

# **APPLIED EDUCATIONAL PSYCHOLOGY**



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# Applied Educational Psychology



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**ACADEMIC**  
**UNIVERSITY PRESS**

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Year of Publication 2024-25

ISBN : 978-93-6284-073-8

Printed and bound by: Global Printing Services, Delhi

10 9 8 7 6 5 4 3 2 1

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# Preface

Applied Educational Psychology bridges the gap between psychological theory and educational practice, offering practical insights into how psychological principles can be effectively utilized in educational settings. The foundational principles and theories underpinning educational psychology, providing an overview of key concepts such as learning theories, cognitive development, and motivation.

The intricacies of learning and development within educational contexts, examining how factors such as individual differences, socio-cultural influences, and environmental factors impact student learning outcomes. Understanding these dynamics is crucial for educators to design instructional strategies that cater to diverse learners' needs and promote optimal development.

Motivation and engagement in learning are central themes, which delves into theories of motivation and practical strategies for fostering intrinsic motivation, engagement, and self-regulated learning among students. By understanding the factors that influence motivation, educators can create learning environments that inspire curiosity, persistence, and enthusiasm for learning.

Classroom management and behaviour support strategies are provides educators with practical techniques for creating positive and inclusive learning environments, managing disruptive behaviour, and promoting prosocial behaviour among students. Effective classroom management is essential for optimizing instructional time and creating a conducive learning environment where all students can thrive.

The explores assessment and intervention strategies for diverse learners, emphasizing the importance of using multiple assessment tools and techniques to gather comprehensive data about students' strengths, needs, and progress. This

chapter also discusses evidence-based intervention strategies for addressing academic, social, emotional, and behavioral challenges that may impede learning.

The focus shifts to understanding and supporting students with special educational needs, including those with learning disabilities, ADHD, autism spectrum disorders, and emotional or behavioral disorders. Educators learn about inclusive practices, differentiated instruction, and individualized intervention plans to meet diverse learners' needs effectively.

The seventh chapter examines the role of applied educational psychology in promoting teacher professional development and enhancing educational outcomes at the systemic level. This chapter discusses the importance of ongoing training, collaboration among educators, and evidence-based decision-making to improve teaching practices, school climate, and student achievement. Applied educational psychology provides a valuable framework for educators to apply psychological principles effectively, enhance teaching practices, and promote positive learning outcomes for all students.

The book on Applied Educational Psychology offers practical insights and strategies for integrating psychological principles into educational practices to enhance teaching and learning outcomes.

*–Author*

# 1

## Introduction

### WHAT IS EDUCATION

In order to know the educational psychology; we have to first understand what is education. The word education is derived from Latin word *educare* which means to *bring-up*.

Education is also derived from another Latin word *educere* which means to *lead out*. Education as *educere* is more acceptable as it means leading an individual from ignorance to knowledge.

Education can be defined as the process of imparting or acquiring knowledge and habits through instruction or study. It can also be defined as a process in which human behaviour is modified so as to be in closer agreement with some model or ideal determined by the values of society. If education is to be effective, it should result in changes in all the behavioural components.

### WHAT IS EDUCATIONAL PSYCHOLOGY?

Educational Psychology is a combination or overlapping of two separate fields of study; psychology and education. It is a distinct discipline with its own theories, research methods, problems and techniques. Educational psychology is distinct from other fields of psychology due to its focus on understanding the processes of teaching and learning that takes place in formal environments.

Educational psychologists study what people think and do as they teach and learn a particular curriculum in a particular environment where education and training are intended to take place. They help in developing instructional methods and materials used to train people in both educational and work settings. They

are also concerned with research on issues of relevance for education, counselling and learning problems. Educational psychology deals with behaviour of human beings in educational situation. This means that educational psychology is concerned with the study of human behaviour or human personality, its growth, development, guidance under the social process of education. Education is possible in human beings; hence, human learning is the central core of educational psychology.

*Definitions of Educational Psychology:*

- Educational psychology is that branch of psychology, which deals with teaching and learning. It takes its meaning from education, social process and from psychology, a behavioural science (Skinner).
- Educational Psychology is the discipline concerned with teaching and learning processes; applies the methods and theories of psychology and has its own as well (Woolfolk, 1995).

## **MULTIPLE THEORY OF INTELLIGENCE**

According to Gardner, all human beings possess at least eight intelligences. Thus, intelligence is not a single entity; rather distinct types of intelligences exist. Each type of intelligence is independent one.

It means, if a person exhibits one type of intelligence, it does not necessarily indicate being high or low on other types of intelligences. Gardner also put forth that different types of intelligences interact and work together to find a solution to a problem.

*Eight types of intelligence (Gardner):*

1. *Linguistic (skills involved in the production and use of language)*: It is the capacity to use language fluently and flexibly to express one's thinking and understands others.
2. *Logical-Mathematical (skills in scientific thinking and problem solving)*: It is the ability think logically and critically.
3. *Spatial (skills in forming visual images and patterns)*: It refers to the abilities involved in forming, using, and transforming mental images.
4. *Musical (sensitivity to musical rhythms and patterns)*: It is the capacity to produce, create and manipulate musical patterns.
5. *Bodily-Kinaesthetic (using whole or portions of the body flexibly and creatively)*: This consists of the use of the whole body or portions of it for display or construction of products and problem solving.
6. *Naturalistic (sensitivity to the features of the natural world)*: This involves complete awareness of our relationship with the natural world.
7. *Interpersonal (sensitivity to subtle aspects of others' behaviours)*: This is the skill of understanding the motives, feelings and behaviours of other people so as to bond into a comfortable relationship with others.
8. *Intrapersonal (awareness of one's own feelings, motives, and desires)*: This refers to the knowledge of one's internal strengths and limitations and using that knowledge to effectively relate to others.

## INTELLIGENCE AS A PROCESS

Sternberg's triarchic theory suggests that intelligent behaviour is the product of applying thinking strategies, handling new problems creatively and quickly, and adapting to contexts by selecting and reshaping our environment. Sternberg believes that intelligence is comprised of three separate, though interrelated abilities: analytical, creative, and practical.

*Sternberg's view of Intelligence:*

- *Componential (analytical) Intelligence:* It is the ability to think abstractly, process information and determine what needs to be done. This intelligence has three components, each serving a different function. First is the knowledge acquisition component, which is responsible for learning and acquisition of the ways of doing things. The second is the Meta or a higher order component, which involves planning concerning what to do and how to do. The third is the performance component, which involves actually doing things.
- *Experiential (creative) Intelligence:* It is the ability to formulate new ideas and combine unrelated facts. It is involved in using past experiences creatively to solve novel problems. It is reflected in creative performance. Persons high on this aspect integrate different experiences in an original way to make new discoveries and inventions.
- *Contextual (practical) Intelligence:* It is the ability to adapt to a changing environment and to shape one's world to optimise opportunities. It may be called 'street smartness' or 'business sense'.

## INDIVIDUAL DIFFERENCES AND DISABILITIES

Each person has an individual profile of characteristics, abilities and challenges that result from predisposition, learning and development. These manifest as individual differences in intelligence, creativity, cognitive style, motivation and the capacity to process information, communicate, and relate to others.

The most prevalent disabilities found among school age children are attention deficit hyperactivity disorder (ADHD), learning disability, dyslexia, and speech disorder. Less common disabilities include mental retardation, hearing impairment, cerebral palsy, epilepsy, and blindness.

Although theories of intelligence have been discussed by philosophers since Plato, intelligence testing is an invention of educational psychology, and is coincident with the development of that discipline. Continuing debates about the nature of intelligence revolve on whether intelligence can be characterized by a single factor known as general intelligence, multiple factors (*e.g.*, Gardner's theory of multiple intelligences), or whether it can be measured at all.

In practice, standardized instruments such as the Stanford-Binet IQ test and the WISC are widely used in economically developed countries to identify children in need of individualized educational treatment.

Children classified as gifted are often provided with accelerated or enriched programmes. Children with identified deficits may be provided with enhanced education in specific skills such as phonological awareness. In addition to basic abilities, the individual's personality traits are also important, with people higher in conscientiousness and hope attaining superior academic achievements, even after controlling for intelligence and past performance.

## **LEARNING AND COGNITION**

Two fundamental assumptions that underlie formal education systems are that students (a) retain knowledge and skills they acquire in school, and (b) can apply them in situations outside the classroom. But are these assumptions accurate? Research has found that, even when students report not using the knowledge acquired in school, a considerable portion is retained for many years and long-term retention is strongly dependent on the initial level of mastery. One study found that university students who took a child development course and attained high grades showed, when tested ten years later, average retention scores of about 30 per cent, whereas those who obtained moderate or lower grades showed average retention scores of about 20 per cent. There is much less consensus on the crucial question of how much knowledge acquired in school transfers to tasks encountered outside formal educational settings, and how such transfer occurs. Some psychologists claim that research evidence for this type of far transfer is scarce, while others claim there is abundant evidence of far transfer in specific domains. Several perspectives have been established within which the theories of learning used in educational psychology are formed and contested. These include behaviourism, cognitivism, social cognitive theory, and constructivism. This section summarizes how educational psychology has researched and applied theories within each of these perspectives.

### **BEHAVIOURAL PERSPECTIVE**

Applied behaviour analysis, a set of techniques based on the behavioural principles of operant conditioning, is effective in a range of educational settings. For example, teachers can alter student behaviour by systematically rewarding students who follow classroom rules with praise, stars, or tokens exchangeable for sundry items. Despite the demonstrated efficacy of awards in changing behaviour, their use in education has been criticized by proponents of self-determination theory, who claim that praise and other rewards undermine intrinsic motivation.

There is evidence that tangible rewards decrease intrinsic motivation in specific situations, such as when the student already has a high level of intrinsic motivation to perform the goal behaviour. But the results showing detrimental effects are counterbalanced by evidence that, in other situations, such as when rewards are given for attaining a gradually increasing standard of performance, rewards enhance intrinsic motivation. Many effective therapies have been based on the principles of applied behaviour analysis, including pivotal response therapy which is used to treat autism spectrum disorders.

## COGNITIVE PERSPECTIVE

Among current educational psychologists, the cognitive perspective is more widely held than the behavioural perspective, perhaps because it admits causally related mental constructs such as traits, beliefs, memories, motivations and emotions.

Cognitive theories claim that memory structures determine how information is perceived, processed, stored, retrieved and forgotten. Among the memory structures theorized by cognitive psychologists are separate but linked visual and verbal systems described by Allan Paivio's dual coding theory. Educational psychologists have used dual coding theory and cognitive load theory to explain how people learn from multimedia presentations.

The spaced learning effect, a cognitive phenomenon strongly supported by psychological research, has broad applicability within education. For example, students have been found to perform better on a test of knowledge about a text passage when a second reading of the passage is delayed rather than immediate.

