

IT WORKS IN PRACTICE BUT WILL IT WORK IN THEORY? THE THEORETICAL UNDERPINNINGS OF PEDAGOGY

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Introduction

The chapter begins with a justification of learning theory and the ways that theory can be useful to the practitioner. It then presents two major philosophical approaches – one based on ideas and the other based on experience - an enduring dichotomy in Western thought. We then discuss the three most influential theories in the Western world – Behaviourism, Cognitivism and Constructivism and show how key aspects of current practice, as discussed in the literature, relate to these theories.

We write this chapter from a Constructivist perspective and our own position and values influence our choice of material and the way we present it. It is neither possible nor desirable to be value-free in such an important area of human endeavour as education. However, it is up to you, the reader, to engage with the ideas presented from your own values and perspectives.

When speaking of learning in general terms we refer to the ‘learner’. When we are discussing teaching activities we use the more specific term ‘student’.

Justifying Theory

Underlying the chapter is the maxim that there is ‘nothing as practical as a good theory’ (Lewin 1943:35) and as a practitioner you will base your professional practices on some aspects of theory, however derived. Educational theory may be considered as the distilled experiences of others (Carlile et al. 2004:4) and the purpose of this chapter is to share with you the experience and conclusions of those who have thought deeply about what goes on in learning. For instance, there is no single agreed definition of learning. It depends on the theory that you hold. This chapter offers a number of different theoretical perspectives, each of which will imply a slightly different definition of learning. For a Behaviourist, to learn is to demonstrate a more or less permanent change in behaviour; for the Constructivist, to learn is to see the meaning or significance of an experience or concept. Your key role as a facilitator of student learning is dependent then upon the theory of learning that you hold.

It has been claimed that: “Theory matters because without it education is just hit and miss; [...] we risk misunderstanding not only the nature of our pedagogy but the epistemic foundations of our discipline” (Webb 1996:23).

Consciously or unconsciously, you hold theories of learning since all action is based on assumptions which may or may not have been articulated or tested. These have been developed through your own years of formal education, of learning things on your own, and of developing learning strategies for students. You may not be aware of what your theories are, and they may never have been challenged. We hope that this chapter will help you to become aware of alternative views so that you can more readily analyse your own. It may be the case that on reflection

your own views form a coherent whole; alternatively you may hold scraps of theory that are in fact incompatible. It is important not to have principles which clash, so bringing them to light will help you organise them more coherently so that you can use them more consciously and engage in ongoing enquiry.

Benefits of Theory

Insight and Affirmation

We hope that, by the end of this chapter you will have acquired a set of concepts and corresponding vocabulary that you can use to gain insight into your own theoretical position(s). It can validate your existing practice and become self-affirming.

Reflection

Having these concepts will allow you to manipulate and develop them in a reflective process. For example, current practices of maintaining a learning journal or reflective log depend on some knowledge of your own theoretical position.

Problem Solving

When problems arise, a theoretical understanding offers you a tool for recognising, analysing and dealing with the issues in a more focussed, logical and effective manner.

Sharing

Shared reflection, as is demonstrated in the process of peer review, also relies on a joint discourse which needs a theoretical shared vocabulary in order to explore epistemological and pedagogical issues.

Scholarship

This shared discourse and communication of ideas is also necessary if you are to engage in the scholarship of teaching. It enables expertise to be shared and best practice to be disseminated. As well as acting as a focus for your continuing questions about teaching and learning it is often necessary to articulate your own practices and values to a wider audience.

Justification

An important aspect of your professional practice will be the justification of your practices to others, whether they are colleagues, administrators, academic managers, policy makers or other stakeholders.

Power

Finally, knowledge is power. Awareness of the discourse will empower you, allow you to explain, justify and promote your ideas about teaching; to communicate with colleagues, to engage in scholarship and to develop clearly thought-out strategies and tactics to enhance your teaching.

