**Chapter 1**

**How students *really* learn**

**Pre-quote:**

The tertiary education sector is an area of current very rapid and unpredictable change, with universities and colleges reviewing and often implementing radical alterations in the ways they design, deliver and assess the curriculum, taking into account not just innovations in how content is being delivered and supported, particularly through technological means, but also the changing relationships between academics and their students. The role of the teacher in higher education needs to be reconsidered, when students can freely access content worldwide, and seek accreditation and recognition of learning by local, national or international providers. (Sally Brown, 2013)

**Intended outcomes of this chapter**

When you have worked through this chapter, you should be better able to:

1. equip yourself for the rapidly developing role of the lecturer, by focusing clearly on how learning really happens;
2. avoid unnecessary jargon and old thinking, when helping your students to learn effectively;
3. identify seven factors, in straightforward language, which underpin student learning;
4. address these factors in your day-to-day work with students;
5. help your students to gain control over these factors;
6. design or modify intended learning outcomes associated with your teaching, so that they align constructively with evidence of achievement, teaching approaches, assessment criteria, and feedback mechanisms.

This chapter underpins just about everything else in this *Toolkit* – whatever else we do, our job as lecturers is to do everything we can to make learning happen. The chapter is in four main sections:

* **Never mind the teaching – feel the learning!** This section ranges briefly around some of the ideas in the vast literature about how human beings are thought to learn – some ideas are better than others!
* **Factors underpinning successful learning:** this is an account of an evidence-based approach I have used over some decades now, working out how learning happens using the language of learners themselves and their teachers;
* **Developing students’ competences:** some thoughts about competence – and the opposite?;
* **Positioning the goalposts – designing and using learning outcomes:** making learning outcomes work for students, – it’s *their* targets we’re talking about.

The model of learning developed in this chapter comes from hundreds of thousands of peoples’ responses to some straightforward questions about their own learning. I stress that this is a *model* and not a theory. It’s become known as the ‘ripples on a pond’ way of thinking about learning, because the factors all affect each other – it’s not a cycle – a mere cycle does no justice to how complex the human brain actually is.

**Never mind the teaching – feel the learning!**

There is no single ideal way to teach – it would be very boring for learners if we all did exactly the same things! Whatever sort of training we think about, or whatever sort of educational experience we consider, the one thing they all need to have in common is that they lead to effective learning, otherwise everyone’s time is being wasted. However, whatever teaching approaches we choose to use, it’s worth stopping to think about exactly how students learn, so we can help them succeed to learn from our actions – and perhaps more important – from each other.

As will be seen throughout this book, the job of the lecturer is far more complex than just ‘lecturing’. It’s essentially about facilitating learning – causing learning to happen – often then leading to measuring evidence of achievement of learning thereby accrediting learning. Carl Rogers was one of the early advocates of the facilitation of learning, and wrote of essential qualities of teachers thus:

Perhaps the most basic of these essential attitudes is realness or genuineness. When the facilitator is a real person being what he is, entering into a relationship with the learner without presenting a front or facade, he is much more likely to be effective. This means that the feelings which he is experiencing are available to him, available to his awareness, that he is able to live these feelings, be them, and able to communicate them if appropriate. It means that he comes into a direct personal encounter with the learner, meeting him on a person-to-person basis. It means that he is being himself, not denying himself. Seen from this point of view it is suggested that the teacher can be a real person in his relationship with his students. He can be enthusiastic, he can be bored, he can be interested in students, he can be angry, he can be sensitive and sympathetic. ... Thus, he is a person to his students, not a faceless embodiment of a curricular requirement, nor a sterile tube through which knowledge is passed from one generation to another (Rogers, 1983, p.106).

(Sorry about the male pronoun – shows how long ago this was written – but the point Rogers makes stands well the test of time here).

The human species is unique in its capacity for learning – that is why our species has evolved as much as it has. The record of human beings engaging in learning goes back to the dawn of civilisation (and for quite some time before either of the words ‘education’ or ‘training’ were invented). Yet much that has been written about *how* we learn tends to have language that is unfamiliar and sometimes even alienating to most of the people who want to learn, or need to learn, or indeed to those who wish to cause learning to happen.

In the main part of this chapter, my intention is to share with you the results of my work over the last three decades, working with hundreds of thousands of lecturers, trainers, teachers and learners probing them about how their learning *really* happens. There emerge seven factors which seem to underpin successful learning at any age, in any part of the world, in any discipline, and by just about any human being! That’s a bold claim, but those of you who have followed my journey thus far, in previous editions of this Toolkit or in Race (2005, 2010, and 2014) will know how this way of thinking about learning has developed and consolidated over the years.

The seven factors I will explain in this Chapter prove to be a very tangible basis upon which to build a strategy for designing lectures, tutorials and student assignments, and also for developing learning materials, including computer-based and online learning resources, and indeed Massive Open Online Courses (MOOCs) much discussed at present.

However, before taking the practical look at learning mentioned above, there follows a short review of just a few of the recent ideas in the wide literature now available about learning, and to put these into perspective one or two thoughts from much longer ago.

**Recent thoughts on theories and models of learning**

Introducing his collection ‘*Contemporary theories of learning’* Knud Illeris (2009) suggests:

During the last 10-15 years, learning has become a key topic, not only for professionals and students in the areas of psychology, pedagogy and education, but also in political and economic contexts. One reason for this is that the level of education and skills of nations, companies and individuals is considered a crucial parameter of competition in the present globalised market and knowledge society. It is, however, important to emphasise that the competitive functions of learning are merely a secondary, late-modern addition to the much more fundamental primary function of learning as one of the most basic abilities and manifestations of human life. (Illeris, p.1)

A number of models have been put forward to explain the processes of learning, or the ways that people acquire skills. There have been two main schools of thought on how learning happens. The behaviourist school takes as its starting point a view that learning happens through stimulus, response and reward, in other words a conditioning process. The stimulus is referred to as an ‘input’, and the learned behaviours as ‘outputs’. It can be argued that the now widespread emphasis on expressing the curriculum in terms of intended learning outcomes derives from the behaviourist school of thinking, and that clearly articulated assessment criteria are an attempt to define the learning outputs.

The other main approach is the cognitive view, which focuses on perception, memory and concept formation, and on the development of people’s ability to demonstrate their understanding of what they have learned by solving problems. One of the most popular approaches of the ‘cognitive’ school arose from the work of Lewin (1952) and was extended by Kolb (1984) in his book *Experiential Learning: Experience as the source of learning and development.* Kolb’s model identifies that most of what we know we learn from experience of one kind or another, and then breaks this down into four stages, turning them into a learning cycle.

Bruner *et al* (1956), however, criticised some of the cognitive approaches as follows, reminding me of the views of Carl Rogers which started this chapter:

A final point relates to the place of emotion and feeling. It is often said that all ‘cognitive psychology’, even its cultural version, neglects or even ignores the place of these in the life of mind. But it is neither necessary that this be so, nor at least in my view, is it so.... Surely emotions and feelings are represented in the process of meaning making and in our constructions of reality. (Bruner *et al*, 1956, in Illeris, 2009, p.167).

Wenger (1998), following up the social dimensions of learning in his book *Communities of practice: learning, meaning and identity,* suggests that:

Learning has traditionally been the province of *psychological* theories.

* *Behaviourist* theories focus on behaviour modification via stimulus-response pairs and selective reinforcement. ... Because they completely ignore issues of meaning, their usefulness lies in cases where addressing issues of social meaning is made impossible of is not relevant.
* *Cognitive* theories focus on internal cognitive structures and view learning as transformations in these cognitive structures. Their pedagogical focus is on explanation, recombination, contrast, inference, and problem-solving.
* *Constructivist* theories focus on the processes by which learners build their own mental structures when interacting with an environment. Their pedagogical focus is task-oriented. They favour hands-on self-directed activities oriented towards design and discovery.
* *Social learning* theories take social interactions into account, but still from a primarily psychological perspective. They place the emphasis on interpersonal relations involving imitation and modelling, and thus focus on the study of cognitive processes by which observation can be a source of learning. (quoted in Illeris, pp.216-7).

