a move to self-directed learning with learners taking increasing responsibility for their learning and the development of skills in self-reflection and an active approach to learning. In



particular the learning outcomes could include: critical thinking, the ability for independent inquiry, responsibility for own learning and intellectual growth and maturity.

- **Whole class teaching** offers a learning-centred approach to maximise whole class instruction by creating energising, engaging teaching that all learners will find useful. Much whole-class teaching is pitched at the middle of the ability range, leaving the able learners unchallenged and the less confident struggling. Participation is often confined to the regular volunteers and learners can become passive and totally dependent on the teacher.
- **Peer explanations** to other peers or to the whole class which can be either whole class teaching or with every learner in the class paired with another. The teacher writes lessons that one learner uses to teach or tutor another. During the tutoring, one learner explains the work to another learner and asks them to answer questions, and tells the learner whether his or her answers are correct. Peer tutoring has been shown to work for learners at all levels.
- **Problem solving models** involve the teacher in presenting the learners with a problem. Learning becomes active in the sense that the learners have to discover and work something out themselves, which provides the learners with opportunities to examine and try out what they know and discover what they need to learn. It presents learners with challenges about their own resourcefulness, personal organisation, critical abilities and capacity to think.
- **Advance organisers** aims to help learners integrate new information with their existing knowledge, leading to 'meaningful learning' as opposed to rote memorisation. It therefore, should develop cognitive structures and systems for dealing with information and enable learners to arrange their knowledge in order. This model is particularly useful to structure extended curriculum sequences or courses and to guide learners systematically in the key ideas.



## Appendix 3 Effect-size research

Effect-size is a simple way of quantifying the size of the difference between two control groups. It is often applied to any measured outcome in education or social science. To understand why we use it, we can see below an example presented by Coe (2002).

A group of 38 children listened to a story and tested on their comprehension skills by answering 20 questions. Half (19 children) listened to the story at 9am, the other half at 3pm. The purpose of the experiment was to explore how the time of day affects learning. The average score was 15.2 for the morning group and 17.9 for the afternoon group: a difference of 2.7.

To understand the effect, we need to understand how important the difference of 2.7 is. Effect-size research allows us to do this by taking into account and comparing the variation in the scores of the two groups, thereby putting the difference of 2.7 into context. If there were no overlap at all in the scores (therefore everyone in the afternoon group scored higher than the morning group) then this would seem like a substantial difference and produce a large effect.

In statistical language therefore, the effect-size is the standardised mean difference between the two groups, in other words:

$$\text{Effect Size} = \frac{[\text{Mean of group 1 (experimental group)}] - [\text{Mean group 2 (control group)}]}{\text{Standard Deviation}}$$

*(The standard deviation is a measure, of the spread of a set of values.)*

An effect-size of 0.8 means that the score of the average person in the experimental group is 0.8 standard deviations above the average person in the control group. Therefore the greater the decimal number, the greater the effect.

Cohen (1969) suggests a familiar way of understanding the numerical value of effect-sizes. Scores of 0.2 are described as 'small', 0.5 'medium' and 0.8 as 'grossly perceptible and therefore large'. However, Cohen acknowledges the danger of using 'small', 'medium' and 'large' out of context and Glass et al (1981) argue that the effectiveness of any particular intervention can only be interpreted in relation to other interventions that seek to produce the same effect. It should also be considered that the importance of effect depends on and is relative to its costs and benefits. In education, for example, if it could be shown that making a small and inexpensive change would raise the academic achievement of even as little as 0.1, then this could arguably be a significant improvement (Coe, 2002). Please see Coe's paper on effect-size for more information, details can be found in the bibliography.