Philosophical Approaches

Idealism

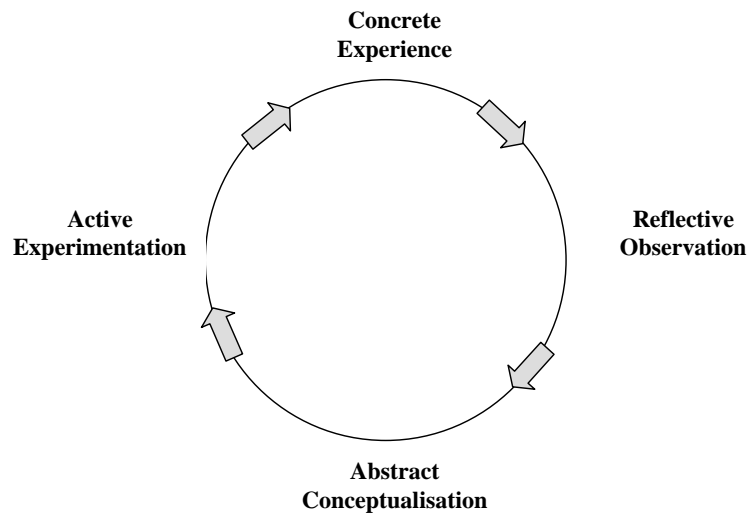
There is a long-standing tradition in Western academic thought of valuing ideas over experience or action. We still think ideas are important. The prioritising of concepts, principles and theory is also an assumption behind the claims made above about the importance and value of theory. The Idealist tradition finds its clearest exponent in the Greek philosopher Plato who thought that ideas constituted reality, and that sensory experience was suspect. The value that we place on ideas is shown in the way that we present principles before practice, for example teaching Ohm's Law to students before they apply it in practice in the laboratory.

A standard view of curriculum is that knowledge consists of knowing the epistemology or ways of knowing in different subjects. For example, there is a different 'way of knowing' in Chemistry than there is in History. The aim of education on this view, is that a student must acquire the specific way of knowing and the principles of the discipline studied. The popularity of the 'Teaching for Understanding' movement exemplifies the importance of understanding the key ideas behind a subject rather than simple content.

Empiricism

Empiricism stresses the role of experience and active learning. The scientific revolution of the 16th century and the overthrow of metaphysical systems led, particularly in North European cultures, to a new interest in the observable world, and to the role of experience in learning. The English philosopher Locke claimed that "There is nothing in the mind that was not first in the senses" (Locke 1690). This argument that ideas are developed from experience was pursued by later educationalists. In the 18th century Rousseau claimed in *Émile* that, instead of formal education, children should learn from nature and the real world.

A modern version of this stress on active learning is that provided by the American educationist (Kolb 1984). He suggests a cycle of learning which begins with experience and progresses to reflection on that experience. The next stage of the cycle is that of conceptualisation or the acquisition of key ideas. These may arise from the reflective process or may be derived from established theory. This will lead on to the next stage. The synthesis of experience, reflection and theory leads to a modification of the learning cycle. The iteration of the learning cycle leads to a growth in knowledge, depth of understanding and improved practice.



Source: Kolb (1984)

Fig. 1: Kolb's Learning Cycle

This cycle has been influential in curriculum planning, in the popularity of active learning, and in the identification of the specific learning orientations of students. Kolb's own instrument (Smith and Kolb 1986), and that derived from it by the UK psychologists Honey and Mumford (1992) seek to identify learners along the four dimensions identified above. Kolb's theory points to the diversity of learner styles and the importance of different learning strategies.

The empirical emphasis of experimental psychology in the 19th century led to the first major scientific theory of learning – that of Behaviourism.

Behaviourism

Behaviourism concentrates on observable behaviour without considering motivation or other mental processes. It developed from a number of experimental studies with animals, including Pavlov's celebrated dog, and progressed to experiments with rats, pigeons and higher animals. It argues that you can 'condition' or train any organism, including human beings, provided that you think very carefully about key aspects of the conditioning. This includes you, the trainer, acquiring a clear view of the behaviour you want to change; (introduce, strengthen or eliminate), the sequencing of events or 'stimuli' to bring about this change, the association or link between the stimuli and the subject's response and the importance of reward or punishment in motivating the learner (reinforcement).

Tab. 1: Key Principles of Behaviourism

<p>Reinforcement Positive or negative feedback which will lead the learner to form a strong association between the stimulus and the desired behaviour (carrot or stick)</p> <p>Contiguity The more immediate the feedback the stronger the association (strike while the iron is hot)</p> <p>Repetition The more frequent the stimulus-response the more likely is the desired outcome (practice makes perfect)</p> <p>Variation Varying the pattern of the stimulus generalises the response (the more the merrier)</p> <p>Intermittent Reinforcement Not rewarding the response every time is found to be more effective than constant reward (keep 'em guessing)</p> <p>Extinction If the stimulus-response bond is not reinforced the association will die (use it or lose it)</p>

Source: Carlile et al. (2004:9)

One implication of Behaviourism is that the learner or subject is completely passive, and you, as the teacher, or more correctly 'trainer' hold the key to learning success. This is shown by Tyler, the US Behaviourist, who had been responsible for effective mass-factory training in the Second World War. When called in to advise the US government in 1947 on falling standards in US public schools, he stated that the trouble was with the teachers who couldn't teach, and were unaware of any teaching principles or strategies. His book on the principles of curriculum design aimed to rectify this deficiency (Tyler 1949).