Educational psychology research has confirmed the applicability to education of other findings from cognitive psychology, such as the benefits of using mnemonics for immediate and delayed retention of information.

Problem solving, regarded by many cognitive psychologists as fundamental to learning, is an important research topic in educational psychology. A student is thought to interpret a problem by assigning it to a schema retrieved from long-term memory. A problem students run into while reading is called "activation."

This is when the student's representations of the text are present during working memory. This causes the student to read through the material without absorbing the information and being able to retain it. When working memory is absent from the readers representations of the working memory they experience something called "deactivation."

When deactivation occurs, the student has an understanding of the material and is able to retain information. If deactivation occurs during the first reading, the reader does not need to undergo deactivation in the second reading. The reader will only need to reread to get a "gist" of the text to spark their memory. When the problem is assigned to the wrong schema, the student's attention is subsequently directed away from features of the problem that are inconsistent with the assigned schema. The critical step of finding a mapping between the problem and a pre-existing schema is often cited as supporting the centrality of analogical thinking to problem solving.

## DEVELOPMENTAL PERSPECTIVE

Developmental psychology, and especially the psychology of cognitive development, opens a special perspective for educational psychology. This is so because education and the psychology of cognitive development converge on a number of crucial assumptions. First, the psychology of cognitive development defines human cognitive competence at successive phases of

development. Education aims to help students acquire knowledge and develop skills which are compatible with their understanding and problem-solving capabilities at different ages.

Thus, knowing the students' level on a developmental sequence provides information on the kind and level of knowledge they can assimilate, which, in turn, can be used as a frame for organizing the subject matter to be taught at different school grades.

This is the reason why Piaget's theory of cognitive development was so influential for education, especially mathematics and science education. In the same direction, the neo-Piagetian theories of cognitive development suggest that in addition to the concerns above, sequencing of concepts and skills in teaching must take account of the processing and working memory capacities that characterize successive age levels.

Second, the psychology of cognitive development involves understanding how cognitive change takes place and recognizing the factors and processes which enable cognitive competence to develop. Education also capitalizes on cognitive change, because the construction of knowledge presupposes effective teaching methods that would move the student from a lower to a higher level of understanding. Mechanisms such as reflection on actual or mental actions vis-à-vis alternative solutions to problems, tagging new concepts or solutions to symbols that help one recall and mentally manipulate them are just a few examples of how mechanisms of cognitive development may be used to facilitate learning.

Finally, the psychology of cognitive development is concerned with individual differences in the organization of cognitive processes and abilities, in their rate of change, and in their mechanisms of change.

The principles underlying intra- and inter-individual differences could be educationally useful, because knowing how students differ in regard to the various dimensions of cognitive development, such as processing and representational capacity, self-understanding and self-regulation, and the various domains of understanding, such as mathematical, scientific, or verbal abilities, would enable the teacher to cater for the needs of the different students so that no one is left behind.

## **SOCIAL COGNITIVE PERSPECTIVE**

Social cognitive theory is a highly influential fusion of behavioural, cognitive and social elements that was initially developed by educational psychologist Albert Bandura.

In its earlier, neo-behavioural incarnation called social learning theory, Bandura emphasized the process of observational learning in which a learner's behaviour changes as a result of observing others' behaviour and its consequences. The theory identified several factors that determine whether observing a model will affect behavioural or cognitive change.

These factors include the learner's developmental status, the perceived prestige and competence of the model, the consequences received by the model,

the relevance of the model's behaviours and consequences to the learner's goals, and the learner's self-efficacy. The concept of self-efficacy, which played an important role in later developments of the theory, refers to the learner's belief in his or her ability to perform the modelled behaviour.

An experiment by Schunk and Hanson, that studied grade 2 students who had previously experienced difficulty in learning subtraction, illustrates the type of research stimulated by social learning theory. One group of students observed a subtraction demonstration by a teacher and then participated in an instructional programme on subtraction.

A second group observed other grade 2 students performing the same subtraction procedures and then participated in the same instructional programme. The students who observed peer models scored higher on a subtraction post-test and also reported greater confidence in their subtraction ability. The results were interpreted as supporting the hypothesis that perceived similarity of the model to the learner increases self-efficacy, leading to more effective learning of modelled behaviours. It is supposed that peer modelling is particularly effective for students who have low self-efficacy.

Over the last decade, much research activity in educational psychology has focused on developing theories of self-regulated learning (SRL) and metacognition. These theories work from the central premise that effective learners are active agents who construct knowledge by setting goals, analysing tasks, planning strategies and monitoring their understanding. Research has indicated that learners who are better at goal-setting and self-monitoring tend to have greater intrinsic task interest and self-efficacy; and that teaching learning strategies can increase academic achievement.

## **CONSTRUCTIVIST PERSPECTIVE**

Constructivism is a category of learning theory in which emphasis is placed on the agency and prior "knowing" and experience of the learner, and often on the social and cultural determinants of the learning process. Educational psychologists distinguish individual (or psychological) constructivism, identified with Piaget's theory of cognitive development, from social constructivism. A dominant influence on the latter type is Lev Vygotsky's work on sociocultural learning, describing how interactions with adults, more capable peers, and cognitive tools are internalized to form mental constructs. Elaborating on Vygotsky's theory, Jerome Bruner and other educational psychologists developed the important concept of instructional scaffolding, in which the social or information environment offers supports for learning that are gradually withdrawn as they become internalized.

## **DEFINITION OF "PSYCHOLOGY"**

The word "psychology" is the combination of two terms-study (ology) and soul (psyche), or mind. The derivation of the word from Latin gives it this clear and obvious meaning: The study of the soul or mind.

This meaning has been altered over the years until today, this is not what the word means at all. The subject of psychology, as studied in colleges and universities, currently has very little to do with the mind, and absolutely nothing to do with the soul or spirit.

Let's see what a few dictionaries have to say and how a word could alter and lose its true and actual meaning.

*"Psyche" is defined as:*

- The spirit or soul.
- The human mind.
- In psychoanalysis, the mind functioning as the centre of thought, emotion, and behaviour.

*And defining "soul", we have:*

- The spiritual or immortal elements in a person.
- A person's mental or moral or emotional nature.

Most of us would agree we have a "psyche" per the above definitions in the sense of "mind", thought, and emotions. Most would also agree they have a "soul" per the second definition above relating to man's mental, moral or emotional nature. We might all have different notions about what these ultimately are, but few could sanely disagree they exist.

The derivation of "psyche" comes from Latin and the Greek *psukhe*-breath, life, soul. To get a better "feel" for this term think of it as the invisible animating principle or entity which occupies and directs the physical body.

We are not dealing with opinions or beliefs here. This is simply what the words and terms mean. Get clear on this first and understand what the words and terms mean, before you start getting into the opinions of others on the subject. If you choose to decide the "mind" refers to nothing real after understanding what the words and definitions mean, despite the fact that almost 10,000 years of thinking men have seriously and carefully looked into this subject, and after no real investigation on your own part, that's your decision.

Also, realize you will be basing this decision on "thinking" and "reason", both of which are only subsidiary to and *part* of any one mind, and neglecting to use a greater aspect of your mind-your personal awareness and direct observation. Basing a decision on what other people say about a mind involves only *concepts* and *ideas* about a mind. Observation involves *experiencing the mind itself*-your own mind.

### **What is the Mind?**

Originally, and for thousands of years, the subject of psychology involved the study of the human spirit, soul or mind. This involves things and functions not obviously visible to the physical senses. You can't see a mind with one's eyes. You can't "feel" a thought with one's hands. You can't place an emotion on a scale and weigh it. You can't detect imagination, even with sophisticated electronic detection devices. Modern "scientific" fields, since they haven't been able to study or detect these things with the physical senses or measuring devices have taken a drastic leap and declared that these things therefore don't exist,

don't deserve recognition, and should be ignored in any "legitimate" study of man and the mind (and human behaviour). John Watson, a typical behavioural psychologist has this to say:

*The extent to which most of us are shot through with a savage background is almost unbelievable.... One example of such a religious concept is that every individual has a soul which is separate and distinct from the body.... No one has ever touched a soul, or seen one in a test tube, or has in any way come into relationship with it as he has with the other objects of his daily experience....*

*The behaviourist asks: Why don't we make what we can observe the real field of psychology? Let us limit ourselves to things that can be observed, and formulate laws concerning only those things. Now what can we observe? We can observe behaviour-what the organism does or says. And let us point out at once: that saying is doing-that is, behaving...-John Watson, behaviourist*

Strangely, the study of the mind has come into the peculiar position of being a study which denies the mind! That's like biology denying the existence of biological organisms, but going on pretending to still be the science of biological organisms while actually dealing with something else entirely. A subject can't exist if it denies the very basis of its own existence by definition. That is the state of modern western psychology and psychiatry. Mmmm? They can't and shouldn't exist, but they do. The entire structure of these subjects as they currently exist is a sham.

Let's take a closer look at this. We each are quite aware we have a mind, emotions, and thoughts, even if we are not so clear or sure about the "soul" and "spirit". We know we are aware and possess self-awareness, but what the nature, qualities and potentials are of awareness is largely anybody's guess. We each know we possess consciousness. In fact, we are aware of our own consciousness as much or more than anything else, yet modern "science" ignores and even denies it. But the truth, despite what "science" or "professionals" say, is that the mind exists to and for each of us as an obvious and observable fact of direct experience. A quick look can tell us many obvious things. I doubt any of us would suggest we don't have a mind, awareness, thoughts or feelings even though none of these things can be detected or perceived with the physical senses or "scientific" measuring gadgets. *We don't immediately run off and deny their existence*, and we correctly assume others have similar minds, thoughts, feelings and emotions. They do. Modern psychologists and psychiatrists, for all practical purposes, completely deny every aspect of the invisible world known to you as your mind. It is invisible to physical detection, but it *does* exist.

There is constant activity within each of our "invisible worlds"-analysing problems, entertaining thoughts of tomorrow's occurrences, recalling yesterday's failures, wallowing in the sadness of a loss, concentrating on the creation of a musical composition, day-dreaming, the ever-changing feelings and emotions about everything we experience, and the endless parade of judgements and

commentary about what we see. Actually, for many of us, we have *too much* mind-it goes on and on, a constant source of images, memories and ideas intruding themselves upon our awareness. Most of us can't control any of this and simply accept as inevitable this continual parade of images and ideas across the landscape of our mind.

In a very real manner *all problems* with any mind, such as things psychiatry calls "depression", "anxiety", "compulsive disorder", "Attention Deficit Disorder" (ADD or ADHD), and even "suicidal ideation", are ultimately and solely *uncontrollable aspects of one's own mind which intrude upon the person's awareness*. It's not that these things don't exist in some way, but they don't exist in the way psychiatry understands and claims to solve them.