## Appendix 4 Vocational qualifications in the UK

**Table 6 Vocational qualifications across the UK and ‘academic’ equivalents according to the National Qualifications Framework (NQF). Adapted slightly from Lucas *et al* (2009) and DirectGov (2010).**

Level	Examples of qualifications	Equivalent FE/HE qualifications	What they offer
8	BTEC Level 8 Advanced Professional City & Guilds Fellowship	Doctorates	Appropriate for leading experts or practitioners in a particular field: <ul style="list-style-type: none"> <li>highly developed and complex Levels of knowledge, opportunity to develop new and creative approaches that extend or</li> <li>redefine existing knowledge or professional practice</li> </ul>
7	BTEC Advanced Professional BTEC Level 7 Advanced Professional Diplomas, Certificates and Awards City & Guilds Membership SVQ Level 5 (SCQF Level 11)	Master’s Degree PGCE	Appropriate for senior professionals and managers: <ul style="list-style-type: none"> <li>develop original responses to complicated and unpredictable problems and situations</li> </ul>
6	BTEC Advanced Professional BTEC Level 6 Professional Diplomas, Certificates and Awards City & Guilds Graduateship	Bachelor’s Degree Graduate Diploma	Appropriate for people working as knowledge-based professionals or in professional management positions: <ul style="list-style-type: none"> <li>a specialist, high-level knowledge of an area of work or study, to enable you to use your own ideas and research in response to complex problems and situations</li> </ul>
5	BTEC Professional Diplomas, Certificates and Awards BTEC Higher National Diploma BTEC Level 5 Professional City and Guilds Full Technological Certificate SVQ Level 4 (SCQF Level 8)	Foundation Degree Diploma of Higher Education	Appropriate for people working as higher grade technicians, professionals or managers: <ul style="list-style-type: none"> <li>ability to increase the depth of knowledge and understanding of an area of work or study, so you can respond to complex problems and situations</li> <li>involves high-level of work expertise and competence in managing and training others</li> </ul>

Level	Examples of qualifications		Equivalent FE/HE qualifications	What they offer
<b>4</b>	BTEC Professional Diplomas, Certificates and Awards BTEC Level 4 Professional		Certificate of Higher Education	Appropriate for people working in technical and professional jobs and/or managing and developing others' specialist learning, involving: <ul style="list-style-type: none"> <li>● detailed analysis of a high-level of information and knowledge in an area of work or study</li> </ul>
<b>3</b>	A Level AS Level Advanced 14–19 Diploma Advanced Diploma	BTEC National Level 3 NVQ City & Guilds, Level 3		Appropriate if you plan to go to university, work independently, or (in some cases) supervise and train others in their field of work: <ul style="list-style-type: none"> <li>● ability to gain or apply a range of knowledge, skills and understanding, at a detailed level</li> </ul>
<b>2</b>	GCSE at grades A*–C Higher 14–19 Diploma Intermediate Diploma BTEC First Diploma	City & Guilds, Level 2 Level 2 NVQ		Appropriate for many job roles: <ul style="list-style-type: none"> <li>● good knowledge and understanding of a subject</li> <li>● ability to perform variety of tasks with some guidance or supervision</li> </ul>
<b>1</b>	GCSE at grades D–G Foundation 14–19 Diploma Foundation Diploma BTEC Introductory BTEC Level 2 Level 1 NVQ			Basic knowledge and skills: <ul style="list-style-type: none"> <li>● ability to apply learning with guidance or supervision</li> <li>● may be linked to job competence</li> </ul>
<b>Entry</b>	Entry Level Certificate Foundation Diploma BTEC Level 1 Certificate			Not geared towards specific occupations: <ul style="list-style-type: none"> <li>● basic knowledge and skills</li> <li>● basic knowledge and skills ability to apply learning in everyday situations</li> </ul>

## Appendix 5 Wider skills frameworks from across the world

**Table 7** Re-created from Lucas, B., Claxton, G. and Webster, R. (2010) *Mind the Gap. Research and Reality in Practical and Vocational Education*, London: Edge Foundation, p 39