Then Wenger goes on to suggest the advantages of *activity* theories, *socialisation* theories and *organisational* theories over these traditional ways of thinking about learning.

Meanwhile, Coffield *et al.* (2004) in a large-scale systematic review of various models of learning were very critical of the Kolb learning cycle, (which is still widely cited) and said:

Kolb clearly believes that learning takes place in a cycle and that learners should use all four phases of that cycle to become effective. Popular adaptations of his theory (for which he is not, of course, responsible) claim, however, that all four phases should be tackled and in order. The manual for the third version of the LSI is explicit on this point: ‘You may begin a learning process in any of the four phases of the learning cycle. Ideally, using a well-rounded learning process, you would cycle through all the four phases. However, you may find that you sometimes skip a phase in the cycle or focus primarily on just one’ (Kolb 1999:4). But if Wierstra and de Jong’s (2002) analysis, which reduces Kolb’s model to a one-dimensional bipolar structure of reflection versus doing, proves to be accurate, then the notion of a learning cycle may be seriously flawed. (Coffield *et al.* 2004)

Coffield *et al.* also reviewed in detail the strengths and weaknesses of various learning styles instruments and models, some deriving from Kolb’s work, and were very critical of the ‘learning styles’ approach, going as far as to ask “Should research into learning styles be discontinued, as Reynolds (1997) has argued?”, quoting Reynolds: ‘Even using learning style instruments as a convenient way of introducing the subject [of learning] generally is hazardous because of the superficial attractions of labelling and categorizing in a world suffused with uncertainties’. (Reynolds 1997: 128 in Coffield *et al.* 2004).

A further criticism of many of the approaches to thinking about learning was neatly made by Peter Jarvis in his chapter ‘*Learning to be a person in society’:*

As a sociologist, I recognised that all the psychological models of learning were flawed, including Kolb’s well-known learning cycle, in as much as they omitted the social and the interaction (in Illeris (2009), p.23).

Going much further back in time, another important approach was that of Ausubel (1968), who in his book *Educational Psychology: A cognitive view,* placed particular emphasis on starting points, and asserted:

The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly. (p.235).

I like nowadays to think of ‘learning incomes’ as well as learning outcomes. The more we know about what our students can already do, where they’ve already been, their hopes, fears and hang-ups, the better we can help them to learn. Many practices now common in training can be matched to the cognitive psychology approach of Ausubel, and his ideas of the need for ‘anchoring’ concepts, advance organisers (such as what we now commonly refer to as learning objectives or statements of intended learning outcomes), and clearly structured learning material. This can be regarded as bringing together useful elements of the cognitive and behaviourist ways of thinking about learning. Skinner (1954), in a journal article entitled ‘The science of learning and the art of teaching’ presented one of the seminal papers for the behavioural school, and paid particular attention to the importance of repeated practice, and the use of rewards to help appropriate responses to be retained. The present way of designing curriculum around intended learning outcomes grew from the 1950s and 1960s when behavioural objectives ruled, and one of the most influential publications was the Bloom *et al. Taxonomy of Educational Objectives,* volume 1 *The Cognitive Domain,* published in 1956.

Yrjo Engestrom, known for his discussion of ‘expansive learning’ suggests:

Any theory of learning must answer at least for central questions: (1) Who are the subjects of learning – how are they defined and located? (2) Why do they learn – what makes them make the effort? (3) What do they learn – what are the contents and outcomes of learning? (4) How do they learn – what are the key actions and processes of learning? (quoted in Illeris (2007: 53 at the start of a chapter summing up Engestrom’s discussion of ‘expansive learning’ as an activity-theoretical re-conceptualisation).

More recently, Biggs and Tang (2011) in successive editions of *Teaching for Quality Learning at University* have brought together a comprehensive survey of the links between teaching and learning in higher education making a powerful case for ‘constructive alignment’ – systematically linking intended learning outcomes, choices of teaching methods, evidence of achievement of the outcomes and assessment methods and criteria. ‘Joined-up thinking’ could be another term for constructive alignment, perhaps.

The profound influence of assessment design on approaches to learning was brought into sharp relief by Gibbs (1999) in his chapter in *Assessment Matters in Higher Education* edited by Brown and Glasner, and developed further in Gibbs (2010). Meanwhile the importance of the role of formative feedback, has been addressed by Knight and Yorke (2003), and developed in great detail by Sadler, who also delves deep into the real problems which exist in trying to quantify learning in terms of marks and grades, in a wide-ranging series of contributions to the literature from 1998 to the present time.

**Deep, surface or strategic learning?**

Much of the discussion about learning revolves around three or four words which describe different (though overlapping) ways of going about the process of learning. In their chapter entitled ‘The link between assessment and learning’, Dunn *et al.* introduce the topic of approaches to learning thus:

Many researchers have distinguished between different cognitive levels of engagement between learning tasks. Perhaps most widely referred to is the distinction between a *surface approach,* in which a relatively low level of cognitive engagement occurs, and a *deep approach,* where a relatively high level of cognitive engagement with the task takes place. In a surface approach to a learning task, the student perceives that it is necessary to remember the body of knowledge. Mostly this would involve the need to rote-learn and then recall the facts concerned. Of course there are many situations where this kind of approach to learning task is appropriate – such as perhaps learning the chemical tables. At the other end of the spectrum is a deep approach to a learning task, where the student perceives that it is necessary to make meaning of the content concerned, to be able to appraise it critically and to be able to apply the knowledge to other contexts or knowledge domains. (Dunn *et al.* 2004: 9–10)

So what sorts of learning are we as lecturers aiming to encourage? The most frequent response is ‘deep learning’. But what *is* deep learning? Possibly really making sense of the topic concerned, and linking it well to all the other things around? This is more likely to be the case when *researching* a topic, and when lots of time is spent focusing on it, and when there is plenty of time to get one’s head around it bit by bit. But a problem comes to light if we ask ourselves ‘what are we really *measuring* with most of our forms of assessment?’, and the answer is much more likely to be ‘surface learning’, or indeed ‘strategic learning’.

**‘**Surface learning’ is looked down upon. It is regarded as the poor relation of deep learning. But in this age where information is so easy to download, store, file and carry around with us, we’re hardly likely to ‘learn’ that information in ways which used to be necessary in the past. In most avenues of life, we can depend on having the information we need readily available, so we don’t see the need to carry it around in our heads any more. It is indeed useful to be quick and accurate at *finding* and *re-finding* information however. There is a tendency to keep in our heads only what we need fairly immediately, and we all tend to use our memories for information which is ‘sufficient to the day’ – and in students’ case ‘sufficient to the exam day’ perhaps. It can be argued that much of modern life only requires ‘surface learning’, as we can so easily get back to important or relevant information as and when we may need it. As always, however, there can be unintended consequences of progress.

***Pause for thought***

Nowadays, most people rarely pick up a hard-copy dictionary, unless learning a language and translating. We can enter a word (even spelled incorrectly) into our laptop, tablet or phone using Google, or many available online dictionaries, and quickly get a range of explanations, illustrations, examples – everything we might need. But not quite. What do we miss out?

One thing we can miss is the *other* words which are close in an alphabetical list to the word or phrase we are looking for. In the days of traditional dictionaries, a not-insignificant amount of learning tended to happen when our eyes strayed beyond our original search. With today’s focused online dictionaries, that is unlikely to occur any more.

But another term creeps in: ‘strategic learning’. This is about making conscious choices about what to learn relatively ‘deep’, and what only merits deliberate ‘surface’ learning. It is probably a sign of how intelligent our students are, that they seem to get increasingly keener to ration the time and energy they put into learning things according to the need to do so. When learning is to be assessed in some way, they are looking for how best to get as many as possible of the available marks. This applies to just about every form of assessment, exams, essays, reports, presentations, dissertations, theses, interviews, and so on.