A better way to handle these problems would be to assist the person to *increase control over the content of their own mind*. There are many ways to do this, although they have never been all pulled together, adequately investigated, codified and organized into a straight-forward workable compilation of methods. Modern "science" has simply discarded the notion of the mind, and from that point on, never bothered to investigate it closely with the aim to understand, solve or improve it.

First, this invisible world *is* totally real. It is *not* imaginary or a hallucination. My invisible world isn't directly real to you, and your invisible world isn't directly real to me, but they are *each real nonetheless*. The person who wants to argue this fact is simply a fool, dull, unable to comfortably observe his *own* mind (because it is possibly filled with degraded and evil things), and probably addicted to the objects of physical sensation and perception to the exclusion of everything else (a modern materialist). Second, this "invisible" world of mind involves many different aspects, functions and potentials. Imagination, attention, intellect, awareness, intention, reason, will, responsibility, memory, and many other things exist in each of us.

They are a vital and important part of us-some might venture to say some of these things ARE us. There is much to each of these areas and a short essay cannot begin to even scratch the surface of their nature, functioning, possible development and capabilities. But they definitely *do exist* and deserve recognition and attention. Any subject calling itself "psychology" would have to address *these things* in detail. The failure of modern psychology and psychiatry to do so is glaringly apparent. These subjects now only address behaviour, physiology, genetics and biochemistry, and the mind is of no concern.

## SCOPE OF EDUCATIONAL PSYCHOLOGY

In this age of science and technology, psychology has been considered as one of the youngest, yet one of the most influential sciences. It has influenced education in many different ways and has give a new turn; a psychological turn to the human mind. For a skilful teacher in this day and age, a great deal of knowledge of educational psychology is highly indispensable.

The subject psychology has two aspects pure and applied. Pure psychology formulates techniques for the study of human behaviour, which finds the practical

shape in its applied aspects, *i.e.*, branches of applied psychology like clinical psychology, crime psychology, industrial psychology, occupational psychology and educational psychology. Educational Psychology as a Branch of Applied Psychology.

As discussed above educational psychology is nothing but one of the branches of applied psychology. It is an attempt to apply knowledge of pure psychology to the field of education. It consists of application of psychological principles and techniques to human behaviour in educational situations. In other words, Educational Psychology is a study of the experience and behaviour of the learner in relation to educational environment.

In order to develop a clear understanding of the term educational psychology it is necessary to understand the meaning of psychology and education separately.

### **Meaning of Psychology**

Curiosity in man has led to know his surroundings which mainly conclude nature and other fellow men. There is always a desire to 'know' what 'one' is, what is his background, what is it made of, what are the associated factors and in what way can it be useful to one self? Each question will lead to more questions, Psychology forces to answer many of the questions we have about ourselves, other people and the nature of human life; why do we feel lonely? Why do we forget? How people learn? What makes someone creative? Why do we take drugs? What makes some one help others? and so on. Psychology had its formal beginning when Wilhelm Wundt established his psychological laboratory in Leipzig Germany in 1879. But in real sense, interest in psychology as a discipline dates back to the work of Plato, Aristotle and other philosophers.

### **Psychology – The Science of Soul**

The Greek Philosophers conceived psychology as a science of soul, as early as 400 B.C. In fact, the term psychology literally means the science of soul. Etymologically, it is composed of two Greek words "Psyche" and Logos means soul and science respectively.

Goeckel named it as psychologia. Soul is a being which dwells on the body and with the end of life it leaves the body. Soul is a metaphysical idea. It can neither be perceived on imagined nor its nature and function can be studied by scientific methods of observation, experiment, *etc.* Therefore, definition of psychology as the science of soul has been discarded by the modern psychologists.

### **Psychology – The Science of Mind**

Some regard psychology as the science of mind. Historically the French philosophers like Descartes (1596-1650) and the Britisher philosophers like Locke considered psychology as the science of mind. Descartes tried to understand body mind relationship in terms of their interaction, the study of nervous system, and interest of references as innate actions, *etc.*

The definition of psychology as the science of mind is not acceptable at present. Mind is an ambiguous a concept as the soul. It is not at all possible to

carry on scientific observation and experimentation on mind. This definition also does not include the overt behaviour of man and animal which are also important subject matter of psychology. Therefore, the definition of psychology as the science of mind has been discarded.

### **Psychology – The Science of Consciousness**

Psychology has also been defined as the science of consciousness. Historically such a definition has been propounded by the Leipzig school of psychologists led by Wilhelm Wundt (1832-1920). Wundt defined psychology as the science of immediate experience with consciousness being the main subject matter. He postulated that conscious experience can be reduced into elements and the primary aim of psychology is the analysis of conscious experience into its elements. But the definition of psychology as the science of consciousness is not acceptable. That is because mental life does not consist only of consciousness. There are unconscious and subconscious mental processes which influence our behaviour in various ways without our knowledge.

### **Psychology – The Science of Experience**

Titchner (1867 – 1927), the leader of the structuralists defines psychology as the science of conscious experience which is dependent upon the experiencing person. To give an example the physicist and the psychologist may be investigating about sound. But while the former investigates the phenomena as such, the latter is interested as to how it is perceived by the observer. The mind is nothing but the sum total of the conscious experiences as perceived by a person. The subject matter of psychology is the study of such conscious experience which constitutes mind. The method of study of conscious experience is through the introspection of a trained observer.

### **Psychology – Study of Behaviour**

Watson (1878-1958), an American brought about a revolution in psychology called behaviourism. He argued that psychology is to be regarded as a science and as a science it is to limit itself to the study and analysis of publicly observable events such as the behaviour of the subject rather than subjective matters like his private mental states. He defined psychology as “the science of behaviour.”

### **Meaning of Science and Behaviour**

Science has been defined as “Systematic study of knowledge” concerning the relationship between the cause and effect of a particular phenomenon. In order to collect the scientific data and systematised material, science employs various kinds of methods of enquiry such as observation, classification, formulation of hypothesis, analysis of evidence, *etc.* It also organises and develops our knowledge of the world we live in. Psychology too aims at the same thing. It uses scientific methods to study human behaviour. It also helps us to understand, control and predict human behaviour.

**What is Social Learning Theory?**

The social learning theory proposed by Albert Bandura has become perhaps the most influential theory of learning and development. While rooted in many of the basic concepts of traditional learning theory, Bandura believed that direct reinforcement could not account for all types of learning. His theory added a social element, arguing that people can learn new information and behaviours by watching other people. Known as observational learning (or modelling), this type of learning can be used to explain a wide variety of behaviours.

# 2

## Importance of Educational Psychology for Teacher

The contribution of educational psychology to the theory and practice of education is rich and varied. The knowledge of educational psychology is important as it provides teachers with some basic skills and guidelines to solve the problems of teaching- learning process. According to John Adams, “Teacher should know John as well as Latin”. It means teacher should know child and subject- matter. A teacher should know the nature, capacities, likings and aptitudes and attitudes of the child. Child is like a book, teacher should know each and every page of it.”

- Skinner’s View, “The teacher needs psychology to bridge the lives of the young and the aims of education in our democratic society.”
- Kuppaswamy’s View, “Psychology contributes to the development of the teacher by providing him with a set of concepts and principles.”

Teaching is an art. Knowledge of educational psychology is very useful and indispensable for the teacher because it gives knowledge to the teacher.

### **Knowledge of Innate Nature**

The child has got natural urges instincts, potentialities and propensities. These innate qualities are the “Prime movers” of his behaviour. The teacher who knows psychology can make his teaching very successful while keeping in view innate nature of the child.

### **Knowledge of Behaviour**

Educational psychology assists the teacher in knowing the behaviour of the child at different stages of development. It also helps the teacher in understanding

the physiological and psychological basis of behaviour, *i.e.*, nervous system, glands, instincts, emotions, sentiments, motives, play, intelligence, heredity and environment, *etc.*

### **Knowledge of Guidance**

It helps the teacher in giving guidance to the pupils by having an understanding of interests, abilities, aptitudes, achievements, problems, educational and vocational plans of the pupils.

### **Knowledge of Unconscious Mind**

It helps the teacher in knowing the unconscious mind of the students and plays very important role in the development of the personality of the individual.

### **Knowledge about Himself**

It helps the teacher to know about himself. He learns the psychology of being a teacher and acquaints himself with the traits of a successful teacher.

### **Understand Development Characteristics**

Children pass through different stages of development as infancy, childhood and adolescence.

These developmental stages have their own characteristics. If the prospective teacher knows the characteristics emerging at different stages of development, he can utilise these characteristics in imparting instruction and moulding their behaviour according to the specified goals of education.

### **Understand the Individual Differences**

No two individuals are alike. The teacher with the knowledge of the kind of individual differences may adjust his teaching to the needs and requirements of the class and thus may be helpful in creating conducive environment in the schools where the students can develop their inherent potentialities to the maximum.

Understand the Nature of Classroom Learning. The knowledge of educational psychology provides a teacher the knowledge of learning process in general and problems of classroom learning in particular. The teacher by the knowledge of educational psychology can understand the principles of learning and various approaches to learning process, problems of learning and their remedial measures and also about factors affecting and guidance for effective learning.

### **Understand Effective Teaching Methods**

Educational psychology gives us the knowledge of appropriate teaching methods. It helps in developing new strategies of teaching. It also provides us with the knowledge of different approaches evolved to tackle the problems of teaching at different age levels.

**Understand the Problems of Children**

By studying educational psychology a teacher may understand the causes of the Problems of the children which occur at different age levels and can successfully solve them.

**Knowledge of Mental Health**

By studying educational Psychology teacher can know various factors which are responsible for mental ill health and maladjustment and can successfully help in Central hygiene.

**Measurement of Learning Outcome**

Psychological tools help the teacher to assess the learning outcome of the students and also to evaluate his teaching methods for required modification.

**Curriculum Construction**

Psychological principles are also used in formulating curriculum for different stages. Needs of the students, their developmental characteristics, learning patterns and needs of the society all are to be included in curriculum construction.

**Research**

Educational psychology helps in developing tools and devices for the measurement of various variables which influence the behaviour and performance of students.

**Helps to Develop Positive Attitude**

The teacher training programme aims to develop positive attitude towards teaching profession and provides the prospective teachers with the necessary competencies to meet the classroom challenges. Training colleges provide the knowledge of organising the subject matter in a sequential order to suit the needs of the class. The trainees are also acquainted with the techniques of motivating children for learning.

**Understanding of Group Dynamics**

Educational psychology helps the teacher to recognise the importance of social behaviour and group dynamics in classroom teaching learning.