The influence of Behaviourism on education has been both malign and benign. Behaviourism assumes, at its most sinister, the kind of authoritarian manipulation of people you find implicit in the kind of 'conditioning' that Anthony Burgess attacked in his book *A Clockwork Orange* (Burgess 1962). Behaviourism allows little room for creativity, independent learning or for the concept of mind at all.

In its favour, Behaviourism builds on aspects of practice that you know are effective. These include the importance of repetition in learning, of presenting strong and varied stimuli (avoid boring the group), of careful planning and the sequencing of learning events, and of specifying achievable and verifiable learning objectives in the form of learning outcomes.

Some of the key developments in modern curriculum planning are Behaviourist. In the 1950's Bloom categorised the different worlds of learning into the Cognitive, the Affective and the Psychomotor domains, as demonstrated in observable behaviour (Bloom et al. 1956). The writing of objectives or goals in the form of tangible learning outcomes is a consequence of Behaviourist thinking. With regard to planning and delivery of learning, the specification of what should hap-

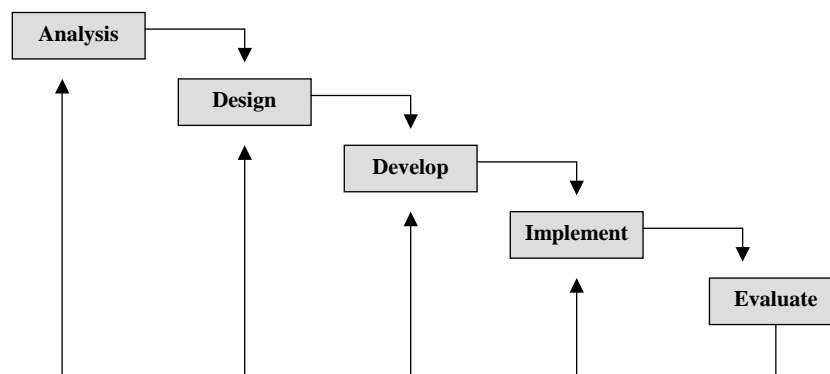
pen in any learning sequence, as provided by Gagné, is still highly influential in the training world.

Tab. 2: Gagné’s Nine Key Instructional Events

Teacher/Designer Action	Response of learner
1. Gaining learner’s attention	Readiness
2. Stating session objectives	Knowing what to expect
3. Reminding what was done before	Stimulation of long term memory
4. Highlighting key features	Perceiving what is important
5. Structuring learning	Creating links and associations
6. Encouraging activity	Performing
7. Providing feedback	Learning awareness and satisfaction
8. Evaluating progress	Strengthening learning
9. Signalling future learning	Gaining learning overview

Source: Gagné and Medsker (1996:140) (adapted)

Behaviourism works best in the teaching and assessment of competencies, where you want to test and verify that the student or trainee does indeed possess the requisite skills or competencies. Behaviourism also provides the underlying principles of instructional design as shown in the standard model of instructional design developed by Royce (1970).



Source: Royce (1970)

Fig. 2: Phases of Instructional Design

Computer-based training (CBT) for example is greatly dependant on the precise sequencing and chunking of learning materials, the stress on repetition and practice, and the importance of the reinforcement of behaviour you desire.

Overall, while the training world, particularly in the US, is still dependant on Behaviourist ‘rational’ principles, Behaviourism becomes more problematic when you are dealing with higher level learning, and acquisition of concepts, problem-solving and originality. It is not a model that suits the general view of university or higher level learning.