It should come as no surprise to us that there is now a lot of evidence showing that ‘strategic learners’ tend to be not only more-successful than surface learners, but also do better in many aspects of life than deep learners too. So what exactly *is* strategic learning? I have argued in recent years (e.g. Race, 2014) that:

We could regard it as making informed choices about when to be a deep learner, and when to be a surface learner. It could be viewed as investing more in what is important to learn, and less in what is less important to learn. It could be regarded as setting out towards a chosen level of achievement, and working systematically to become able to demonstrate that level of achievement in each contributing assessment element. It can also be argued that those learners who go far are the strategic ones, rather than the deep ones. It can be argued that they know *when* to adopt a deep approach, and when it is sufficient to adopt a surface approach. (Race, 2014, p.79)

Many of the sources referred to above inform the view of learning that this chapter will now propose. However, I continue to argue that much of the literature on learning is presented using language and concepts which most students and teachers find different from their everyday experience, and in this chapter (and throughout this *Toolkit*) a more pragmatic approach is sought, to inform appropriately teaching, learning and assessment practices. The approach outlined in this chapter is based on asking students (and others) questions about their own learning, and then analysing their responses (to date from hundreds of thousands of people from a wide range of disciplines, professions and vocations) to identify primary factors which influence the quality of learning. These factors, as you will see in this book, can be addressed consciously and directly both by students and teachers. Students can be helped to gain control over the factors, and teachers can plan their teaching to maximise the learning payoff associated with each factor.

**Learning and intelligence**

If the word ‘learning’ has caused countless different attempts to describe human behaviour and mental functioning, the word ‘intelligence’ can be argued to be equally problematic. There are numerous so-called ‘intelligence tests’, but what exactly do they measure? Most likely, skill at performing within the limits which define the tests, and under the conditions in which these tests are being used. A breath of fresh air was introduced by Howard Gardner, in his book ‘*Frames of Mind: The Theory of Multiple Intelligences’* (2011), summing up his idea that there are several different kinds of intelligence. From his earlier work, Gardner (1993) in his work on ‘multiple intelligences’ starts by regarding intelligence as ‘the capacity to solve problems or to fashion products that are valued in one or more cultural setting’. Whatever *intelligence* may be, it should not be thought of as simply being the capacity to perform well in particular assessment-related contexts or environments – for example intelligence must be much more than merely the capacity to do well in time-constrained, unseen written examinations, or even to use 3000 words or so to construct a written argument or review. Gardner’s work usefully subdivides *intelligence* into multiple facets:

* linguistic – use of language – words;
* mathematical-logical – patterns, deductive reasoning, logic and numbers;
* musical – compose, perform and appreciate musical patterns, sound and rhythm;
* bodily – kinaesthetic – use of whole body or parts of the body – coordination of movements;
* spatial – recognising and using patterns of space – images – parking the car, crystallography;
* interpersonal – working with other people, understanding their motivations, intentions and desires;
* intrapersonal – self-awareness, understanding oneself, and recognising one’s feelings, fears and motivations;
* naturalist – awareness of the natural environment, sustainability;
* spiritual/existential – embracing aesthetic, unseen and spiritual dimensions; faith and religion;
* moral – ethics, humanity, value of life;
* bestial – communicating effectively with animals.

There’s a lot more to the human species than just words. That’s why I worry whenever I see the phrase ‘neuro-linguistic programming’, and it’s not just the ‘programming’ that feels somewhat sinister in discussion of human thinking! Any one person’s intelligence can be regarded as a fairly unique blend of several of Gardner’s facets. Any learning experience is likely to involve several of these, adding to the picture of each individual student being quite unique in their overall approach to learning, but without all the difficulties discussed by Coffield *et al.* (2004) when thinking about learning styles. At last, perhaps, we’re working towards a map upon which just about every aspect of human learning can be placed, and which spans the cognitive, behavioural, social and emotional aspects of human thinking and behaviour.

**Factors underpinning successful learning**

**– an evidence-based approach, using the language of learners themselves**

One of the problems common to some, if not most, of the theories of learning referred to above is that they tend to be written using educational or psychological terminology – jargon? This does not mean that they are wrong, but it does mean that they are not particularly valuable when we try to use them to help our students to learn more effectively, or to help ourselves to teach more successfully. The remainder of this chapter is intended to provide you with a jargon-free, practical approach to enquiring into how learning happens best, which you can share with your students, and which you can use to inform all parts of your own work supporting students’ learning.

Getting people to think of something they have learned successfully is a positive start to alerting them to the ways in which they learn. It does not matter what they think of as the successful learning experience of their choice – it can be work-related, or a sporting achievement, or any practical or intellectual skill. Try it for yourself – answer the pair of questions which follow now before reading on.

**Question 1**

(a) Think of something you’re good at – something that you know you do well. Jot it down in the space below.

(b) Write below a few words about *how* you became good at this.

Most responses to 1(b) are along the lines of:

* practice (by far the most common answer);
* trial and error;
* just doing it;
* repetition;
* having a go;
* experimenting;
* playing.

We all learn an immense amount in early childhood, seemingly effortlessly, by playing. Then all too soon, learning seems to be relegated to ‘work’. This is tragic and unnecessary! All answers to question 1(b), boil down to ‘learning by doing’ in one way or another, a strong factor underpinning how most people learn. There’s nothing new about this – it’s already been called experiential learning for long enough – but let’s stay with short words like *doing* for the present. ‘Trial and error’ is also important. Learning through one’s mistakes is one of the most natural and productive ways to learn almost anything. Sadly, our educational culture – and particularly our assessment culture – leaves little room for learning from mistakes. Too often, mistakes are added up and used against students! Next, another question, to probe another dimension of successful learning.

***Feeling the learning***

The matter of *feelings,* as noted by many writers from Rogers to Jarvis,is something which has not been sufficiently explored by the developers of theories of learning. Feelings are as much about what it is to be human as any other aspect of humanity. There is a lot of discussion about student motivation (particularly when there is a *lack of motivation*)*,* but perhaps too little energy has been invested in exploring the *emotions* upon which motivation depends. A relatively simple question yields a wealth of information about the connection between feelings, emotions and successful learning. Try it for yourself.

**Question 2**

(a) Think of something about yourself that you feel good about – a personal attribute or quality perhaps. Jot it down in the space below.

(b) Write below a few words about how you *know* that you can feel good about whatever it is. In other words, what is the *evidence* for your positive feeling?

Most responses to 2(b) above are along the lines of:

* feedback;
* other people’s reactions;
* praise;
* seeing the results.

Therefore (unsurprisingly) feedback is an important underpinning factor to most people’s learning.

***Receiving positive feedback***

It is useful to follow up our exploration of the importance of positive feelings with some thoughts about how students can be helped to *receive* positive feedback. In some cultures, including that of the UK, there is quite a strong tendency to shrug off compliments and praise, or to resort to the defence strategy of laughter! The effects of this behaviour detract from the value of the positive feedback in the following ways:

* the positive feedback is often not really taken on board;
* the person giving the feedback may feel rejected, snubbed or embarrassed;
* the ease of giving further praise may be reduced.

Helping students (and others) to confront these possibilities can be useful in developing their skills to derive the maximum benefit from positive feedback. For example, simply replying along the lines ‘I’m glad you liked that’ can make all the difference between embarrassment, and feedback effectively delivered and received.

When extended to the domain of critical feedback, further dividends are available. It can be very useful to train students (and ourselves!) to thank people for critical feedback, while weighing up the validity and value of it. This is much better than resorting to defensive stances, which tend in any case to stem the flow of negative feedback, usually before the most important messages have even been said.

**Doing +feedback *= successful learning?***

Though these two elements are essential ingredients of successful learning, there are several further factors which need to be in place. Some of these are easier to tease out by asking a question about *unsuccessful learning.* Try it for yourself now, then read on.

**Question 3**

(a) Think, this time, of something that you *don’t* do well! This could have been the result of an unsatisfactory learning experience. Jot down something you’re *not* good at in the space below.

(b) Now reflect on your choice in two ways. First, write a few words indicating what went wrong when you tried to learn whatever-it-was.