**Problem of Discipline**

With the knowledge of educational psychology teacher utilises the importance of indirect discipline rather than corporal punishment. It tells the teacher that discipline should be self-discipline, dynamic, positive and constructive through participation in purposeful activity. Pleasure and pain, reward and punishment, praise, *etc.*, should be judiciously used. If the teacher is unaware of the principles of educational psychology he may be unable to solve the problems of his students and thereby fail to induce order and discipline among them.

### **School and Class Administration**

Former autocratic method of administration in school and class has been changed by democratic way of life wherein the teachers and administrators are more democratic, co-operative and sympathetic and problems of administration solved by mutual discussion.

### **Use of Audio-Visual Aids**

Educational psychology has helped the teachers to make use of various types as audio-visual aids in classroom teaching so as to make the concept more clear, definite and learning to last longer.

### **Time-Table**

The knowledge of psychology is helpful to the teacher in preparing time-table. He should keep in main the relative importance and toughness of different subjects and level and index of fatigue of the students.

### **Use of Innovations**

Activity-centred teaching, discussion method, micro-teaching, *etc.*, are some innovative ideas adopted to improve the teaching learning process.

### **Co-curricular Activities**

Activities like debate, drama, games are given due importance along with theoretical subjects for the harmonious development of the personality of children.

### **Production of Text Books**

Educational psychology has helped in planning of text books according to the intellectual development of children, their needs and interests at different age levels. Undoubtedly the study of educational psychology may be very helpful to equip our prospective teachers with necessary skills to deal with classroom teaching learning problems.

## **RELEVANCE OF EDUCATIONAL PSYCHOLOGY FOR SECONDARY TEACHERS**

Educational psychology has contributed considerably to the creation of the modern system of education.

*The knowledge of educational psychology helps the teacher in the following ways:*

- *To understand the Stages of Development:* Psychology has clearly shown that human life passes through different stages of development before it reaches adulthood. They are infancy, childhood, adolescence and adulthood. Psychologists have also thoroughly studied the characteristic behaviour patterns in these different periods of life. Identification of these periods with different sets of characteristics and

attributes as regards physical, mental and emotional development greatly help educationists to design curriculum and determine appropriate methods of teaching for students at different stages.

- *To Know the Learner:* The child or the learner is the key factor in the teaching-learning process. Educational psychology helps the teacher to know his interests, attitudes, aptitudes and the other acquired or innate capacities and abilities; to know the stage of development linked with his social, emotional, intellectual, physical and aesthetic needs; to know his level of aspiration, his conscious and unconscious behaviour; his motivational and group behaviour; his conflicts, desires and other aspects of his mental health. So that perfect guidance and help can be provided and positive attitude towards the learner can be formed.
- *To Understand the Nature of Classroom Learning:* Educational Psychology helps the teacher to adapt and adjust his teaching according to the level of the learners. A teacher is teaching in a class but a large number of students do not understand the subject-matter which is being taught. To deal with the students effectively in the class the teacher must have the knowledge of the various approaches to the learning process, principles, laws and factors affecting it then only he/she can apply remedial measures in the learning situation.
- *To Understand the Individual Differences:* No two persons are exactly alike. Pupils differ in their level of intelligence, aptitudes, likes and dislikes and in other propensities and potentialities. There are gifted, backward, physically and mentally challenged children. Thus, psychology tells the teacher about the individual differences among the students in the class and the procedure, methodology and techniques to be adopted for them.
- *To Solve Classroom Problems:* There are innumerable problems like truancy, bullying, peer pressure, ethnic tensions, cheating in tests, *etc.* Educational Psychology helps to equip the teacher by studying the characteristics of the problem children, the dynamics of the group, behavioural characteristics and adjustments.
- *To develop Necessary Skills and Interest in Teaching:* Educational psychology helps the teacher to acquire and develop necessary qualities and skills to deal with the problems created by the pupils, maintain a healthy atmosphere in the classroom and show concern regarding the progress of the child.
- *To Understand Effective Methods of Teaching:* Educational Psychology has discovered several new approaches, principles, methods and techniques of teaching which are very helpful in today's teaching-learning process. Educational psychology tells us how significant play and recreation are for the children and how play-way methods turn learning into an interesting task.

- *To Understand the Influence of Heredity and Environment on the Child:* Educational psychology helps the teacher to know that the child is the product of heredity and environment. They are the two sides of a coin. Both play a prominent part in the all-round development of the child. While the child is born with a number of hereditary qualities, environment helps them to be modified according to the requirements of the society.
- *To Understand the Mental Health of the Child:* Educational Psychology helps the teacher to know what are the factors responsible for the mental ill-health and maladjustment of a student and to suggest improvement thereof. Besides this, it also provides the teacher with necessary insight to improve his own mental status to cope up with the situation.
- *To Understand the Procedure of Curriculum Construction:* Curriculum is an integral part of the teaching-learning process. Curriculum should be child-centred and fulfil the motives and psychological needs of the individual because child capacities differ from stage to stage. Educational psychology helps the teacher to suggest ways and means to curriculum framers to prepare sound and balanced curriculum for the children.
- *To Provide Guidance and Counselling:* Today guidance to a child at every stage of life is needed because psychological abilities, interests and learning styles differ from person to person. Similarly, what courses of study the child should undertake in future is also a vital question. All these can be answered well if the teacher knows the psychology of children.
- *To Understand Principles of Evaluation and Assessment:* Evaluation is an integral part of the teaching-learning process. How to test the potentialities of the child depends upon the evaluation techniques. The development of the different types of psychological tests for the evaluation of the individual is a distinct contribution of educational psychology.
- *To inculcate Positive and Creative Discipline:* The slogan of the traditional teachers was “spare the rod and spoil the child.” Flogging the child was the chief instrument. Educational Psychology has replaced the repressive system with the preventive system. Now teachers adopt a cooperative and scientific approach to modify the behaviour of the students. Emphasis is laid on self-discipline through creative and constructive activities.
- *Educational Psychology and Research:* Educational psychologists conduct research to improve the behaviour of human beings in the educational situation. For this purpose it helps in developing tools and devices to measure the performance and suggest remedial measures thereof.
- *To Know Himself/Herself:* Educational Psychology helps the teacher to know about himself/herself. His/her own behaviour pattern,

personality characteristics, likes and dislikes, motivation, anxiety, conflicts, adjustment, *etc.* All this knowledge helps him in growing as a successful teacher.

- *Educational Psychology Helps in Professional Growth, Changing Attitude and Innovative Thinking:* Inside the classroom, educational psychology has enabled the teacher to achieve proper conditioning of pupils by achieving and directing classroom programmes on human lives. Not only this, educational psychologists are busy in finding out innovations in the field of education. These innovations will bring about professional growth of the teacher.

## **THE PRACTICAL VALUE OF PSYCHOLOGY TO THE TEACHER**

It would be an interesting task to trace the history of psychology from its earliest crude and haphazard beginnings to its present state of advancement with its wide range of enquiries and interests, its struggles to attain exact scientific results, its efforts to employ experimental methods, its laboratories, its failures, its achievements. I have not to speak, however, of what psychology has been or is, but assuming that to be sufficiently familiar to you, I must attempt briefly to point out some of its applications to the great and noble art of teaching.

We may consider the importance of psychology to the teacher in (1) the discovery of the inter-relations of different lines of study, (2) in organizing and systematizing his own mental life, (3) in guiding the process of bringing together the subject of study and the subject who studies, *i.e.*, in helping the teacher as (a), director; (b), student; (c), educator.

### **THE TEACHER AS DIRECTOR**

The teacher must know something about the inter-relations of different studies. He has to arrange the time-table, and frequently to teach several of the subjects. Even where, he is restricted to the teaching of some specialty he should know how his special subject is related to the others pursued by the pupils he is teaching. Does psychology occupy such a place as to make it specially valuable in seeing the inter-relations of various studies? Let us examine. Wundt divides studies into three great classes, (a), the natural sciences; (b), the mental sciences; (c), the philosophical enquiries. He claims that psychology is complementary to (a), the natural sciences, assisting in the treatment of problems otherwise inadequately solved; is the foundation of (b), the mental sciences, as dealing with the simple data and underlying principles of all mental sciences, and lastly it is the natural preparation for and introduction to (c), the philosophical enquiries.

That psychology is complementary to the natural sciences may be illustrated by a number of commonplace and well-known instances as the case of the “personal equation” in astronomy, where it becomes necessary to account for the apperception and reaction times of the observer, who is using the transit

instrument to prevent mistakes. Familiar examples illustrate that the abstracted, mathematical and physical properties of the observed phenomenon do not alone explain the appearances, *e.g.*, the larger apparent size of the moon when near the horizon; the apparent motion of the sun. Other simple illustrations might be taken from the optical illusions arising when what is termed “pencils” of lines are drawn from a point between two parallel lines, cutting the parallel lines in various directions, make the parallel lines seem to curve outward; while lines drawn from points outside the parallel lines and terminating in an imaginary line midway between the parallel lines, make the parallel lines appear to curve inward, *etc.*

Cases of colour contrast afford other illustrations. A continuous strip of gray on contiguous surfaces of black and white appear darker on the white and lighter on the black background; the same gray placed on backgrounds of red and of green appear greenish on the red and reddish on the green background.

The British Scientific Association places psychology among the natural sciences in its meetings by making it a sub-section of physiology. The American Scientific Association places it under the second group of mental sciences by making it a subsection of anthropology. It belongs to both places.

Only a slight examination is required to see that for the mental sciences psychology is just as fundamental and underlying as mathematics is for the natural sciences. Note any recent advance in thousand you will find it resting on insight into and appreciation some psychological principle. Look at the new methods of teaching grammar, not *before*, but *through* the language to which it belongs. Look at the complete revolution in method in the manner of teaching and using *rules*, once first, now last in the process, once announced and memorized, now discovered and constructed by the pupil himself.

Look at the improvement in history in such works as Green’s Short History of the English People; going beneath the events to the life of the people, their aims and passions, and the analysis of the character and motives of the chief actors. Look at the improvement in political economy by the introduction of psychological and ethical considerations. What may we expect in law when some of the time spent on procedure in criminal law is applied to the study of the *criminal* himself?

As to the value of psychology as an introduction to the philosophical enquiries, an objection might be raised that all of them, philosophy, æsthetics and theology, claiming to deal with the true, the beautiful and the good as ideals, are ultimately based on metaphysics, and the less we have to do with metaphysics the better.

Modern philosophy, however, should not be confounded with the much-misunderstood and much-maligned mediæval disputations any more than modern chemistry with alchemy, or modern biology and medical science with the views of Theophrastus Bombastus Paracelsus. And even the superseded past should be remembered with some gratitude and respect as the progenitor of the present. “Honour thy father and thy mother.” Those who cry out most loudly against metaphysics, past or present, are in almost every case the unconscious victims of the shallowest and most erroneous forms of metaphysical speculation.