Framework	Description of key elements
Queensland New Basics	A focus on 4 broad skill areas grounded in ‘risk tasks’ (substantial real world problems)
Victorian Essential Learnings	Based on 4 components – interpersonal development, personal learning, ICT and thinking processes
South Australia (SA) Learning to Learn	The SA Compass Two sections – Learning for Teaching and Teaching for learning. Includes understanding how self and others learn, developing deep pedagogical and content knowledge and participating in professional learning communities and networks
Tasmanian Curriculum	Strong focus and the teaching of thinking skills, including reasoning, asking questions, making decisions, solving problems along with responsible community participation
New Zealand Key Competencies	5 Key competences rooted in principles of effective teaching. The 5 competencies are:- thinking; using language, symbols and texts; managing self; relating to others; participating and contributing
Singapore Desired Outcomes of Education	A long list of outcomes implicitly derived from the teaching of wider skills including moral integrity, teamwork, self-belief, resilience, entrepreneurial spirit and aesthetic appreciation
Finland Learning to Learn Competencies	A complex framework with a strong emphasis both on the process of learning and on its assessment. A set of context-related beliefs; self-related beliefs and learning competencies
EU Framework for Key Competencies	8 key competencies for successful life in knowledge society. The 8 are:- Communication in the mother tongue; Communication in a foreign language; Mathematical literacy; Basic Competence in science technology; Digital competence; Learning to learn; Interpersonal, intercultural, social and civic competencies; Sense of innovation and entrepreneurship, and Cultural awareness and expression
OECD DeSeCo Framework	OECD’s 3 broad clusters of competencies
Project Zero	A range of approaches such as Visible Thinking, and Multiple Intelligences, along with a set of 7 key principles for ‘smart schools’
Habits of Mind	16 wider habits of mind for effective learning, developed by Arther Costa and Bena Kallick in the USA. The 16 include:- Persisting; Thinking and communicating with clarity and precision; Managing impulsivity; Gathering data through all senses; Thinking flexibility; Striving for accuracy and Finding humour

## Appendix 6 An overview of subjects ‘well taught’ and needing ‘improvement’

**Table 8 An overview of ‘well taught’ and subjects needing ‘further improvement’ in teaching and learning derived from inspection data**

Year	‘Well’ Taught Subjects		Subjects needing ‘further improvements’	
	FECs	WBL providers	FECs	WBL providers
<b>2004/05</b>	No data available	Retail Customer Service Transportation Information and Communications Technology (ICT) (ALI report)	Engineering Construction (IFP report) Foundation Levels (Foster Review) Manufacturing	Construction (ALI inspection and IFP report) Manufacturing (IFP report)
<b>2007/08</b>	No data available	Engineering Business Administration Construction	No data available	Preparation for Life and Work Health and Social Care
<b>2008/09</b>	Health and Social Care Public Services Languages, Literature and Culture Retail and Commercial Enterprise	Engineering Construction	Leisure, Travel and Tourism Construction Preparation for Life and Work Information and Communication Technology	Leisure, Travel and Tourism Business Administration
<b>2009/10</b>	Health, Public Service and Care Arts, Media and Publishing Engineering and Manufacturing Technologies	Engineering and Manufacturing Technologies	Business, Administration and Law Science and Mathematics Construction, Planning and the Built Environment	Preparation for Life and Work Construction, Planning and the Built Environment Retail and Commercial Enterprise

## Appendix 7 Examples of teaching models

**Sources: Joyce *et al* (2008) and DfES (2004)**

**Behaviour and cybernetic family (Joyce *et al*, 2008)**

Model	Developer	Purpose
<b>Social learning</b>	Albert Bandura; Carl Thoresen; Wes Becker	Management of behaviour. Learning new patterns of behaviour, reducing phobic and other dysfunctional patterns, learning self-control
<b>Mastery learning</b>	Benjamin Bloom; James Block; B.F. Skinner	Mastery of academic skills and content of all types
<b>Programmed learning</b>	Many developers – Carl Smith and Mary Foltz	Mastery of skills, concepts factual information
<b>Simulation</b>	Thomas Good; Jere Brophy; Wes Becker and others	Mastery of complex skills and concepts in a wide range of areas of study
<b>Direct teaching</b>	David Rinn	Mastery of academic study and skills in a wide range of areas of study
<b>Anxiety reduction</b>	David Johnson; Roger Johnson	Control over aversive reactions. Application in treatment and self-treatment of avoidance and dysfunctional patterns of response