(c) Next, try to decide whose fault it was (if anyone’s of course) – does any blame rest with you, or with someone else (and if so, whom?).

Typical responses to 3(b) above include:

* I did not really *want* to learn it;
* I couldn’t see the point;
* I couldn’t get my head round it.
* The light just wouldn’t dawn.

As for whose fault it may have been that the learning was not successful, many people blame themselves, but a significant number of respondents blame particular teachers, lecturers, trainers or instructors – and can usually remember the names of these people, along with a lot of what they did to damage motivation.

**Wanting *to learn***

If there’s something wrong with one’s motivation, it’s unlikely that successful learning will happen. However, motivation (despite being very close to ‘emotion’) is a rather cold word; *wanting* is a much more human word. Everyone knows what ‘want’ means. Also, *wanting* implies more than just motivation. *Wanting* goes right to the heart of human urges, emotions and feelings. When there’s such a powerful factor at work helping learning to happen, little wonder that the results can be spectacular. We’ve all been pleasantly surprised at how well people who really *want* to do something usually manage to do it. If people want to learn, all is well. Unfortunately, the *want* is not automatically there. When subject matter gets tough, the *want* can evaporate quickly. When students don’t warm to their teachers, or their learning environments, their *want* can be damaged.

***Making sense of what one has learned –* digesting *–* realizing – ‘getting my head around it’**

We are thinking here about making sense of what has been learned, and also the learning experience – and also making sense of feedback received from other people. *Digesting* can be thought of as sorting out what is important in what has been learned, and extracting the fundamental principles from the background information. *Digesting* is also about discarding what’s not important. It’s about putting things into perspective. *Digesting,* above all else, is about establishing a sense of *ownership* of what has been learned. It’s about *far more* than just reflection. Students often describe digesting as ‘getting my head around it’. They sometimes explain it as ‘realising’. When one has just *realised* something, one is then able to start to *communicate* the idea to other people – tangible evidence that learning has been successful. And looking ahead to assessment, we can only ever try to measure what *comes out* of learners, what they *communicate.* We can never really find out what they ‘know’ or what they ‘understand’ other than through what they *show.*

Thousands of people have answered the three questions we’ve looked at so far, and even written their answers down. The people asked have covered all age ranges, occupations and professions. It is not surprising to discover that very different people still manage to learn in broadly similar ways, and that people’s answers have remained very similar across all the years I’ve now been posing these questions, even when the learning environments have changed dramatically. After all, learning is a *human* process – it matters little whether you’re a human trainer, a human student, or a human manager. In face-to-face training, or large-group based education, students are already surrounded by people who can help with the *making sense* stage – most importantly, each other. This remains the case when learning online, as with the ease of communication using social media, learners rarely feel alone. When students put their heads together informally to try to make sense of a difficult idea or problem, a lot of making sense and realising occurs.

***Now another question!***

For the next question, let’s return to successful learning, but this time without that vital ‘want’.

**Question 4**

(a) Think of something that you did in fact learn successfully, but at the time you did not *want* to learn it. Probably it is something that you’re now glad you learned. Jot something of this sort below.

(b) Write down a few words about ‘what kept you at it’ – in other words the alternatives that worked even when your *want* to learn was low or absent.

A wide range of things are cited by respondents to 4(b) above, but common factors keeping different students going include:

* strong support and encouragement;
* determination not to be seen to get it wrong or fail;
* simply *needing* to learn the thing concerned, so that something else would be achievable.

***Needing to learn – a substitute for motivation?***

Responses to Question 4 often highlight that a successful driving force for learning is *necessity*. There are some subjects where it can be very difficult to generate in students a strong *want* to learn, but where it may be quite possible for us to explain to them convincingly why they really do *need* to learn them. For example, for many years I taught students chemical thermodynamics. Few (normal!) students *want* to get to grips with the second Law of Thermodynamics, but many *need* to get their heads round it. When students have ownership of a *want* to learn, there is little that we need to do to help them maintain their motivation. However, helping students to gain ownership of the need to learn something is a reasonable fallback position, and can still help students to learn successfully.

***Five of the factor s underpinning successful learning***

From my analysis of thousands of people’s answers to the four straightforward questions we’ve explored so far in this chapter, five of the principal factors underpinning successful learning can be summarised as follows.

1. **Wanting** motivation, interest, enthusiasm
2. **Needing** necessity, survival, saving face
3. **Doing** practice, repetition, experience, trial and error
4. **Feedback** other people’s reactions, seeing the results
5. **Making sense** getting one’s head round what has been learned.

***How do these factors interact with each other?***

The human brain is not a computer that works in a linear or pre-programmed way all the time. Nor do we just go round in circles. Our brains often work at various overlapping levels when, for example, solving problems or making sense of ideas. The *wanting* stage needs to pervade throughout, so that *doing* is wanted, *feedback* is positively sought, opportunities for *making sense* are seized, and so on. Perhaps a more sensible model would have *wanting* at the heart, and *feedback* coming from the outside, and *doing* and *making sense* occurring in an overlapping way as pictured below.

**Doing**

**Making sense**

**Feedback**

*Figure 1.1: ‘Ripples on a pond’ representation of the first five factors underpinning successful learning*

In various publications over recent years, including the previous editions of this book, I have argued that these factors all continuously affect each other, and that a way of thinking about them is to liken them to ‘ripples on a pond’. Perhaps learning can be started by some *wanting,* where the bounced-back ripples from the external world constitute the *feedback* and continue to influence the *doing.* The effects of the *feedback* on the *doing* could be thought of as enabling *making sense* to happen*.* The main benefit of such a model is that it removes the need to think about learning as a unidirectional sequence. The model has about it both a simplicity and a complexity – in a way mirroring the simultaneous simplicity and complexity in the ways in which people actually learn.

***Using the model***

Probably the greatest strength of the *wanting/needing, doing, feedback, making-sense* model of learning is that it lends itself to providing a solid foundation upon which to design educational and training programmes. If you look at any successful form of education and training, you’ll find that one way or another, all of these factors underpinning effective learning are addressed. Different situations and processes attend to each of the factors in different ways.

For example, ***wanting*** is catered for by the effective face-to-face lecturer who generates enthusiasm. Enthusiasm is very infectious. Have you ever learned anything really well from someone who was clearly bored with it? *Wanting* can also be invoked by carefully worded statements showing the intended learning outcomes, which capture the students’ wishes to proceed with their learning. The wanting can be enhanced by the stimulation provided by attractive colours and graphics in online or computer-based learning materials. What if there’s no *wanting* or *needing* there in the first place? Perhaps feedback can, when coupled with learning-by-doing and making sense, cause the ripple to move back into the centre, and create some motivation. Learning by ***doing*** is at the heart of any good learning programme, and equally in any well designed flexible learning package or online course.

***Feedback*** is provided by tutors, or by the responses to exercises or self-assessment questions in flexible learning materials, or on-screen in online learning environments, or simply by fellow-students giving feedback to each other. Feedback can be regarded as the process that prevents the whole ‘ripple’ simply dying away, as feedback interacts with the *making sense* and *doing* stages, and keeps the learning moving.

The one that’s all-too-easy to miss out is ***making sense.*** This is something we can’t do to our students, only they can make sense of things. However, all experienced tutors know how important it is to give students the time and space to make sense of their learning and to put it into perspective. Similarly, the best learning packages cater for the fact that students need to be given some opportunity to practise with what they’ve already learned, before moving on to further learning.

**How can we increase students’ motivation?**

In many educational institutions, staff grumble that students’ motivation is not what it used to be. There are students who simply don’t seem to *want* to learn. There are students who don’t seem to see why they may *need* to learn. They seem less willing to sit at our feet and imbibe of our infinite wisdom. And nowadays in many parts of the world, students are often paying a lot to be at a university (or their parents or grandparents are paying!). There are some students who even seem to believe that we are paid to do their learning for them – and it can certainly be argued that we’re paid to do everything we reasonably can to make sure that their learning is successful.