It is philosophical speculation carefully conducted which has done most to expose false principles and to amend crude and erroneous standpoints. If we mean by philosophy, reflection on the meaning of experience, reconsideration of the significance of the results gained in scientific investigations, then, instead of saying no one should have anything to do with philosophy, we should rather say everyone should have something to do with philosophy. Everyone who reflects on the meaning of life and its experiences, who desires to pass beyond the mere appearances and discover their worth and importance for life, conduct and destiny is to that extent a philosopher.

It is necessary to specialize in science to gain results. But every scientist in every field has not only the privilege but also the duty to give more than mere details connected with his specialty. He should endeavor to give hints concerning their ultimate meaning as this is revealed to him. At any rate, the teacher cannot be a mere pedant. He must be a man as well as a scholar, and he will give a respectful hearing to such investigations and cultivate an intelligent interest in them. For this, psychology is a useful introduction and preparation. May we not conclude that psychology stands in such a central position and in such intimate connection with every branch of enquiry that it is peculiarly fitted to assist in their co-ordination ?

### **THE TEACHER AS STUDENT**

It is scarcely necessary to say anything about the importance of continual study to the teacher. He must keep alive his interest in what he is teaching by continually enriching his mind by new enquiries and acquisitions.

Our studies should be organized. Each new discovery should be made to throw light upon everything we already know.

By reflectively, actively organizing in this way the mind gains strength and insight, keeps alive its old interests and creates new ones.

Thus study is made delightful and fruitful, thought is trained to become consecutive and successful. The teacher should himself be a thinker of this type and he should have psychological insight to enable him to guide his pupils to attain such an intellectual culture.

### **THE TEACHER AS EDUCATOR**

What the teacher acquires and gains in his own self-culture is, as teacher, a means; the end sought by him is the training of pupils. He must stimulate and awaken interest. He desires to make the subject of study a means to transform the whole character of the subject who studies. In order to accomplish this, the teacher must keep in mind the logical order of a correct presentation of the subject of study; the stage of development and powers of his pupil and the laws of his mental growth; that he may gain the result, the developed pupil. In order of presentation, he must proceed from the simpler to the more complex; and the simpler is not the most abstract but the most concrete, for he must also proceed from the known to the less known. He must arrange the presentation so that a puzzle or problem is proposed and suggested to the pupil, add his curiosity aroused to endeavor to solve it.

The teacher must sympathetically place himself at the pupil's standpoint, if he desires the pupil, to advance to his point of view. In order to do this, he should endeavor to recall the stages and processes whereby he as pupil proceeded, when he was at the stage now occupied by his pupil. The ability to do this, probably accounts for the fact that, in many cases an English-speaking teacher will be more successful in teaching pupils the rudiments of a foreign language than a native. It may also account for the fact that so large a proportion of young and inexperienced teachers succeed as well as they do.

The most important service of psychology to the teacher, is that it that it leads him to consciously and systematically study his pupils and thus awakens or intensifies his interest in them. Surely, if a doctor becomes interested in the discovery of new diseases and new remedies for them, a teacher should be interested in each new pupil and in each experiment for his improvement.

An individualized interest makes a teacher as careful of his pupils as a fond mother is of her children. He is on the alert to see that the physical well-being of the child is not neglected. Has the child had habits of sitting, or studying, or walking, or breathing? He discovers the cause and endeavors to correct kindly, wisely, and at once. Proper physical habits conduce to health and morality.

Is the child untidy or unmannerly? The teacher leads him by example and considerate advice. The child is respected and is taught to respect himself. Is the child dull and stupid? The teacher endeavors to find out if ill-health, or poor food, or ill-usage at home, is the cause; he encourages the child to play, and soon it will turn out that the teacher is found visiting the home and endeavoring to arouse parental solicitude and gain parental co-operation. This teacher will not neglect lighting, heating, or ventilation; he will be careful not to unduly fatigue his pupils, and will be found supervising their plays without officious interference. He will even be found guarding the out-houses and walls from the desecration of perverted vandalism. He will be the guide, counsellor and confidential friend of the adolescent pupils; guarding them with solicitude and watchfulness in this critical period of unstable equilibrium, when the nature is plastic and responsive to the promptings of the highest ideals; and when, on the other hand, the danger is so great of the beginnings of perverted habits and criminal tendencies arising, if the pupils are neglected, and allowed simply to "grow up" like Topsy or Ruth Bonnython.

Let us now recall some examples of assistance from psychology, in arrangement of time table and presentation of the subject of study.

The thoughtful teacher will distinguish between the more severely logical and mathematical subjects, and the historical and literary. For the former, more concentrated attention is required, and therefore, these should be placed in the early part of the programme. When it comes to reviewing, it will turn out that the second class of studies requires more repetition and reviewing. Pupils should, however, be taught to recall directly what they have previously read and studied, without using the book to assist them. The memory should be trained in self-reliance. Perhaps it is in connection with memory that most people would think of the assistance of psychology to the student.

Kant says memory may be mechanical, ingenious, or judicious. I think it must be confessed that the earliest attempts to apply psychology in assisting and directing memory training, were chiefly of the “ingenious” kind. discovering curious and arbitrary connections in accordance with the law of the association of ideas, through similarity, contrast and contiguity.

Many text-books seem to be constructed with the view of employing the “mechanical” memory. It is supposed that the briefer the summary, the easier it will be to learn and remember. The student is supposed to con[sic] over the tables and learn them by sheer repetition.

A deeper insight will indicate more “judicious” methods. The great rule for memory is “take care of knowing and recollecting will take care of itself.” Let the subject be taught and studied logically, systematically, thoroughly, and woven as widely as possible into the warp and woof of the mental interests and thoughts of the pupil. In this way the time spent in one subject is not taken from all others, but is contributing to all others. It is a popular fallacy to suppose that all the time spent in one subject is subtracted away from every other.

The trained and experienced teacher educates all the powers of his pupils, and utilizes every subject for this purpose. He keeps clearly before his view the result to be attained, carefully selects the most efficient means, and with solicitude and interest observes and directs the process. He desires the full and harmonious development of *all* the powers and capabilities of the pupil, physical, mental, social, moral and religious. He is aware that he is co-operating with the pupil in the formation of character. Is there anything of higher value? This thought makes the teacher reverent, it impresses him with a sense of his responsibility; it also enables him to respect his profession and see in it one of the noblest efforts of human endeavor. Although our Public Schools are sometimes accused of giving merely intellectual drill, no teacher worthy of the name is limiting his efforts to this. He is bending every energy to attain discipline and training of character, by means of the intellectual and the disciplinary; he strives to inculcate ideals and form habits of faithfulness, honesty, uprightness, industry, truthfulness, obedience, reverence/Mark, he is not teaching *definitions* of these, that would be a “merely intellectual drill.” He is moulding the character to these moral habits. It is just because the Public Schools are so efficient that Sunday School and home continually desire to relegate more and more to the Public Schools. The careful and reverent study of the child is destined to react upon home, Sunday School and Church. If child-nature had been studied should we find the text “Except ye become as little children ye cannot enter the Kingdom of Heaven,” so continually misinterpreted to mean that there should be passive admission of truth without questioning or enquiry? Is that the way the child learns or acts? Should not our religious life exhibit the same fearless confidence in asking questions and the same readiness in putting into practice the answers that the active child displays?

It would be a wide field to follow the pernicious effects of un-psychological methods of parents and teachers in the suppressing of questions, and stifling the religious cravings of children. We have too often “offended these little ones.”

Sooner or later truer psychological methods, as exemplified in the Kindergarten, will permeate the whole school system and overflow into the Sunday School, the Church and the home. Let me add to the teacher interested in the study of psychology and its applications to his profession:— Remember that the Science of Psychology, with all its intrinsic importance and immediate usefulness, is simply the portal and propaedeutic to the higher reflective problems of the ultimate significance of life, and, art, moral conduct, and religious aspiration. As in your teaching you desire the intellectual to be the means to lift up the pupil to higher ground, prepare him for the reception of the highest truths, so let these lofty themes be in your own life constant topics of interest, perennial sources of new insight, continual fountains of noblest inspiration.

### **Learning by Teaching**

In professional education, learning by teaching designates currently the method by Jean-Pol Martin that allows pupils and students to prepare and to teach lessons, or parts of lessons. Learning by teaching should not be confused with presentations or lectures by students, as students not only convey a certain content, but also choose their own methods and didactic approaches in teaching classmates that subject. Neither should it be confused with tutoring, because the teacher has intensive control of, and gives support for, the learning process in learning by teaching as against other methods.

### **History**

Seneca the Younger told in his letters to Lucilius that we are learning if we teach (epistulae morales I, 7, 8): *docendo discimus* (lat.: “by teaching we are learning”). At all times in the history of schooling there have been phases where students were mobilized to teach their peers. Frequently, this was to reduce the number of teachers needed, so one teacher could instruct 200 students. However, since the end of the 19th century, a number of didactic-pedagogic reasons for student teaching have been put forward.

### ***Students as Teachers in Order to Spare Teachers***

In 1795 the Scotsman Andrew Bell wrote a book about the mutual teaching method that he observed and used himself in Madras. The Londoner Joseph Lancaster picked up this idea and implemented it in his schools. This method was introduced 1815 in France in the “écoles mutuelles”, because of the increasing number of students who had to be trained and the lack of teachers. After the French revolution of 1830, 2,000 “écoles mutuelles” were registered in France.

Due to a political change in the French administration, the number of écoles mutuelles shrank rapidly and these schools were marginalized. It is important to stress that the learning level in the Bell-Lancaster-schools was very low. In hindsight, the low level can probably be attributed to the fact that the teaching-process was delegated entirely to the tutors and that the teachers did not supervise and support the teaching process.

### ***Students as Teachers in Order to Improve the Learning-Process***

The first attempts using the learning by teaching method in order to improve learning were started at the end of the 19th century.

#### ***Selective Descriptions and Researches***

Systematic research – though initially only descriptive – began in the middle of the 20th century. For instance Gartner 1971 in the US, in Germany Krüger 1975, Wolfgang Steining 1985, Udo Kettwig 1986, Theodor F. Klassen 1988, Ursula Drews 1997 and A. Renkl 1997

#### ***LdL as a Comprehensive Method***

The method received broader recognition starting in the early eighties, when Jean-Pol Martin developed the concept systematically for the teaching of French as a foreign language and gave it a theoretical background in numerous publications.

1987 he founded a network of more than a thousand teachers that employed learning by teaching (the specific name: LdL = “Lernen durch Lehren”) in many different subjects, documented its successes and approaches and presented their findings in various teacher training sessions. From 2001 on LdL has gained more and more supporters as a result of educational reform movements started throughout Germany.