**Informational processing family (Joyce *et al*, 2008)**

Model	Developer	Purpose
<b>Inductive thinking (classification)</b>	Hilda Taba (Bruce Joyce)	Development of classification skills, hypothesis building and testing and understanding of how to build conceptual understanding of content areas
<b>Concept attainment</b>	Jerome Bruner; Fred Lighthall	Learning concepts and studying strategies for attaining and applying them. Building and testing hypotheses
<b>Inquiry training</b>	Richard Suchman	Causal reasoning and understanding of how to collect information, build concepts and build and test hypothesis
<b>Cognitive growth</b>	Jean Piaget and many others	Increase general intellectual development and adjust teaching and learning to facilitate intellectual growth
<b>Advance organisers</b>	David Ausubel and many others	Designed to increase ability to absorb information and organise it, especially in learning from lecturers and readings
<b>Mnemonics</b>	Michael Pressley; Joel Levin (and associated scholars)	Increase ability to acquire information, concepts, conceptual systems and meta-cognitive control of information processing capability

**Social family (Joyce *et al*, 2008)**

Model	Developer	Purpose
<b>Group investigation</b>	John Dewey; Herbert Thelen; Shlomo Sharan; Rachel Hertz-Lazarowitz	Development of skills for participation in democratic processes. Also emphasises social development, academic skills and personal understanding
<b>Social inquiry</b>	Byron Massialas; Benjamin Cox	Social problems solving through collective academic study and logical reasoning
<b>Jurisprudential inquiry</b>	James Shaver; Donald Oliver	Analysis of policy issues through a jurisprudential framework. Collection of data, analysis of value questions and positions, study of personal beliefs
<b>Laboratory method</b>	National Training Laboratory	Understanding of group dynamics, leadership, understanding of personal styles
<b>Role playing</b>	Fannie Shaftel	Study of values and their role in social interaction. Personal understanding of values and behaviour
<b>Positive interdependence</b>	David Johnson; Roger Johnson	Development of interdependent strategies of social interaction. Understanding of self-other relationships and emotions
<b>Structured social inquiry</b>	Robert Slavin and colleagues	Academic inquiry and social and personal development. Cooperative strategies for approaching academic study



### Personal family (Joyce *et al*, 2008)

Model	Developer	Purpose
<b>Nondirective learning</b>	Carl Rogers	Building capacity for personal development, self-understanding, autonomy and esteem of self
<b>Awareness training</b>	Fritz Perls	Increasing self understanding, self-esteem and capacity for exploration. Development of interpersonal sensitivity and empathy
<b>Classroom meeting</b>	William Glasser	Development of self-understanding and responsibility to self and others
<b>Self-actualisation</b>	Abraham Maslow	Development of personal understanding and capacity for development
<b>Conceptual systems</b>	David Hunt	Increasing personal complexity and flexibility in processing information and interacting with others

### Further useful descriptions

**Inductive teaching** also referred to as classifying, is a means of helping learners to solve problems. Learners are presented with an array of data and asked to sort and classify it, so generating a hypothesis or rule.

**Deductive teaching** focuses on subject concepts and, specifically, on the learners' understanding of 'the concept rule': a definition or rule which is stated about the topic of the session.

**Direct teaching** is whole-class teaching characterised by a stimulus-response approach. The teacher draws learners in, actively engaging them through a variety of techniques such as questioning, explaining and organising group work. There will often be a starter then plenaries at appropriate points to clarify learning.

**Modelling** is effective in teaching new skills or procedures, for example how to construct a paragraph, evaluate a painting or draw a conclusion from evidence. Not only will the teacher demonstrate the procedure, but will also talk through their thinking, so making explicit the decisions that have to be made at each stage.