Tab. 3: Implications of Behaviourism for Practice

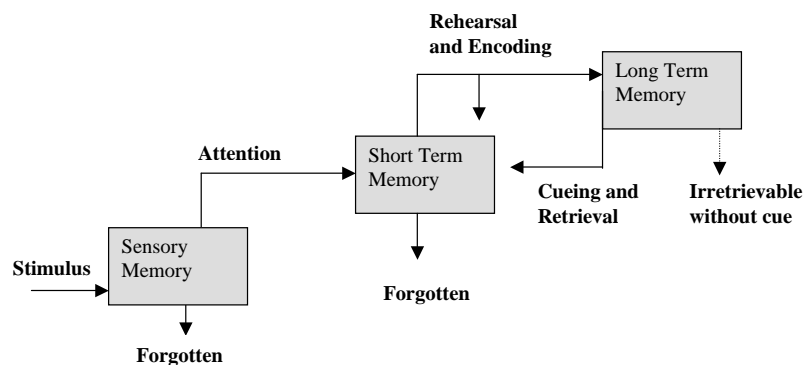
- List the learning outcomes (Bloom’s Taxonomies show how these can be categorised)
- Assessment must be based on these learning outcomes and nothing else
- Break the material down into small units
- Carefully sequence these units according to the desired learning
- Present the rules for learning the topic
- Ensure that the learner actively responds (does things)
- Provide opportunities for frequent learner feedback
- Reinforce correct behaviour with immediate rewards

Source: Carlile et al. (2004:10)

Cognitivism

Cognitivism, based on an investigation of human thought processes, is diametrically opposed to Behaviourism which disregards mental activity or motivation. Cognitive theory developed from experimental work carried out on memory, perception and attention, such as Miller’s well-known work on the number of items that can be held in short-term memory (Miller 1956:81–93). Work on artificial intelligence and the attempt to replicate mental processes by computers also stimulated Cognitivist thinking.

Cognitivists focus on the ways that learners gain and organise their knowledge and they have developed ‘information processing input-output’ models of learning. The following diagram illustrates the way that sensory input may be processed through short-term memory, and organised or ‘encoded’ before being lodged in long-term memory, and learning takes place.



Source: Carlile et al. (2004:12) (adapted)

Fig. 3: Mental Processing

Many current ideas intended to facilitate student learning draw on our awareness of the mental processing outlined above. For example, Ausubel (1968) recommends the use of ‘advance organisers’ where you present a patterned outline of material to students before you introduce them to more detailed content. This draws on the importance of encoding material prior to transfer to

long-term memory. The concept of 'Mind-mapping' as a form of effective note-taking developed by Buzan (1974) draws both on concepts of encoding and those of dual coding- that is, of presenting material in more than one medium to increase learner retention. Work carried out on levels or types of learning also draws on our knowledge of short and long-term memory stores. For example, work by Marton and Saljo (1984:36–55) identifies two clear types of students – 'surface learners' who try (and generally fail) to retain the material held in short term memory because of information-overload, and 'deep learners' who attempt to understand and encode material so that it can be transferred to long-term memory and more effectively learnt. Strategic learners are also effective, but are more instrumental in learning, working only towards the specific goals they wish to achieve.

The most famous Cognitivist was Piaget and Inhelder (1990) who argued that knowledge is acquired by the natural development of mental structures as the child responds to experience. The concept of 'readiness' is therefore important in order for the child to move on to the next stage of conceptual development, and this idea has been picked up by some later theorists. While Piaget's work concentrates on child learners, there has been more general interest in his concept of 'de-centring' or being able to see the world from different points of view - an important stage in the development of abstract thinking. His concept of 'de-centring' can be applied to older learners too, since a mark of an educated person is the ability to 'generalise' and see the world from a number of different perspectives.

For Cognitivists then, learning is developing strategies for thinking. It is not surprising therefore that Cognitive approaches underlie the Critical thinking movement which has gained prominence in recent years and is increasingly used as a tool in problem-solving in specific disciplines.

The Accelerated Learning movement, a late Cognitivist development which is attracting much popular attention, draws on a variety of sources. You as the teacher need a knowledge of neural processes, the importance of water, sleep and exercise, visualisation, music, and the techniques derived from neuro-linguistic processing (NLP). With these you can foster and 'accelerated' learning. You can find a growing number of Accelerated Learning Workshops run both in the formal and informal education sector, though concentrating on child learners.

Cognitivists however, like Behaviourists, still place the teacher or curriculum designer firmly in control. You need a knowledge of mental processing or of how to produce the desired behaviour in order to reinforce or direct learning, but it is still your responsibility to control it. As a subject specialist you will want your students to adapt particular strategies that are effective in your domain. For example Mathematics teachers are not very concerned with the answer to a problem. Their focus is on the cognitive strategies needed to arrive at a solution.