### **Learning by Teaching by Martin (LdL)**

*LdL by Martin consists of two components: A general anthropological one and a subject-related one.*

- The anthropological basis of LdL is related to the pyramid or hierarchy of needs introduced by Abraham Maslow, which consists, from base to peak, of 1) physiological needs, 2) safety/security, 3) social/love/belonging, 4) esteem/self-confidence and 5) being/growth through self-actualization and self-transcendence. Personal growth moves upward through hierarchy, whereas regressive forces tend to push downward. The act of successful learning, preparation and teaching of others contributes to items 3 through 5 above. Facing the problems of our world today and in the future, it is essential to mobilize as many intellectual resources as possible, which happens in LdL lessons in a special way. Democratic skills are promoted through the communication and socialization necessary for this shared discovery and construction of knowledge.
- The subject related component (in foreign language teaching) of LdL aims to negate the alleged contradiction between the three main components: automatization of speech-related behaviour, teaching of cognitively internalized contents and authentic interaction/communication.

### ***The LdL Approach***

After intensive preparation by the teacher, students become responsible for their own learning and teaching. The new material is divided into small units and student groups of not more than three people are formed. Each group familiarizes itself with a strictly defined area of new material and gets the assignment to teach the whole group in this area. One important aspect is that LdL should not be confused with a student-as-teacher-centered method. The material should be worked on didactically and methodologically (impulses, social forms, summarizing phases, *etc.*). The teaching students have to make sure their audience has understood their message/topic/grammar points and therefore use different means to do so (*e.g.*, short phases of group or partner exercises, comprehension questions, quizzes, *etc.*). An important effect from LdL is to develop the students' "websensibility," defined as "a cognitive and emotional sensibility for interdependence."

### ***Advantages and Disadvantages***

Most teachers using the method do not apply it in all their classes or all the time. They state the following advantages and disadvantages:

#### ***Advantages***

- Student work is more motivated, efficient, active and intensive due to lowered inhibitions and an increased sense of purpose
- By eliminating the class division of authoritative teacher and passive audience, an emotive solidarity is obtained.
- Students may perform many routine tasks, otherwise unnecessarily carried out by the instructor
- Next to subject-related knowledge students gain important key qualifications like
  - Teamwork
  - Planning abilities
  - Reliability
  - Presentation and moderation skills
  - Self-confidence

#### ***Disadvantages***

- The introduction of the method requires a lot of time.
- Students and teachers have to work more than usual.
- There is a danger of simple duplication, repetition or monotony if the teacher does not provide periodic didactic impetus.

### ***Reception of Martin's Methods***

Martin's work has been well received in teacher training and by practicing teachers: since 1985 more than 100 teacher students in all subjects wrote their

ending thesis about LdL. Also the education administration received both the theory and the practice of LdL (vgl. Margret Ruep 1999). In didactics handbooks LdL has been described as an “*extreme form of learner centred teaching*”). On the university level, LdL has been disseminated by Joachim Grzega in Germany, Guido Oebel in Japan and Alina Rachimova in Russia.

## **Learning by Teaching Outside the LdL-Context**

### ***Sudbury Schools***

Sudbury schools, since 1968, do not segregate students by age, so that students of any age are free to interact with students in other age groups. One effect of this age mixing is that a great deal of the teaching in the school is done by students. Here are some statements about Learning by teaching in the Sudbury Schools:

*“Kids love to learn from other kids. First of all, it’s often easier. The child teacher is closer than the adult to the students’ difficulties, having gone through them somewhat more recently. The explanations are usually simpler, better. There’s less pressure, less judgment. And there’s a huge incentive to learn fast and well, to catch up with the mentor. Kids also love to teach. It gives them a sense of value, of accomplishment. More important, it helps them get a better handle on the material as they teach; they have to sort it out, get it straight. So they struggle with the material until it’s crystal clear in their own heads, until it’s clear enough for their pupils to understand.”*

### ***Pupil-Team Learning: The Durrell Studies***

In the 1950s Dr. Donald D. Durrell and his colleagues at Boston University pursued similar methods which they named Pupil-Team Learning. A year-long efficacy study in the schools of Dedham, Massachusetts, was published in the Boston University Journal of Education, Vol. 142, December, 1959, entitled “Adapting Instruction to the Learning Needs of Children in the Intermediate Grades” in which one of the authors, Walter J. McHugh, reported significant learning gains from the use of pupil teams.

## **Peer Learning and Teaching in Higher Education**

Teaching and learning within a group or team context can be particularly effective in higher education. This cooperative atmosphere mimics potential workplace scenarios that students would expect to find in their careers after college. The skills learned in this group atmosphere, such as the ability to listen and learn from their peers, is essential in many vocations. Marbach-Ad and Sokolove found that in this peer-to-peer cooperative learning and teaching atmosphere resulted in students questioning and being involved at a higher-level.

### ***The Vygotsky Connection***

In the 1930s Lev Vygotsky wrote extensively, in Russian, on the profound connection between language and cognition, and in particular oral language (speech) and learning. The implication of Vygotsky's observations for Learning by Teaching would appear to be direct and apt. "The one who does the talking, does the learning" may best summarize the point: students learn by teaching their peers.

## **ONLINE EXPERIENCE**

While the vast majority of our survey respondents had been active in posting course resources, syllabi, or personal information on the Web, not all had previous experience in Web-based instruction. Nearly a quarter of the respondents had never taught even a portion of a course online. On the other hand, nearly 4 in 10 respondents had taught courses partially online; among this group, the average number of partially online courses taught was about four. Another 18 per cent had experience teaching fully online courses, with an average of five such courses. In addition, 19 per cent had done both—partial and completely online courses—with an average of 10 such online course experiences.

Calculations across these responses indicated that nearly 4 in 10 early Web adopters had taught completely online courses, while nearly 6 in 10 had taught at least part of a course online. Given these data, the respondents in this study certainly had extensive online teaching experiences on which to base their survey answers.

### **Respondent's Web-Related Skills**

An instructor's degree of comfort in using different Web technologies has a direct bearing on classroom practices as well as the decision to teach even part of a course online. When instructors are hesitant or lacking in confidence, there is less likelihood for innovation and risk taking.

*Therefore, we asked these early Web adopters about their degree of comfort with the following Web skills:*

- Creating HTML pages,
- Hosting an online chat,
- Sending and receiving file attachments,
- Using Web-based courseware systems, and
- Moderating a Web-based asynchronous discussion.

The responses were interesting. For instance, over 90 per cent of these faculty members felt a high degree of comfort sending and receiving file attachments in e-mail. Fewer than one per cent of respondents were uncomfortable with this skill. Somewhat surprisingly, 62 per cent were highly comfortable with creating HTML pages and another 20 per cent had a medium level of comfort.

However, this acknowledged degree of comfort likely includes a range of skills from using standard software options such as "save as HTML" to actually

being facile with HTML and other programming code. The degree of expertise with HTML remains a question for future surveys. These early adopting faculty were somewhat less comfortable moderating a Web-based asynchronous discussion forum or bulletin board. Still, nearly 50 per cent rated their degree of comfort as high, while another quarter of them reported a medium level of comfort. Similarly, 44 per cent were highly comfortable with Web-based courseware systems and another 34 per cent felt moderately comfortable.

On the low end was comfort with hosting an online chat session. Perceptions of online chat tools were roughly split across low, medium, and high comfort categories. These results indicate that these faculty members possessed at least some basic technology skills. Perhaps, as the NEA survey of traditional and distance learning higher education members revealed, workshops and training sessions on teaching via distance learning are now readily available.

While such a skill base and comfort level may be expected of these early Web adopters, many of these faculty members are either taking advantage of university training and support or are engaged in a heavy amount of self-teaching in regard to Web-based teaching tools. Or perhaps they are overstating their skills. In fact, latter parts of this report reveal a somewhat different picture.

### **Time Commitments**

In terms of overall time investment, these college instructors almost unilaterally agreed that teaching online is more time-consuming than traditional classroom-based instruction. More than 4 in 5 faculty agreed that teaching online courses requires more time than traditional courses.

Fewer than 10 per cent disagreed with that statement. Once again, this is consistent with the NEA report finding that more than half of college faculty teaching via distance learning spent more time on their online courses than their traditional ones regardless of the number of students or times they had previously taught the course.

Such findings point to a need for greater course support and incentives that could ease time pressures felt by instructors involved in online teaching.

### **Attrition**

Some reports and media releases contend that students are more likely to drop online courses than traditional ones. Those utilizing a mixed mode or blended approach—traditional and online in the same course—were less likely to experience significant student attrition than those teaching completely online courses.

In fact, only 29 per cent of those utilizing a blended approach experienced more than 10 per cent drop the their courses, whereas 44 per cent of those teaching completely online courses had more than 10 per cent drop their course. Perhaps more strikingly, only 2 per cent of blended courses experienced more than a 50 per cent attrition rate compared to 10 per cent of the completely online courses with such huge attrition rates.

### **Internet Access**

Computer access does not appear to be a problem for these early adopters of Web technologies. Seventy-eight per cent of these college instructors had Internet access in their current or most recent classroom. Computer lab accessibility was even higher with 93 per cent indicating that they had access to an Internet-connected computer lab for class use. Even more, 97 per cent, had Web access from home. This is more than double the 47 per cent of Americans who are users of the Internet at home as reported in a recent UCLA study. Such high level of technology access is not too surprising given that the majority of the respondents were early Web adopters who had a high level of education. In effect, these findings indicate that access to computers and Internet resources is no longer an obstacle for many college faculty.

## **PEDAGOGY AND TEACHING**

In education, teachers facilitate student learning, often in a school or academy or perhaps in another environment such as outdoors. A teacher who teaches on an individual basis may be described as a tutor. The objective is typically accomplished through either an informal or formal approach to learning, including a course of study and lesson plan that teaches skills, knowledge and/or thinking skills. Different ways to teach are often referred to as pedagogy. When deciding what teaching method to use teachers consider students' background knowledge, environment, and their learning goals as well as standardized curricula as determined by the relevant authority. Many times, teachers assist in learning outside of the classroom by accompanying students on field trips. The increasing use of technology, specifically the rise of the internet over the past decade, has begun to shape the way teachers approach their roles in the classroom. The objective is typically a course of study, lesson plan, or a practical skill. A teacher may follow standardized curricula as determined by the relevant authority.