**Demonstration** is an approach used to illustrate an event or procedure. It is often used to stimulate thinking.

**A constructivist approach** can challenge and address misconceptions. Learners are asked to make explicit their thinking about a particular notion or idea. This will often reveal a range of ideas. Learners are then challenged to consider what would happen in a particular circumstance for each of the ideas. Following this learners are asked to rethink their ideas in light of what actually happens.

**Concept attainment** – this model is built around the studies of thinking conducted by Bruner, Goodnow, and Austin (1967). It is designed to help learners learn concepts for organising information and to help them become more effective at learning concepts.

**Simulations** are constructed from descriptions of real-life situations. A less-than-real-life environment is created for the instructional station. Sometimes the renditions are quite elaborate (for example, flight and space flight simulators). The learner engages in activity to achieve the goal of the simulation (to get the aircraft off the ground, or to redevelop an urban area), and has to deal with realistic factors until the goal is mastered.

In **role playing**, learners explore human-relations problems by enacting problem situations and then discussing the enactments. Together, learners can explore feelings, attitudes, values, and problem-solving strategies.

**Jurisprudential** inquiry In a replica of the judicial process, jurisprudential inquiry lets learners explore controversial issues in much the same way as participants in a trial are introduced to and must evaluate or weigh evidence.

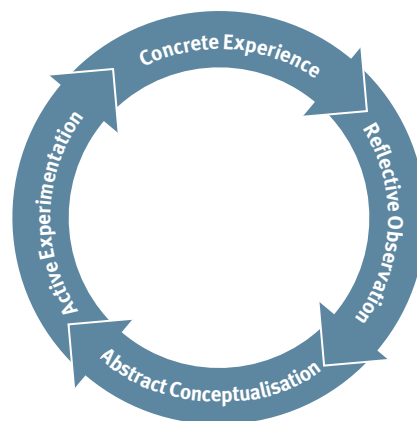
## Appendix 8 Learning styles

Learning styles form an important part of the context of teaching and learning in which teachers practice. Learning styles may be defined as one's way of processing information, feeling and behaving in learning situations (Smith, 1982).

There is a vast amount of literature and diagnostic tools that have arisen due to the emphasis on learning styles and associated terms such as learning strategies and learning approaches. There are now questions over the value of this area of learning research and in particular the value of diagnostic tools. There is a body of research which indicates that the process of diagnosing learners with a learning style can risk labelling them and pigeonholing learners in their most preferred learning style. Instead it is argued that teachers need to expand their learners' repertoires by scaffolding learning activities beyond their preferred learning styles (Cordingley and Bell, 2007). TLRP (2006) also states that the tutor's role is to scaffold learning<sup>5</sup> and provide learners with the activities to move forward intellectually. Knowledge of the learning process and learners 'preferred learning styles' is thus an important part of delivering good teaching and learning which is appropriate to context.

Various styles of learning and tools for assessing learning styles, sometimes known as Learning Style Inventories (LSI) have been identified by theorists. Kolb's set of learning styles is a commonly referenced example. It was developed from his theory of the learning process, known as experiential learning. Experiential learning defines learning as the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of *grasping knowledge and transforming it* (Kolb 1984). Kolb expressed this process in what he called the learning cycle, shown below:

**Figure 4 Kolb's Learning Cycle, from Kolb (1984).**



<sup>5</sup> Scaffolding is based on the idea that individual learner's have a limited margin in which what they can learn in a particular timeframe. Scaffolding refers to the supports the teacher provides to help the learners carry out a task. It may for instance require a teacher to carry out parts of the overall task that the learner cannot yet manage. It involves a kind of cooperative problem-solving effort by teacher and learner in which the express intention is for the learner to assume as much of the task on his/her own (see Cullen, 2002).