As the student moves up through the educational system from primary, to secondary, to higher educational levels, the pedagogical approach becomes more Cognitive. At primary level there is an emphasis on the acquisition of facts (Bruner 1996), whereas at higher levels there is an emphasis on general principles, methods and ways of knowing. This is also shown in assessment procedures and examinations where lower level papers ask for description and reproduction of facts whereas higher level papers require analysis, discussion and debate - Cognitivist approaches.

Tab. 4: Implications of Cognitivism for Practice

- Promote active listening
- Don't overload short term memory by presenting too much material at once
- Don't lecture for more than twenty minutes without a break
- Chunk material into groups or categories to facilitate retention
- Make the structure and patterning of the material explicit for learners
- Present material in more than one form to facilitate transfer to long term memory
- Give learners the opportunity to revisit topics to strengthen retention
- Use key words and terms as memory cues
- Outline the meta-cognitive strategies needed for your subject

Source: Authors

Constructivism

The last of the meta-theories is not one, but a broad group of theories that can offer you a different explanation of the way that people learn. Constructivists claim that people 'construct' their own meaning by building on their previous knowledge and experience. New ideas and experiences are matched against existing knowledge, and the learner constructs new or adapted rules to make sense of the world. 'Constructs' are created which are representations of the world. These are used to measure and validate current experience and to predict new experience. Constructivism therefore is a dynamic process where small localised changes in these 'constructs' may lead to this change in overall understanding.

Constructivists believe that learning is a desire to find the meaning in situations, and this meaning will be an individual one, since we have all had different experiences of being in the world. You, as the teacher, cannot be in charge of your students' learning, much as they may like you to be. How then can you cater for everyone when their views of reality will be so different, and students will come to learning already possessing their own constructs of the world? They may easily accommodate the concepts you offer them, or there may be a clash between different representations of the world. Whereas the Cognitivist tries to take charge and direct the students' thinking, the Constructivist accepts the autonomy of the student, and instead acts as a facilitator or mediator. The Constructivist helps the learner to discover meaning and understanding, rather than simply to accumulate information.

Some modern trends in learning which have been developed from a Constructivist perspective include student-centred learning which stresses the centrality of the learner, and the fostering of independent learning through the use of negotiated learning strategies and of learning contracts.

One of the underlying principles of Constructivism is its stress on diversity in learning given the different constructs of the world held by learners, and this brings together a number of other well-known theories. Teaching in higher education is increasingly concerned with adult students who construct knowledge in a different way from children. Knowles (1980) states a number of different ways in which adult learners are different from child learners.

Learning Style theories also demonstrate diversity in claiming that there are clear learner preferences. Learner preferences are influenced by effective past learning, by habit, or the learner's own strengths. There are many different types of Learning Style models. A popular model is that based on personality constructs (Myers-Briggs 1980). The VARK model is based on visual auditory, read-write and kinaesthetic modalities (Fleming and Mills 1992). Another is based on

Tab. 5: Pedagogy versus Androgogy

Child learners	Adult learners
Rely on others to decide what is important	Decide for themselves what is important
Accept information at face value	Use experience to validate information
Don't expect learning to be immediately useful	Expect what they learn to be immediately useful
Have little or no experience to draw on	Have much experience
Cannot act as resource to group	Significant ability to act as resource to group

Source: Knowles (1980)

preferences for specific stages of the learning cycle as identified by Kolb (1984). Learning Style Theory implies that you, as the teacher, should adopt a range of teaching strategies. Otherwise you will privilege one group by teaching to their chosen style, and disadvantage the others. Reflection on the use of learning style could also lead you to a consideration of your own learning and teaching and how it correlates with student learning.

An interest in diversity in intelligence rather than a single unitary intelligence comes from the US Harvard-based psychologist Gardner (1999) who explicitly claims a Constructivist perspective. His Multiple Intelligence (MI) theory posits a number of intelligences rather than one overarching organising intelligence.

Tab. 6: Gardner's List of Intelligences

<ul style="list-style-type: none"> • Linguistic Intelligence • Logical-mathematical intelligence • Spatial intelligence • Bodily/kinaesthetic intelligence • Musical intelligence • Interpersonal intelligence • Intrapersonal intelligence • Naturalistic intelligence • Existential or spiritual intelligence (under consideration)
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Source: Hyland (2000:32) (adapted)

According to Gardner, all individuals have a 'jagged intelligence profile', developed from innate potential, experience, practice, and motivation. Like Learning Styles, MI theory implies that you should adopt a range of teaching strategies and assessment strategies, including self-assessment, so that students can know, build on, and be judged on their strengths.