***Why is motivation often low?***

There are many reasons for increased incidence of low levels of student motivation, including:

* There are many more students in our higher education system. We still have those students who are keen to learn, but they are diluted by students whose motivation is much less, and who would not have come into our system some years ago. The proportion of students who know exactly *why* they’re in higher education seems to have decreased.
* More students enter higher education to satisfy other people’s expectations of them, rather than through their own motivation to succeed. Some are coaxed, cajoled or pressed by parents and others, and come in as a duty rather than as a mission.
* There is a greater culture shock on moving from school to higher education – all those distracting temptations, and scary unprecedented freedom. Many students are unprepared for the increased responsibility for their own learning that higher education places upon them.
* Students are much more ‘grown up’ than they used to be. Their lifestyle expectations have increased. This means that problems with finances and difficulties with relationships take a greater toll on the energies of more students than used to be the case.
* The rigours of our academic systems can mean that there may be no chance of remediation for poor assessed work, and failure can breed irrecoverably low motivation.

***What are the symptoms of low motivation?***

Some symptoms of failing motivation appear to us as in-class behaviours, others we see evidence of as out-of-class behaviours, with yet more symptoms reflecting students’ perceptions about ourselves. For online learning, the symptom is drop-out or non-completion – usually less than 10% of starters on a MOOC are likely to complete.

*Some in-class symptoms of low motivation:*

* coming to class late and/or leaving early, or indeed not turning up at all;
* talking to friends in class about other things;
* looking out of the window, scribbling, drawing, doodling, texting, and generally fiddling with mobiles, laptops and tablets;
* not being engaged in classrooms or lecture theatres, not asking questions, not being willing to answer questions, nor volunteering responses when invited;
* diverting lecturers from the main issues;
* coming in without pens, paper, books, calculators, and so on;
* taking a longer break than is intended during long sessions, or failing to return at all;
* yawning, looking disinterested, and avoiding eye contact;
* inappropriate social interactions in class (compare back row of cinema!).

*Some out-of-class symptoms of low motivation:*

* consistent absence without explanation or reason;
* inadequate preparation towards class work;
* handing in hasty last-minute work – botched, or not handing in any work;
* drifting for hours online, without achieving any real learning;
* low quality individual and/or group work;
* damaging each other’s attitude;
* work avoidance strategies – giving in too easily to doing only unimportant tasks and putting off doing important ones;
* ignoring lecturers out of class;
* being found not to have contributed to group tasks – doing only what’s necessary for coursework marks, but not doing other things;
* not buying books, nor using library resources;
* not downloading essential resources from the module web-pages – or (even more often) downloading them, but never opening the files.

*Is some of it our fault?*

Some explanations of low student motivation point in our direction! The charges against us include:

* our seeming indifference to time-of-day factors – Friday afternoon classes, students’ need for an early afternoon snooze after lunch;
* students’ experiences of the unevenness of the pressure of work – e.g. weeks go by with nothing to hand in, then a deluge of hand-in dates;
* some students feeling that they’ve been labelled by us already as low-achievers, and taking all slightly critical feedback as reinforcement of their lowered self-esteem;
* seating plans too rigid and predictable, room quality, the overall learning environment being scruffy or un-enthusing;
* the teachers they meet – our own looks, sounds, level of enthusiasm, perceived lack of understanding about how learning really happens and the effects of the learning environment;
* more-able students feeling that they are undervalued and under-challenged, and that we spend too long catering for the lower-fliers;
* insufficient acceptance on our part of a basic human need for students (like children) to win at least some of the battles.

***How can we tackle low motivation?***

The following suggestions are tactics, rather than solutions. However, choosing tactics can be our first steps towards building a strategy to counter the malaise of poor student motivation. You will already have your own tactics to add to (or supersede) the ones suggested below.

1. **Accept that motivation is a real problem.** Pretending that low motivation doesn’t exist does not make it disappear. Treating it as an issue to be addressed jointly with students increases the chance that they will recognise it themselves, and (as only they can) make adjustments to their rationale for being in higher education.
2. **Recognise the boundary conditions of the problem**. Low motivation is essentially a problem with full-time students, rather than with part-timers. Low motivation is essentially a problem with younger students, rather than mature returners. When we have large mixed-ability, mixed-age classes containing full-timers and part-timers together, the range of motivation is even more of a problem to all concerned.
3. **Remember that students can have difficult lives.** First-year students may be far from home, family, friends, familiar streets, for the first extended time so far. For some, it’s like being on remand – they’ve been sent there by other people. Some delight in their new environment, others are homesick, but all are expending a lot of their energy adjusting their lives. The differences between school and university are more profound than perhaps they were when we were new students.
4. **Accept that many young people are rebels.** It’s a natural enough stage of growing up. But this means that they aren’t so keen to please us, and may be more willing to be sullen, uncooperative and passive. In our consumer-led society (and students are consumers) they are less likely to try to hide their dissatisfaction. None of this means that they aren’t intelligent, or that they lack potential.
5. **Seek different kinds of feedback from students.** We already seek lots of feedback, but often with repetitive, boring devices such as tick-box questionnaires, where students don’t really tell us anything other than their surface responses to too-often-asked structured questions about our teaching. Ask students how they feel about topics, rooms, online work, assignments, and us! Ask for words, not just rankings.
6. **Make it OK to be demotivated.** Students sometimes feel that their low morale is yet another failure, and it becomes a self-fulfilling prophecy. All human beings (ourselves included) have peaks and troughs in motivation, and students need to see that (for example) success can breed more success.
7. **Don’t expect students to be passionately interested in things they haven’t yet got their heads around.** The passion often comes with making sense of subject matter, and this often comes with experience and interaction, so concentrate on the learning-by-doing, peer feedback, and in-class involvement. Don’t lecture to a group as if every member of it is entirely switched on, when we know all too well that this isn’t the case.
8. **Don’t presuppose that our own topic is the most fascinating thing in the life of all the students we see.** A few may end up researching in this topic, but for most it is just another stepping stone to a qualification that they are going to use for something quite different to our own particular field. Make it an interesting stepping stone, but don’t expect all the students to take it as seriously as we perhaps do.
9. **Concentrate on their learning, rather than our teaching.** Think more carefully when teaching about what will be going on in their minds, rather than the information in our minds that we’d love to transfuse to our students. Knowledge is not infectious, and is much more than mere information. Enthusiasm is, however, infectious – we can try to transmit this.
10. **Keep assessment in perspective.** The assessment students do for us sits alongside all the other assessed tasks they do for all their other teachers. Don’t let students’ lives be dominated by assessed work, to the exclusion of the natural joy of learning.
11. **Spend more time helping all students to become better learners.** Don’t regard it as someone else’s business. Don’t assume that students should already be skilled learners. Help students to gain more control over how they learn, so that they have a greater ownership over what they learn. Above all, continue to help them to address *why* they are learning, and *how best* to go about their studies.
12. **Spend more energy on praising.** Students (like ourselves) respond well to positive feedback. Ticks aren’t enough. It’s all too easy for us to spend our limited time on giving constructive critical feedback, but if there is not enough praise there, this just seems like condemnation to demotivated students.
13. **Continue being a student.** Perhaps a requirement for employment as a teacher in higher education should be that we too should always be enrolled on an academic programme as students, and that we should see our studies through to assessment. And we should have the opportunity to fail or succeed, just like our students. Therein lies the essence of understanding students’ motivations.

**Two more factors underpinning successful learning**

We’ve already looked at four questions about how people learn, and identified five straightforward factors arising from hundreds of thousands of people’s responses to these questions. We’ve explored how these factors do not work in a particular sequence or cycle, but how interact with each other concurrently. We’ve also looked at what can go wrong with motivation, and some of the things we can do to enhance the *want* to learn. But I argue that learning is not complete until two more stages have been achieved. The first of these can be linked to people’s responses to Question 5 below.

**Question 5**

(a) Think of something which you’ve helped other people to learn. This could include teaching people, coaching them, training them and so on. Think back particularly to the first time you explained it to other people, particularly by putting it into spoken words.