The cycle shows different stages in the learning process; concrete experience and abstract conceptualisation being when knowledge is grasped and active experimentation and reflective observation when knowledge is *transformed*. Kolb proposed that this cycle can be started from any of the stages and that it should be approached as a continuous cycle. However, in practice it is suggested that often the learning cycle begins with concrete experiences, the learner carrying out a particular action and realising the effects of this action. The second step involves the reviewing and reflecting on the task just completed, asking questions and understanding what happened. This leads to the third stage, in which learners understand the general principle behind the event/task in order to complete the last stage, of applying what has been learnt to other circumstances. Kolb argues that effective learning requires the use of all four stages in the cycle and therefore different abilities to fulfil each stage (Kolb, 1984). Few learners can approach learning situations so ideally, and thus Kolb recognised that learners tend to show orientation to certain stages of the cycle. He therefore developed a learning style inventory to identify four basic learning styles:

- **Diverging** (feeling and watching) – learners who like to look at things from different perspectives, preferring to watch and use imagination to solve problems
- **Assimilating** (watching and listening) – learners prefer a concise, logical approach, these people require good clear explanation rather than practical opportunity
- **Converging** (doing and thinking) – learners solve problems and use their learning to find solutions to practical issues. They prefer technical tasks, and find practical uses for ideas and theories
- **Accommodating** (doing and feeling) – learners prefer a ‘hands on’ approach to learning, relying on human intuition rather than logic (see Kolb, 1984).

Other examples of learning styles include visual, audio and kinaesthetic (VAK). A visual learning style refers to learning by seeing or reading, audio by listening and talking and kinaesthetic by feeling and doing (Flemming, 2001). There are also variations of this, including VAKT (visual, audio, kinaesthetic and tactile). These learning style categories have been adopted by various learning style theorists and inventories. The Dunn and Dunn model determines that the diagnosis of visual, audio or kinaesthetic learners is dependent on learner preference to various stimuli which can be grouped in environmental, emotional, sociological, psychological and physiological elements. The VAK learning style in particular has led to the development of many commercially developed diagnostic tools, and as stated the value of these diagnoses has been questioned. As Coffield et al (2004) asserted, it has led to ‘*clear, simple, but unfounded messages for practitioners and managers that have too often been distilled from a highly contested field of research.*’

Furthermore, Noel Entwistle (2000) asserts that learners hold conceptions of learning that tend to develop and become more sophisticated over time. Entwistle argues that if learners hold a sophisticated conception of learning they adopt a deep approach to learning to reach their own understanding of materials and ideas.

- **Deep learning** – the intention of the learner is to extract meaning and produces active learning processes that involve relating ideas and looking for patterns and principles. This approach also involves monitoring the development of one’s own understanding and adapting learning accordingly.

Conversely, if learners conceptualise learning in terms of memorisation of facts and their intention is to just meet course requirements they are likely to adopt a surface approach (Coffield *et al*, 2004).

- **Surface learning** – the intention of the learner is to cope with the task, the learning process is restricted because the course is viewed as unrelated bits of information. At best it leads to routine memorisation.

Important to the theory is the proposal that learners can adopt both deep and surface approaches when needs be, to achieve the best possible marks, this is known as a strategic approach.

In terms of pedagogical relevance, teachers can facilitate a deep learning approach through pedagogical choices. Entwistle briefly examples teachers who use more varied methods of assessment to purposefully ensure learners have deep understanding and reflect on what they have learnt (Entwistle, 2002). Further, Ramsden and Entwistle, show that the deep approach to learning is encouraged by learners being given freedom in learning and experiencing good teaching with good pace, pitch, real-life illustrations, empathy with learner difficulties, tutors being enthusiastic and offering lively and striking explanations (Ramsden and Entwistle, 1981, cited in Coffield, et al, 2004). The learning approaches that learners are oriented to, thus form part of the context and can give direction to the pedagogical decisions teachers make.

Although the issues around learning styles must be acknowledged, knowledge of the learning process and styles can help teachers expand their learners' repertoire of skills through scaffolding learning. It importantly, can help deliver personalised and effective teaching and learning appropriate to context.



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