Formative assessment is an important tool for the Constructivist teacher as it reveals the existing mental constructs held by the student. If these constructs are inadequate or flawed the teacher can then present counter examples or scenarios that challenge the existing constructs and prompt the student to a readjustment.

Whereas Cognitive Science has researched measurable cognitive processes, such as the duration of memory or attention-span, Constructivism is interested in the whole mind, and the affect-

tive domain, including the place of volition and emotion in learning. Barnett (2004) claims that, in learning, volition is more important than intellect. If this is the case then it requires an interest in strategies designed to strengthen volition and motivation in learners, and in the part played by values. Values are closely linked to purpose and so relate back to volition and motivation of learners. The values associated with a subject and of the education community can influence students' perception and response. The role of values therefore needs to be made more explicit to students so that they can be either accepted and affirmed, or subjected to debate and challenge.

Emotion is now recognised as a major element in learning. This is quite natural when you consider the way that our perceptions of the world are influenced by the way we feel. The limbic or primitive brain developed prior to other areas of the brain, and therefore exerts a powerful influence over attention, perception and memory. We know for example that long-term memory retention is greatly aided by the emotional associations of that memory, and memory loss occurs when their emotional associations are too painful.

The emotions are central to the interpersonal and intrapersonal domains in Gardner's multiple intelligences theory. Recent work by Goleman (1996) has led to the development of a number of instruments designed to identify EQ or emotional intelligence. One area of particular interest is in the emotional intelligence of you as the teacher or facilitator in recognising and responding to the emotions and moods of your students in order to facilitate engagement and motivation.

Strategies that emphasise the emotional aspect of learning include the use by students of reflective journals, together with such techniques as 'critical incident' and storytelling because these techniques incorporate the emotions along with the cognitive and narrative elements of experience therefore promoting deeper levels of meaning.

Tab. 7: Implications of Constructivism for Practice

- Approach material from the learner's perspective and values
- Acknowledge and accommodate student diversity (ability, age, gender, culture, nationality)
- Encourage reflection through the use of learning journals etc.
- Present an overview of the topic including purpose and objectives
- Explain the relevance of the topic
- Build on what it is already known
- Encourage active and discovery and independent learning
- Give timely feedback on performance
- Constructively align objectives, strategies and assessment

Source: Carlile et al. (2004:17)

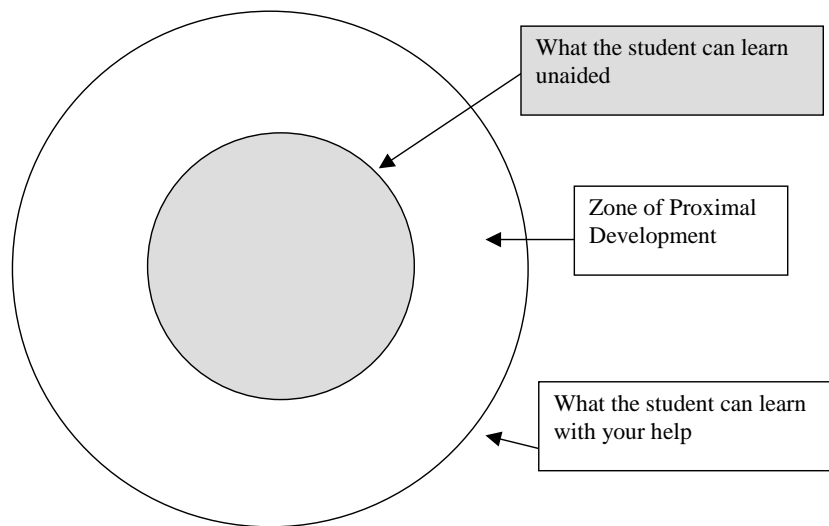
Social Constructivism

Western theories of learning have tended to focus on the individual rather than the group (though this is not the case in eastern philosophies where the group is perceived as more important than the individual member). However, some key insights on the social aspect of learning are emerging, both in relation to the role of others as mediators of meaning, and on the importance of culture in learning.

The research of the Russian psychologist Vygotsky (1934) demonstrated the importance of others as learning mediators. In the first instance he showed that in infants, communication (between the mother and infant) is a pre-requisite to the child's acquisition of concepts and language. To

look at this in reverse, he showed that without communication, there can be no thought. Thinking does not exist independently of the world, nor of other people. A number of linguistic theories stress communication and dialogue as being key elements of Constructivism in facilitating meaning.

The second important way in which Vygotsky thought learners interacted with each other was through what he called the 'Zone of Proximal Development' (ZPD).