(b) To what extent did you find that you ‘had your own head around it’ much better after putting it into spoken words that first time? Choose one of the following options:

* Very much better
* Somewhat better
* No better

**Verbalising: putting it into spoken words – teaching, explaining coaching**

Question 5(a) is eagerly embraced by just about anyone whose work includes teaching, training, or coaching. Furthermore, even those whose job does not include these things readily recall explaining things to other people, including colleagues and children.

Question 5(b) leads to a vast majority of respondents choosing the ‘very much better’ option. The key additional factor is *verbalising.* This is about putting it into spoken words to other people. In other words, we’ve never really made sense of something properly until we’ve spoken it. This is bad news for anyone just studying alone at a desk or a computer! There’s something about putting it across to other people that causes us to get our heads around it deeper. We could rationalise that this causes all the factors we’ve looked at so far to resonate deeply and quickly – we’re *doing,* we’re *getting feedback* from those we’re explaining things to, we’re *making sense* ever more deeply, and we’re interacting with others’ *want* and *need* as we go.

The fact that this sixth factor necessarily involves other people brings to the fore what was missed by so many earlier, clumsy models and theories of learning – the social dimension is now present. But there’s still something missing. Let’s go straight on to the final question.

**Question 6**

(a) Still thinking of the first time you helped other people get a grip on that particular topic, think back to the first time you attempted to see how well they’d ‘got it’. Think of the first time you tried to measure their learning of the topic.

(b) To what extent did you find that after that first occasion of measuring or assessing their learning, you yourself had made sense of the topic even more deeply? Choose one of the three options which follow:

* Very much better
* Somewhat better
* No better

People have no difficulty picturing this scene. We’ve all checked up about whether those we’re explaining things to have ‘got it’, and the vast majority of people vote for ‘very much better’ when it comes to Question 6(b). In other words, we all ‘get our heads around something’ considerably more deeply every time we try to measure whether other people’s learning has succeeded. It’s the acts of *making judgements* or *applying criteria* to other people’s evidence of achievement which helps each of us deepen our own learning that last bit more.

Once more, we could argue that the act of assessing causes the other six factors we’ve already considered to resonate much more strongly, and that the social dimension of learning is strongly involved. Therefore, the picture of the factors underpinning successful learning is completed by showing *verbalising* and *assessing* as two further ripples which are needed when something is learned much more fully.

**Wanting**

**Needing**

**Doing**

**Making sense**

**Feedback**

**Verbalising**

**Assessing**

Figure 1.2: the seven factors underpinning successful learning

Sadler (2010) writes convincingly on how we need to get our students verbalising, and making judgements to deepen their learning.

Students need to be exposed to, and gain experience in making judgements about, a variety of works of different quality... They need planned rather than random exposure to exemplars, and experience in making judgements about quality. They need to create verbalised rationales and accounts of how various works could have been done better. Finally, they need to engage in evaluative conversations with teachers and other students. Together, these three provide the means by which students can develop a concept of quality that is similar in essence to that which the teacher possesses, and in particular to understand what makes for high quality. Although providing these experiences for students may appear to add more layers to the task of teaching, it is possible to organise this approach to peer assessment so that it becomes a powerful strategy for higher education teaching. (p.544)

**Developing students’ competences**

Let’s stand back from what we’ve already thought about in this chapter, and go back to the central purposes of everything we do when teaching, or designing learning resources for students. We intend to help them to become more competent. The competences we are addressing are not just those relating to skills which students will be able to demonstrate to us, nor are they all amenable to our usual assessment processes and practices. The competences include those connected with thinking, creativity, originality, enterprise, employability, entrepreneurship, problem-solving, and so on, as well as those linked to mastery of defined areas of knowledge. Sadler (2013) cautions us about adopting simplistic checklist approaches to competence measurement:

Decomposing competence into manageable (or even atomised) components in order to facilitate judgments may have some interim value in certain contexts, but the act of decomposition can obscure how a practitioner would work the various bits in together to form a coherent whole. Judgments of competence can properly take place only within complex situations, not in the abstract, and not componentially. (Sadler, 2013b, p.13)

As with many other recommendations from Sadler’s work, it is best to help students to become aware of how best to develop their own competences; the approach shared in the next part of this Chapter parallels what we’ve already discussed about letting students in to how learning really happens.

What’s the opposite of competence? ‘Incompetence’ is the word which immediately comes to mind. Unfortunately, incompetence is a word with negative associations, so some time ago I coined the word ‘uncompetence’ to mean not-yet-competent, less threatening than incompetence. This is why I developed a model of conscious versus unconscious competence and uncompetence. See fig.1.3.

**Competence**

**Uncompetence**

**Unconscious**

**Conscious**

*Figure 1.3* Conscious–unconscious competence–uncompetence

***The ‘target’ box***

We want to help our students to become consciously competent. This can be regarded as the target box on the competence–uncompetence matrix. Please see fig.1.4. The more we can help students to be *aware* of their competences, the better their motivation. In other words, conscious competence links to the *wanting* to learn factor. It breeds confidence. We can address this by expressing intended learning outcomes as clearly as we can, so that students are aware when they have reached the position of achieving these outcomes, and know that they are able to demonstrate their achievement of them to us when we assess their performance.

**Competence**

**Uncompetence**

**Unconscious**

**Conscious**

**Target**

Can do

*Figure 1.4* Conscious competence: the ‘target’ box

***The ‘transit’ box***

There’s nothing wrong with ‘conscious uncompetence’. Indeed, knowing what one can’t yet do is usually an essential step towards becoming able to do it. Of course, many unconscious uncompetences don’t even need to be addressed, including all the things one does not need to become able to do, and so on. It is only those conscious uncompetences which relate to the topics to be learned which need to be moved towards the target box on the diagram in fig.1.5.

**Competence**

**Uncompetence**

**Unconscious**

**Conscious**

**Target**

Can do

**Transit**

Can’t yet do

*Figure 1.5* Conscious uncompetence: the ‘transit’ box

When the intended learning outcomes are clear, it is easier for students themselves to work out what they can’t yet do, and they can often turn their conscious uncompetences into competences without further help. However, as teachers we can often help students to gain feedback which gives them a lot more detail of exactly how they should go about moving out of the transit position. Similarly, students can gain a great deal of feedback from each other about how best to make the move.

***Unconscious uncompetence – the ‘danger’ box***

This is about not knowing what one can’t yet do. For most learners (students, but also ourselves), it’s the things we don’t know we’re not yet good at which pose the greatest threat. It could be argued that the art of teaching is about helping students to find out what lies hidden in their ‘danger’ boxes on this diagram! Clear expressions of intended learning outcomes can help students to see that there are things they hadn’t yet identified that they needed to become able to achieve. However, even more help can be brought to bear by assessment and feedback, where we (and indeed fellow-students) contribute to giving students information about what they didn’t know that they couldn’t yet do. Please see fig.1.6.

**Competence**

**Uncompetence**

**Unconscious**

**Conscious**

**Target**

Can do

**Transit**

Can’t yet do

**Danger**

*Figure 1.6* Unconscious uncompetence: the ‘danger’ box

It is of course possible for students to jump straight from the ‘danger’ position to the ‘target’ one, but then it can be argued that their learning is not nearly so deep as it would have been if they had been alerted to the detail of exactly what it was that they didn’t know they couldn’t yet do, then tackling the situation consciously and addressing the problem.

It is increasingly recognised that an important function of higher education is to help students to develop their key transferable skills. Some of the most important of these are those connected with becoming self-sufficient, autonomous learners. Ideally, we need to be training students toward becoming able to probe for themselves what might lie in the danger box in their learning.

***Unconscious competence – the ‘magic’ box?***

Fortunately, we’ve all got unconscious competences as well as conscious ones. Many skilful teachers don’t actually *need* to be aware of exactly wherein lies the success of their teaching. Students who can already achieve learning outcomes don’t necessarily have to *know* that they are already in a position to do so. However, it can be argued that the transition from the ‘magic’ box to the ‘target’ one is a useful part of the learning process. For example, the excellent teacher who finds out *why* his or her teaching is successful is in a much better position to help others emulate that success. Similarly, students who find out about their unconscious competences are in a better position to build up their confidence, and to draw from that gain in self-understanding reflective processes that they can use in their conscious learning. See fig.1.7.