The teacher may interact with students of different ages, from infants to adults, students with different abilities and students with learning disabilities. Teaching using pedagogy also involve assessing the educational levels of the students on particular skills. Understanding the pedagogy of the students in a classroom involves using differentiated instruction as well as supervision to meet the needs of all students in the classroom. Pedagogy can be thought of in two manners. First, teaching itself can be taught in many different ways, hence, using a pedagogy of teaching styles. Second, the pedagogy of the learners comes into play when a teacher assesses the pedagogic diversity of his/her students and differentiates for the individual students accordingly. Perhaps the most significant difference between primary school and secondary school teaching is the relationship between teachers and children.

In primary schools each class has a teacher who stays with them for most of the week and will teach them the whole curriculum. In secondary schools they

will be taught by different subject specialists each session during the week and may have 10 or more different teachers. The relationship between children and their teachers tends to be closer in the primary school where they act as form tutor, specialist teacher and surrogate parent during the course of the day. This is true throughout most of the United States as well. However, alternative approaches for primary education do exist. One of these, sometimes referred to as a “platoon” system, involves placing a group of students together in one class that moves from one specialist to another for every subject. The advantage here is that students learn from teachers who specialize in one subject and who tend to be more knowledgeable in that one area than a teacher who teaches many subjects. Students still derive a strong sense of security by staying with the same group of peers for all classes. Co-teaching has also become a new trend amongst educational institutions. Co-teaching is defined as two or more teachers working harmoniously to fulfill the needs of every student in the classroom. Co-teaching focuses the student on learning by providing a social networking support that allows them to reach their full cognitive potential. Co-teachers work in sync with one another to create a climate of learning.

## **RIGHTS TO ENFORCE SCHOOL DISCIPLINE**

Throughout the history of education the most common form of school discipline was corporal punishment. While a child was in school, a teacher was expected to act as a substitute parent, with all the normal forms of parental discipline open to them. In past times, corporal punishment was one of the most common forms of school discipline throughout much of the world. Most Western countries, and some others, have now banned it, but it remains lawful in the United States following a US Supreme Court decision in 1977 which held that paddling did not violate the US Constitution. 30 US states have banned corporal punishment, the others have not. It is still used to a significant degree in some public schools in Alabama, Arkansas, Georgia, Louisiana, Mississippi, Oklahoma, Tennessee and Texas.

Private schools in these and most other states may also use it. Corporal punishment in American schools is administered to the seat of the student’s trousers or skirt with a specially made wooden paddle. This often used to take place in the classroom or hallway, but nowadays the punishment is usually given privately in the principal’s office. Official corporal punishment, often by caning, remains commonplace in schools in some Asian, African and Caribbean countries. Currently detention is one of the most common punishments in schools in the United States, the UK, Ireland, Singapore and other countries. It requires the pupil to remain in school at a given time in the school day; or even to attend school on a non-school day, *e.g.*, “Saturday detention” held at some US schools. During detention, students normally have to sit in a classroom and do work, write lines or a punishment essay, or sit quietly.

A modern example of school discipline in North America and Western Europe relies upon the idea of an assertive teacher who is prepared to impose their will

upon a class. Positive reinforcement is balanced with immediate and fair punishment for misbehaviour and firm, clear boundaries define what is appropriate and inappropriate behaviour. Teachers are expected to respect their students, and sarcasm and attempts to humiliate pupils are seen as falling outside of what constitutes reasonable discipline. Whilst this is the consensus viewpoint amongst the majority of academics, some teachers and parents advocate a more assertive and confrontational style of discipline. Such individuals claim that many problems with modern schooling stem from the weakness in school discipline and if teachers exercised firm control over the classroom they would be able to teach more efficiently. This viewpoint is supported by the educational attainment of countries—in East Asia for instance—that combine strict discipline with high standards of education.

It's not clear, however that this stereotypical view reflects the reality of East Asian classrooms or that the educational goals in these countries are commensurable with those in Western countries. In Japan, for example, although average attainment on standardized tests may exceed those in Western countries, classroom discipline and behaviour is highly problematic. Although, officially, schools have extremely rigid codes of behaviour, in practice many teachers find the students unmanageable and do not enforce discipline at all. Where school class sizes are typically 40 to 50 students, maintaining order in the classroom can divert the teacher from instruction, leaving little opportunity for concentration and focus on what is being taught. In response, teachers may concentrate their attention on motivated students, ignoring attention-seeking and disruptive students. The result of this is that motivated students, facing demanding university entrance examinations, receive disproportionate resources, while the rest of the students are allowed, perhaps expected to, fail. Given the emphasis on attainment of university places, administrators and governors may regard this policy as appropriate.

## **TRIANGULAR BASIS OF TEACHER EDUCATION**

Construction of the relevant knowledge base for each stage of education requires a high degree of academic and intellectual understanding of matter related to teacher education at each stage. This involves selection of theoretical knowledge from disciplines cognate to education, namely, psychology, sociology and philosophy, and converting it into forms suitable for teacher education. Teacher education derives its content from the disciplines of Philosophy, Sociology and Psychology. These disciplines provide the base for better understanding and application of Teacher education.

The Philosophical basis provides insights to the student teachers about the implications of- the various schools of philosophy, ancient and modern philosophical thoughts, educational thoughts of philosophical thinkers on education and its various aspects such as curriculum construction and discipline. The Sociological basis helps the student teachers to understand the role of society

and its dynamics in the educational system of a nation and the world at large. It encompasses the ideals that influence national and international scenes. The Psychological basis helps the student teachers develop insights into students' psychological make-up. This enables the student teachers to understand their self, their students and the learning situations such that they are able to provide meaningful and relevant learning experiences to their students.

## **ASPECTS OF TEACHER EDUCATION**

*Teacher education is concerned with the aspects such as:*

- Who (Teacher Educator),
- Whom (Student teacher),
- What (Content) and
- How (Teaching Strategy).

Teacher education is dependent upon the quality of teacher educators. The quality of pedagogical inputs in teacher education programmes and their effective utilization for the purpose of preparing prospective teachers depend largely on the professional competence of teacher educators and the ways in which it is utilized for strengthening the teacher education programme.

Teacher education, thus, first deals with the preparation of effective teacher educators. Teacher education reaches out to the student teachers by providing the relevant knowledge, attitude and skills to function effectively in their teaching profession. It serves to equip the student teachers with the conceptual and theoretical framework within which they can understand the intricacies of the profession.

It aims at creating the necessary attitude in student teachers towards the stakeholders of the profession, so that they approach the challenges posed by the environment in a very positive manner. It empowers the student teachers with the skills (teaching and soft skills) that would enable them to carry on the functions in the most efficient and effective manner. Teacher education therefore pays attention to its content matter.

## **THE INTERNATIONAL LEVEL**

### **UNESCO**

At no time in human history was the welfare of nations so closely linked to the quality and outreach of their higher education systems and institutions.. As the only United Nations agency with a mandate in higher education, UNESCO facilitates the development of evidence-based policies in response to new trends and developments in this field emphasizing its role in achieving the Millennium Development Goals and particularly poverty eradication.

The Organization fosters innovation to meet education and workforce needs and examines ways of increasing higher education opportunities for young people from vulnerable and disadvantaged groups. It deals with cross-border higher education and quality assurance, with a special focus on mobility and recognition

of qualifications, and provides tools to protect students and other stakeholders from low-quality provision of higher education. UNESCO promotes policy dialogue and contributes to enhancing quality education, strengthening research capacities in higher education institutions, and knowledge sharing across borders.

### **Teacher Education**

- Global leadership on teachers,
- Their status,
- Their professional training,
- Their management and administration and key policy issues.
- The UNESCO/ILO Recommendations concerning the Status of Teachers and provide the framework for the same.
- The Teacher Training Initiative for Sub-Saharan Africa (TTISSA) is a core initiative addressing key issues in the African context.

### **What UNESCO is doing for Teacher Training- (Role And Functions)**

UNESCO promotes the development of a professionally-trained corps of teachers who provided the human contact, understanding and judgment necessary to prepare our children for the world of tomorrow.

### **UNESCO and Teachers**

Good teachers are the cornerstone of quality education. On a daily basis, teachers contribute to sustainable development by building its human foundation – nurturing each child’s capacity and desire to learn. Without teachers, Education for All (EFA) by 2015 would be an unobtainable dream.

### **Teachers: Creating hope for Tomorrow**

- Teachers are at the very heart of UNESCO’s work. Each day, over 60 million teachers care for 1 billion children, cultivating their souls and minds. Any process that attempts to improve the quality of education promote peace and harmony and eliminate discrimination requires teachers. Teachers work with children who will be the leaders of tomorrow.
- But for teachers to be effective, they must be well-trained, motivated, have a decent work environment, good pay and an attractive career path. UNESCO enables the world’s teachers by building on the standards for the professional, social, ethical and material concerns of teachers set in the 1966 and 1997 recommendation concerning the status of teachers and education personnel.
- There is currently a severe shortage of teachers worldwide. UNESCO helps adjust national policies to reverse teacher flight, teacher drop-out and assists countries with the professionalization of “volunteer” teachers recruited by hard-pressed governments to fill crisis-level gaps.

### UNESCO and Teacher Education

- Emphasizing the essential role teacher training and education policy play in national development goals.
- Producing and disseminating policy guidelines on open and distance learning, e-learning, and use of ICTs in teacher education.
- Advocacy to improve the training and status of teachers worldwide.
- Integrating international standards regarding HIV/AIDS and life skills into national teacher education policies.
- Promoting exchange of good national practices and lessons learnt within groups of countries with common teacher-related agendas through networking and exchange.
- UNESCO promotes the development of a professionally-trained corps of teachers who provided the human contact, understanding and judgment necessary to prepare our children for the world of tomorrow.

## FORMAL EDUCATION OR SCHOOLING

In formal education or schooling, a curriculum is the set of courses, course work, and content offered at a school or university. A curriculum may be partly or entirely determined by an external, authoritative body.

In the U.S., each state, with the individual school districts, establishes the curricula taught. Each state, however, builds its curriculum with great participation of national academic subject groups selected by the United States Department of Education, *e.g.*

National Council of Teachers of Mathematics for mathematical instruction. In Australia each state's Education Department establishes curricula with plans for a National Curriculum in 2011. UNESCO's International Bureau of Education has the primary mission of studying curricula and their implementation worldwide.

*Curriculum means two things:*

1. The range of courses from which students choose what subject matters to study, and
2. A specific learning programme.

In the latter case, the curriculum collectively describes the teaching, learning, and assessment materials available for a given course of study. Currently, a spiral curriculum is promoted as allowing students to revisit a subject matter's content at the different levels of development of the subject matter being studied.

The constructivist approach, of the tycoil curriculum, proposes that children learn best via active engagement with the educational environment, *i.e.*, discovery learning. Crucial to the curriculum is the definition of the course objectives that usually are expressed as learning outcomes' and normally include the program's assessment strategy. These outcomes and assessments are grouped as units, and, therefore, the curriculum comprises a collection of such units, each, in turn, comprising a specialised, specific part of the curriculum. So, a typical curriculum includes communications, numeracy, information technology, and social skills units, with specific, specialised teaching of each.