Source: Carlile et al. (2004:20)

Fig. 4: Zone of Proximal Development

A certain amount can be learnt by a student on his or her own. However, with your help more can be learnt. You can recognise the stage the student is presently at, and offer suitable material, encouragement and prompts to move him or her on to the next level of learning.

As the learning mentor you provide 'scaffolding' or support to help students to a higher level, while gradually withdrawing this support so that the student becomes more independent. You help your students to internalise external knowledge and make it their own.

Collaborative learning is another area of growing interest, not just for instrumental reasons of dealing with ever-larger groups in higher education but for sound pedagogical reasons.

Peer tutoring, where students in the same group tutor one another, has the advantage of increasing self-esteem and developing social skills. It also facilitates meaning in both parties, in a way that you as a teacher may not perceive, since you may not see the problem in a topic from a student's perspective. The benefit for the peer tutor is that teaching is a sound method for clarifying understanding. You may have found that your lecturing has increased your own understanding of your subject. Peer assessment can also be used as a tool in student learning, since students learn to develop the criteria for making judgements and evaluating their own performance.

Many sociological studies have shown the significance of the peer group in creating a culture that can be either open or hostile to learning. The role of culture in learning is a complex one. For Bruner (1996) the intellect of the learner is framed by the surrounding culture and learning is a sharing of that culture. All learning then is induction into a culture, including all the tacit values of that culture. In Bruner's view, to be culture-free is to be intelligence-free.

Different cultures have different views on the purposes of learning and education and as a teacher or educationalist you need to be aware of these differences. For example, some socially or economically disadvantaged groups do not consider that formal learning has served them well, and are mistrustful of it. The French sociologist Bourdieu claims that, just as some social groups lack economic capital in which to invest for the future, so others lack the 'cultural capital'

which can be used to take advantage of learning opportunities which they can pass on to the next generation (Bourdieu and Passeron 1970). The challenge for you, as facilitator, is to provide a motivation and will to learn in order to influence this cycle.

It is increasingly common to talk about 'communities of practice'. According to the work of the French sociologist Foucault (1975), knowledge is embedded in the activities, social relations and expertise of specific communities, whether these are scientific, political, geographical or virtual. On this view, knowing is inseparable from action and environment, and is also inseparable from issues of access and empowerment. Recent experiments in the use of 'collaborative environments' using new technologies have led to the empowerment of learners at quite different levels. For example, children have been involved in data collection with university researchers on environmental projects and are properly acknowledged in the resulting publications.

This view raises questions about your role as a representative of the academic community including that of gatekeeper of knowledge, enforcer of values and monitor of community participation and practice.

These are complicated ideas but they suggest the need for situated learning where knowledge is placed not just in the real world but, in specific practices and social relations. As a member of a community of practice you are expected to seek out opportunities for students to solve real problems in realistic situations as exemplified in problem-based learning.

Tab. 8: Implications of Social Constructivism for Practice

- Encourage team working and collaboration
- Promote discussion - even in lectures
- Involve students in project work
- Set up study groups for peer learning
- Allocate a small proportion of grades to peer assessment and train students in the process and criteria
- Show students models of good practice in essay writing and project work
- Be aware of your own role as a model of 'the way things are done around here'
- Know your students as people, develop relationships and build trust
- Be emotionally aware and intelligent
- Be explicit about your professional values and the ethical dimensions of your subject

Source: Authors

Conclusion

In this chapter we have provided some reasons why a knowledge of learning theory is important, and how it could apply to your practice.

We have briefly outlined two philosophical approaches before going into detail about the three major theories which influence current principles and practice. As you can see, there has been a recent move away from the dominance of psychological theories which claim a scientific and objective explanation of the learning of the individual learner. There is now an increasing awareness of the role of philosophy and sociology in examining learning as a moral and a social activity which cannot be divorced from purpose, value and context.

We envisage the chapter as a resource that will inform the ideas and practices outlined in the other chapters. Finally, we hope that this chapter has stimulated your interest in theory and acts as an enrichment of your teaching.