**Competence**

**Uncompetence**

**Unconscious**

**Conscious**

**Target**

Can do

**Transit**

Can’t yet do

**Danger**

**Magic**

*Figure 1.7* Unconscious competence: the ‘magic’ box

It can be a little unsettling to translate unconscious competences into conscious ones. It can be compared to being able to ride a bike, and wobbling when becoming aware of the processes involved. However, the learning which accompanies this sort of transition can be of value when applied to new learning scenarios.

More importantly, most students find that when they are alerted to the things they did not realise that they could already do well, they gain confidence and self-esteem. As teachers, we need to remind ourselves that our work is not just about telling students what they need to do, but equally about alerting to students to strengths they already have – their ‘learning incomes’ perhaps. Positive feedback is a powerful aid to motivation, and where better to direct our positive feedback than to the things that students may not have realised deserved our praise.

**Confidence and self-concept**

Students from non-traditional academic backgrounds are likely to find their confidence levels are further undermined if their beliefs in their own abilities to succeed are undermined by conceptions about themselves which have made it difficult for them to achieve academically in the past.

Clegg, in Peelo and Wareham (2002) citing Dweck, argues that there is a high correlation between self-concept and achievement and this depends on whether they see their capabilities as being set in stone or malleable to change through hard work and strategic approaches. They discuss two positions that students can adopt in regard to their own abilities, first, that intelligence is fixed (an entity theory of intelligence, as evidenced by IQ scores) and that there is very little they can do to improve themselves, and second, that ability is malleable and that hard work can lead to high achievement (an incremental theory of intelligence):

The personal commitment an individual makes to a theory of intelligence is indicative of their self perception. Students who subscribe to an entity theory of intelligence believe that failure is the final point, the outcome of their achievements. They need ‘a diet of easy successes’ (Dweck, 2000: 15) to confirm their ability and are fearful of learning goals as this involves an element of risk and personal failure. Assessment for these students is an all-encompassing activity that defines them as people. If they fail at the task, they *are* failures. Challenges are a threat to self-esteem as it is through being seen to be successful that these students define themselves. ...Perhaps predictably, those students who believe that intelligence is incremental have little or no fear of failure. A typical response from such a student is ‘The harder it gets, the harder I need to try’. These students do not see failure as an indictment of themselves and [can] separate their self-image from their academic achievement. When faced with a challenge, these students are more likely to continue in the face of adversity because they have nothing to prove. (Clegg in Peelo and Wareham 2002: 176).

Carole Dweck, more recently in a transcript of an interview which is available online discusses the inadequacy of ‘knowing’ in a rapidly changing environment, where new information becomes available every second and is accessible so readily:

The things you know today are not enough. Facts change, new challenges arise, and so you can never think, ‘I know this’ and call it done. To do so would assume that the question stays static or that the knowledge set neces­sary for solving a problem is permanently the same. To say ‘I know’ is to assume that your ideas are non-revisable, and that the question or problems haven’t shifted. (Dweck, 2013)

Self-beliefs, whether concerning knowledge or intelligence, are remarkably persistent and can interfere powerfully in how a student responds to negative comments in feedback from tutors: Clegg (2002) continues:

Blaming oneself for failure indicates an incremental theory of intelligence. Students believe they could have done something to avoid failure and will try harder next time. ... In other words, students choose how they interpret feedback and failure so as to lessen the emotional damage. Students deny the validity of teacher, peer and professional judgement if it disagrees with their own self concept. (Clegg in Peelo and Wareham 2002: 177)

**Positioning the goalposts – designing and using learning outcomes**

So far, this chapter has been about *how* learning can be caused to happen. All of this is academic unless we also link it to *what* is intended to be learned, including thinking about why, when, and where. That’s where learning outcomes come in. Indeed, Biggs and Tang (2011) place intended learning outcomes at the centre of their model of constructive alignment.

Learning outcomes represent the modern way of defining the content of a module or course. The old-fashioned way was simply to list topic headings, and leave it to the imagination of the lecturer exactly what each heading would mean in practice, and how (or indeed if) each part of that would be assessed in due course. Nowadays, expressions of learning outcomes are taken to define the content, level and standard of any course, module or programme. External scrutiny interrogates assessment criteria against learning outcomes to ensure that the assessment is appropriate in level and standard to the course or module. Even more importantly, however, learning outcomes can be vitally useful to students themselves, who (with a little guidance) can be trained to use the expressed learning outcomes as the targets for their own achievement.

***Why use learning outcomes?***

* Well-expressed statements of intended learning outcomes help students to identify their own targets, and work systematically towards demonstrating their achievement of these targets.
* Learning outcomes are now required by quality assurance bodies, professional bodies, in the review and validation of educational programmes around the world.
* Learning outcomes can provide one of the most direct indicators of the intended level and depth of any programme of learning, helping students and others to choose the most appropriate modules.

***Where can learning outcomes be useful to students?***

Learning outcomes should not just reside in course validation documentation (though they need to be there in any case). They should also underpin everyday teaching-learning situations. They can be put to good use in the following places and occasions:

1. In student handbooks and programme web pages, so that students can see the way that the whole course or module is broken down into manageable elements of intended achievement, and set their own targets accordingly.
2. At the start of each lecture, for example on a slide, so that students are informed of the particular purposes of the occasion.
3. At the end of each lecture, so that students can estimate the extent to which they have travelled towards being able to achieve the intended outcomes associated with the lecture.
4. At suitable points in the briefing of students for longer elements of their learning, including projects, group tasks, practical work and field work.
5. On each element of resource materials issued (usually online) before, during or after lectures, to reinforce the links between the content of the session and students’ intended learning.
6. On tasks and exercises, and briefings to further reading, so that students can see the purpose of the work they are intended to do.
7. On the first few screens of each online learning sequence that students study independently (or in groups).

***Tips on designing and using learning outcomes***

It is natural enough that professional people such as lecturers may feel some resistance to having the content of their teaching ‘pinned down’ by pre-expressed statements of intended learning outcome. However, the rationale for using them is so strong that we need to look at some practical pointers which will help even those who don’t believe in them to be able to design them reasonably successfully. It is in the particular public context of linking learning-expressed outcomes to assessment criteria that most care needs to be taken. The following suggestions are based on many workshops I have run helping lecturers to put into clear, everyday words the gist of their intentions regarding the learning they intend to be derived from a particular lecture, or a practical exercise, or a tutorial, or students’ study of a journal paper, an online resource and so on – *each and every* element which makes up a programme of study.