References

- Ausubel, D. (1968). *Educational Psychology, A Cognitive View*. New York, Holt: Rinehart and Winston.
- Barnett, R. (2004). Willing to Learn in Higher Education. In *Conference Paper, AISHE Inaugural Conference*, Dublin.
- Bloom, B. et al. (1956). *Taxonomy of Educational Objectives: Handbooks 1 to 3: The Cognitive, Affective and Psychomotor Domain*. London: Longmans Green.
- Bourdieu, P. and J. Passeron (1970). *Reproduction in Education, Society and Culture*. London: Sage.
- Bruner, J. (1996). *Towards a Theory of Instruction*. Cambridge Mass.: Harvard University Press.
- Burgess, A. (1962). *A Clockwork Orange*. London: Heinemann.
- Buzan, T. (1974). *Use Your Head*. London: BBC.
- Carlile, O., A. Jordan, and A. Stack (2004). *Learning by Design: Learning Theory for the Designer of Multimedia Educational Materials*. Waterford: WIT/ BBC Online.
- Fleming, N. and C. Mills (1992). *Helping students understand how they learn*, Volume 7. The Teaching Professor.
- Foucault, M. (1975). *Discipline and Punish: The Birth of the Prison*. London: Tavistock.
- Gagné, R. and K. Medsker (1996). *The Conditions of Learning: Training Applications*. Forth Worth: Harcourt Brace.
- Gardner, H. (1999). *Intelligence Reframed for the 21st Century*. New York: Basic Books.
- Goleman, D. (1996). *Emotional Intelligence*. London: Bloomsbury Press.
- Honey, P. and A. Mumford (1992). *The Learning Styles Questionnaire*. Maidenhead: Peter Honey Company.
- Hyland, A. (2000). *Multiple Intelligences: Curriculum Assessment Project*. Cork: UCC. Final Report.
- Jordan, A. (2003). *FinVoc MI Resource Book for Teachers: FinVoc Pilot Project on Multiple Intelligence*. Waterford: WIT.
- Knowles, M. (1980). *The Modern Practice of Adult Education: From Pedagogy to Andragogy* (2 ed.). Chicago: Follett.
- Kolb, D. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs, New Jersey: Prentice-Hall.
- Lewin, K. (1943). Forces behind food habits and methods of change. *Bulletin of the National Research Council* 108, 35–65.
- Locke, J. (1690). *An Essay Concerning Human Understanding*. London: Penguin Classics.
- Marton, F. and R. Saljo (1984). Approaches to learning. In F. Marton, D. Hounsell, and N. Entwistle (Eds.), *The Experience of Learning*. Edinburgh: Scottish Academic Press.

- Miller, G. A. (1956). *The magic number seven, plus or minus two: Some limits on our capacity for processing information*, Volume 63. Psychological Review.
- Myers-Briggs, I. (1980). *Gifts Differing*. Palo Alto, CA: Consulting Psychologists Press.
- Piaget, J. and B. Inhelder (1990). *The Psychology of the Child*. New York: Basic Books.
- Royce, W. (1970, August). Managing the development of large software systems. In *Proceedings of IEEE, West Con*.
- Smith, D. and D. Kolb (1986). *The User's Guide for the Learning-Style Inventory: A Manual for Teachers and Trainers*. Boston, MA.: McBer & Company.
- Tyler, R. (1949). *Basic Principles of Curriculum and Instruction*. Chicago: University Press Chicago.
- Vygotsky, L. (1934). *Thought and Language*. Cambridge Mass: MIT Press.
- Webb, J. (1996). Why theory matters. In J. Webb and C. Maughan (Eds.), *Teaching Lawyers Skills*. London: Butterworth.

Tab. 9: Useful Websites

Author/Topic	Bruner, Jerome, (Main Concepts)
Address	http://mercury.sfsu.edu/~ching/personal/Learning/theorists/Bruner.html
Accessed	2004
Description	An overview of Bruners theory of discovery learning with a home link to many other relevant theorists and their studies along with a section of quizzes to test your own knowledge and understanding
Author/Topic	Gagné, Robert, M. (Conditions of Learning)
Address	http://www.educationau.edu.au/archives/cp/04d.htm
Accessed	2004
Description	An overview of Gagné's conditions of learning theory and how it relates to the process of instructional design
Author/Topic	Kelly, Curtis (David Kolb: The Theory of Experiential Learning)
Address	http://reviewing.co.uk/research/experiential.learning.htm
Accessed	2004
Description	A critique of Kolb's experiential learning style model, making reference to other experiential learning models along with many other relevant references
Author/Topic	Mayer, John, Salovey, Peter (The Intelligence of Emotional Intelligence)
Address	http://trochim.human.cornell.edu/gallery/young/emotion.htm
Accessed	2002
Description	Details on emotional intelligence with many links to other related websites on brain theory and neuroscience.

Source: Jordan (2003:96–100) (adapted)