1. **Work out exactly what you want students to be able to do by the end of each defined learning element.** Even when you’re working with a module that is already expressed in terms of learning outcomes, it is often worth thinking again about your exact intentions, and working out how these connect together for different parts of students’ learning.
2. **Keep thinking in terms of evidence.** Learning outcomes essentially should point towards the evidence of achievement needed to show that they’ve been successfully mastered. When students know what they’re going to be expected to show for their achievement, they’re much more likely to get there.
3. **Link the evidence of achievement of learning outcomes strongly to assessment.** Whether the assessment is in the form of traditional exams, online activities or ongoing coursework, it is important that students themselves can see how the learning outcomes spell out their targets for achievement.
4. **Make the outcomes personal.** Don’t say, for example, ‘students will be expected to....’It’s much better to use the word ‘you’ when referring to students. ‘When we’ve completed this lecture, you should be able to compare and contrast particle and wave models of radiation’ is better than stating ‘the expected learning outcome of this lecture is that students will ...’. Similarly, use the word ‘you’ when expressing learning outcomes in student handbooks, web pages, handouts, laboratory briefing sheets, and so on. Students need to feel that learning outcomes are for them – not just for other people.
5. **Work imaginatively with existing learning outcomes.** There may already be externally defined learning outcomes, or they may have been prescribed some time ago when the course or programme was validated. These may, however, be written in language which is not user-friendly or clear to students, and which is more connected to the teaching than to the learning process. You should be able to translate these outcomes, so that they will be more useful to your students.
6. **Match your wording to your students.** The learning outcomes as expressed in course documentation may be off-putting and jargonistic, and may not match the intellectual or language skills of your students. By developing the skills to translate learning outcomes precisely into plain English, you will help the outcomes to be more useful to students, and at the same time it will be easier for you to design your teaching strategy.
7. **Your intended learning outcomes should serve as a map to your teaching programme.** Students and others will look at the outcomes to see if the programme is going to be relevant to their needs or intentions. The level and standards associated with your course will be judged by reference to the stated learning outcomes.
8. **Remember that many students will have achieved at least some of your intended outcomes already.** When introducing the intended learning outcomes, give credit for existing experience, and confirm that it is useful if some members of the group already have some experience and expertise which they can share with others.
9. **Be ready for the question ‘why?’.** It is only natural for students to want to know why a particular learning outcome is being included. Be prepared to illustrate each outcome with some words about the purpose of including it.
10. **Be ready for the reaction ‘so what?’.** When students, colleagues, or external reviewers still can’t see the point of a learning outcome, they are likely to need some further explanation before they will be ready to take it seriously.
11. **Work out your answers to ‘what’s in this for me?’**. When students can see the short-term and long-term benefits of gaining a particular skill or competence, they are much more likely to try to achieve it.
12. **Don’t promise what you can’t deliver.** It is tempting to design learning outcomes that seem to be the answers to everyone’s dreams. However, the real test for your teaching will be whether it is seen to enable students to achieve the outcomes. It’s important to be able to link each learning outcome to an assessable activity or assignment.
13. **Don’t use words such as ‘understand’ or ‘know’.** While it is easy to write (or say) ‘when you have completed this module successfully, you will understand the Third Law of Thermodynamics’, it is much more helpful to step back and address the questions: ‘how will we know that they have understood it?’, ‘how will they themselves know they have understood it?’, and ‘what will they be able to do to *show* that they have understood it?’. Replies to the last of these questions lead to much more useful ways of expressing the relevant learning outcomes.
14. **Don’t start at the beginning.** It is often much harder to write the outcomes that will be associated with the beginning of a course, and it is best to leave attempting this until you have got into your stride regarding writing outcomes. In addition, it is often much easier to work out what the ‘early’ outcomes actually should be once you have established where these outcomes are leading students towards.
15. **Think ahead to assessment.** A well-designed set of learning outcomes should automatically become the framework for the design of assessed tasks. It is worth asking yourself ‘How best can I measure this?’ for each draft learning outcome. If it is easy to think of how it will be measured, you can normally go ahead and design the outcome. If it is much harder to think of how it could be measured, it is usually a signal that you may need to think further about the outcome, and try to relate it more firmly to tangible evidence that could be assessed.
16. **Keep sentences short.** It is important that your students will be able to get the gist of each learning outcome without having to re-read them several times, or ponder on what they really mean.
17. **Consider illustrating your outcomes with ‘for example ...’ descriptions.** If necessary, such extra details could be added in smaller print, or in brackets. Such additional detail can be invaluable to students in giving them a better idea about what their achievement of the outcomes may actually amount to in practice.
18. **Test-run your learning outcome statements.** Ask target-audience students ‘what do you think this really means?’, to check that your intentions are being communicated clearly. Also test your outcomes statements out on colleagues, and ask them whether you have missed anything important, or whether they can suggest any changes to your wording.
19. **Aim to provide students with the whole picture.** Put the student-centred language descriptions of learning outcomes and assessment criteria into student handbooks and module web pages, or turn them into a short self-contained leaflet to give to students at the beginning of the course. Ensure that students don’t feel swamped by the enormity of the whole picture! Students need to be guided carefully through the picture in ways that allow them to feel confident that they will be able to succeed a step at a time.
20. **Don’t get hung up too much on performance, standards and conditions** when expressing learning outcomes. For example, don’t feel that such phrases as ‘on your own’, or ‘without recourse to a calculator or computer’ or ‘under exam conditions’ or ‘with the aid of a list of standard integrals’ need to be included in every well-expressed learning outcome. Such clarifications are extremely valuable elsewhere, in published assessment criteria. Don’t dilute the primary purpose of a learning outcome with administrative detail.
21. **Don’t be trivial!** Trivial learning outcomes support criticisms of reductionism. One of the main objections to the use of learning outcomes is that there can be far too many of them, only some of which are really important.
22. **Don’t be bullied into ritualistic module templates.** For example, ‘rules’ that there will only be three learning outcomes per module are simply silly. Some topics need quite a lot of relatively brief but different learning outcomes to describe the intended learning well, while other topics may only have one or two such outcomes.
23. **Don’t try to teach something if you can’t think of any intended learning outcome associated with it.** This seems obvious, but it can be surprising how often a teaching agenda can be streamlined and focused by checking that there is some important learning content associated with each element in it, and removing or shortening the rest.
24. **Don’t write any learning outcomes that can’t (or won’t) be assessed.** If it’s important enough to propose as an intended learning outcome, it should be worthy of being measured in some way, and it should be *possible* to measure.
25. **Don’t design any assessment task or question that is not related to the stated learning outcomes.** If it’s important enough to measure, it is only fair to let students know that it is on their learning agenda.
26. **Don’t state learning outcomes at the beginning, and fail to return to them.** It’s important to come back to them at the end of each teaching–learning element, such as lecture, self-study package, or element of practical work, and so on. Turn them into checklists for students, for example along the lines ‘Check now that you feel able to ...’ or ‘Now you should be in a position to ...’.

**Conclusions about learning**

For too long, learning has been considered as a special kind of human activity, requiring its own jargon and vocabulary. It’s not! To learn is to be human. Nor does learning require particular kinds of room, desk, silence, or other environmental conditions – learning can happen anywhere. My main point is that *wanting/needing, doing, feedback* and *making sense* are so close to the essence of being human that it’s possible to keep these processes firmly in mind when designing educational courses, training programmes, learning resources and open learning materials. Moreover, and more importantly, it’s important to ensure that students get lots of opportunity to deepen their learning by *verbalising* it, talking to each other in-class and beyond the classroom, putting what they have learned into spoken words. And perhaps crucially, we need to ensure that students have plenty of practice at *assessing* their own – and each others’ – learning so that they further deepen their learning by making judgements and applying criteria to evidence of learning. This is perhaps our best chance to help students to link the fundamental factors explored in this chapter to something that is usually inextricably linked to learning: assessment.

Furthermore, we need to remember that learning is done *by* people – not *to* them. In other words, it is useful to use a model of learning which students themselves can understand. Moreover, it is important to use a model of learning which students themselves *believe in.* The *wanting/needing, doing, feedback, making sense, verbalising, assessing* model can easily be introduced to students by asking them the questions used earlier in this chapter, and they then gain a sense of ownership of the model. Similarly, students themselves readily identify with the competence–uncompetence model illustrated in this chapter, and find it helpful in taking more control of their own learning. It often comes as a pleasant surprise and a welcome relief that there is not something mystical or magical about how people learn.

Having paid due regard to *how* students (and of course we ourselves) learn, it’s vital to become very skilled at putting into clear, unambiguous words our descriptions of *what* is to be learned. Writing learning outcomes is not an activity that can be done off the cuff. Expressions of intended learning outcome need to be drafted, edited, discussed, refined, and continuously reviewed, if we are to define our curriculum in ways which will stand up to the increasing levels of external scrutiny of our professional practice.

Learning is about human achievement. Students are at the heart of learning – all learning can be regarded as student-centred (sadly not all teaching is student-centred!). For achievement to be recognised and accredited, it has to be evidenced. Our closest encounters with students are usually when we try to measure their achievement, and provide feedback to them to help them to develop it even further. That’s why the next chapter is on assessment and feedback – whatever else we do, we need to get these right if we’re going to do students’ learning justice.