## **IMPORTANCE OF EDUCATIONAL PSYCHOLOGY IN CHILD DEVELOPMENT**

Early childhood is considered to be “an ideal period for learning.” Watson thinks, the scope and intensity of learning during this period exceeds that of any other period of development.” The following points should be kept in view by the educator while planning the education of the child at this stage.

### **Proper Atmosphere**

A healthy, peaceful and secure atmosphere should be provided for the child. This is necessary both at home and the school.

### **Proper Treatment**

The child has to depend on others for the satisfaction of his requirements. Hence he should always receive an affectionate, sympathetic, and courteous treatment from others an atmosphere of fear and repression will not allow the child to develop properly.

### **Developing the Endowments of the Child**

A child takes birth with certain natural endowments. The educator should try to locate them and plan for their maximum development.

### **Satisfaction of Curiosity**

Every child is curious to know the details of his social environment. The parents and the teachers should try to pacify this need of the child by answering the questions asked by him.

### **Developing Self-Sufficiency**

The infant depends on others for the satisfaction of his needs. The child has to do everything himself. The educator should try to develop a spirit of self-sufficiency in the child and should provide him opportunities so that the child is able to do most of the things himself.

### **Developing a Social Sense**

Efforts should be made by the teacher to develop a rational social séances in the child. The Child starts developing a social sense by the end of this stage.

### **Encouraging the Instinctive Development of the Child**

The child at this stage is guided by his instincts. The teacher should not try to suppress the instinctive development of the child. It should be sublimated in the best interests of the personality development of the child.

### **Formation of Good Habits**

This is considered to be the most flexible age of the child. Steps should be taken towards the formation of good habits by the child.

**Learning by Doing**

The child is active by nature. This ought to be satisfied through the use of activity method which advocates learning by doing.

**Use of the Play-Way**

Play is natural to the child. Let him play and learn. This will make learning easier and acceptable to the child.

**Sensory Training**

There are five senses of the child. These should be properly developed at this stage. This sensory training was also emphasized by Madam Montessori.

**Use of Stories and Pictures**

Children at this stage are interested in stories and multi-coloured pictures. They should be made to learn by using story telling method and with the help of multi-coloured pictures and charts.

**Later Childhood-(from 10 to 12 Years)*****Physical Development***

The development is slow and uniform. The child at the age of 12 is about 55 inches in height, which means an annual increase of 2 to 3 inches. Boys are slightly taller than girls. Body proportions change considerably and the overall appearance of the child also alters. The nose becomes larger and the lower jaw also increases in size. Arms, legs and trunk increase in length and look thinner. This rather gives 'an ugly look' to the child. He also builds up fine muscular co-ordinations and improves many muscular and motor skills. Boys show superiority to girls and special interest in games and skills requiring physical strength, while girls are superior to boys in skills involving the use of finer muscles, such as drawing, painting, sewing, etc.

**Emotional Development**

The child now comes to have a control over his emotions. His emotional behaviour is guided by a rational expression. He is still jealous, may be of his younger brothers or his class-fellows. He may tease and make fun of those children who are the objects of his jealousy. He may be afraid of things but tries to look brave. His expression of joy is expressed by a smile. He satisfies his curiosity by asking questions from the teacher and by studying books.

**Social Development**

At this stage the child is engaged in social give and take. Sometimes he is teased and bullied by others and he also teases and bullies others. He attaches great value to friendship and takes part in games and excursions. Now he is fairly independent in his behaviour. He moves with his friends and comes to

have a 'group' spirit. Sometimes he may assume the leadership of the group as well. Boys and girls make their separate groups. The children also come to have knowledge about their caste, religion bias and prejudices.

### **Mental Development**

Children develop their mental power by studying in the schools, reading books, and by visiting places. They develop their reasoning power, memory, attention and sensory discrimination during this period.

Children also judge their own actions and criticize the actions of others and in this way they come to have their own opinions. In religious and racial matters they take up the opinions of their elders. They also take up the aesthetic standards of their elders. Their vocabulary increases by leaps and bounds. Now they are able to speak and write sentences of more than average length.

### **Moral Development**

To him the moral code is now determined by the group to which she belongs. He considers that stealing is generally bad. He judges the actions of others accordingly. He has a strong sense of fair-play and justice. Sometimes conditions in the family play a very important role in determining these attitudes.

### **Educational Importance of Later Childhood**

This period of childhood is the time when the basic outlook, values and ideals of the child are finally shaped. Hence it is duty of the parents, teachers and the society to plan for their proper development. The School, however, has a very important role to play. The following points should be kept in view by the teacher.

#### **Proper Physical Development**

Well-organised evening games and sports should be provided for children so that they are able to have a proper physical development. The teacher should see that every child takes part in these games. Morning physical training may also be organised for resident students. In the new educational pattern of 10+2+3, physical development is being highly emphasized by educators.

#### **Provision for Excursions and Scouting**

Children start developing surplus energy at this stage. They are interested in adventure and roaming about here and there. It is, therefore, necessary that suitable provision should be made for excursions and outings for them. The scouting should be organised in the school to satisfy this need of the child.

#### **Proper Provision of Extra-Mural Activities**

Hidden qualities have to be found out and properly developed. This is possible only if a large number of extra-mural activities are provided in the school this will enable the child to choose those activities in which he is interested. In the organisation of these activities democratic ways should be adopted.

### **Planning for Proper Social Development**

Children develop the 'group spirit' at this stage. In order to direct it in the right channels it is necessary that group games on a group competition basis should be arranged. It is a period of competitive socialisation. It is through these group competitions that the child will develop various qualities like discipline, self-control, sympathy and co-operation.

### **Developing the Creative Instinct**

Children want to create something new. This creative trend should be properly utilised for educational ends. The teacher should provide opportunities where children are in a position to satisfy their creative instinct.

### **Proper Emotional Outlet**

This stage, however, is considered to be a unique stage in the emotional development of the child. It is possible only if proper outlets for the emotional expressions of children are provided. The teacher should not try to suppress these outlets. He should try to redirect them in the right channels. He should place examples of great men of the world before them.

### **Satisfying the Acquisitive Instinct**

Children want to acquire those things which they like. If it is not properly directed they start stealing they should, therefore, be encouraged to collect those things which have an educational value.

### **Moral Training**

The child at the age of eight years starts accepting the moral values of the society in which he lives. Therefore, it is necessary that some moral training should be provided. Instructions may be provided which have a moral value for the child. A democratic approach should be followed as morality is something which springs from the heart of the child.

### **Learning Through Self-Activity**

Children like activity. It comes to occupy a more important place in the educational system when it originates from the children themselves. Self-activity leads to self-expression, thus leading to self-realisation.

### **Teacher's Role in Academic Development**

The teacher has a very important role to play in the mental development of the child.

*His role may be in the following directions:*

- (a) Children are interested in language learning. They may learn two or three languages at this stage.
- (b) Children should be encouraged to choose those subjects which have a functional value. Preference should be given to those subjects which are useful in life.

- (c) Interests of children differ and change. Hence, it is necessary that their text-books should have different types of lessons. They may include adventurous stories, biographies of great men, drama, dialogue, *etc.*
- (d) It is the duty of the teacher to make necessary changes in the curriculum and methods of teaching.

### **Adolescence Stage (Period From to/Years)**

The term 'Adolescence' is derived from the Latin word 'Adolescence' which means 'to grow to maturity?' This is a period lying between childhood and maturity. Thus, it is a period of change, when the individual is neither a child nor an adult. The changes which take place are physical, sexual, emotional, social, mental and moral. A harmonious development of adolescence means full adult height, weight, stature and strength, and complete sexual maturity; the proper adjustment of the adolescent in the society; he also takes up his duties and responsibilities; the complete development of his mental powers and emotional stability and economic independence and professional competence.

### **Physical Development**

#### ***Height and Weight***

Growth is rapid just before and during the early years of adolescence. Both boys and girls develop their height and weight.

#### **Bodily Proportion**

Different parts of the body grow at different rates and reach their final size. Arms and legs grow longer and hands and feet grow much bigger.

### **Sexual Development**

This stage is the development of sex maturity. The pituitary glands secrete 'gonadotropic' hormone which finally stops bodily growth and leads to sex maturity. The sex glands of male produce spermatozoa which lead to the development of sexual growth. In the same way, female sex glands are called the ovaries which produce 'Ova' sex hormones.

### **Emotional Development**

This is the period of increased and charged emotions as the instincts of the child attain maturity. His feeling also undergoes a great change. He is sensitive and easily offended. He feels he is all alone, unloved, and in a world which is hostile.

He is required himself to adjust to the new situations and behave as the new adult. He may face emotional difficulties. He is not able to control his emotions and this leads to temper outbursts. Sometimes he is happy and sometimes he is sad, sometimes he also suffers from emotional moods. He may also indulge in day-dreaming.

Love is also predominant feeling in this period. This is due to the development of sex instinct. This love may be of most selfless kind. Adolescents are prepared to sacrifice everything simply to gain the love of another child. In the later period of adolescence this is directed to the opposite sex. The adolescents also direct love towards great men, which is known as hero worship.

### **Social Development**

At this stage the adolescent is self conscious and lacks confidence and is very modest. He wants seclusion. All these things disappear as he develops. He starts choosing his own friends and chooses them on the qualities they possess. Gradually he forms small group. He takes part in various social groups as a member of these groups. Thus he gains experiences which are valuable to him in adult life.

In this period adolescents also come in conflict with parental demands. They demand independence of action whereas their parents treat them as children and hence they come in conflict with them.

### **Moral Development**

At this stage the child develops his critical ability and judgement. He also comes across various individuals and thus he does not accept religious principles without criticism. He becomes conscious of the idea of right and wrong.

### **Mental Development**

At this stage the span of attention increases. Memory, reasoning and judgement also increase. He understands and appreciates poetry, music, art, literature and mathematics.

### **Adulthood Stage (Period After Years of Age)**

Adulthood period is the longest of all the periods or stages of life. It is characterised by an all round maturity physical, intellectual, emotional and social. At this stage the individual develops into a functioning member of the society and acts according to social and moral standards. He is self-reliant and accepts responsibility for his decisions and actions. He develops ability to think rationally and intelligently, ability to understand the world and to make maximum adjustments.

### **Old Stage (Period After Years of Age)**

This stage starts from 58 years till death. At this stage one spends one's most of time in worshipping social service and excursions.

### **Revolution in Education Induced by Psychology**

The extent to which psychology has produced into the field of teaching and learning education is so impressive that only the term revolution can be applied to it with any accuracy. In pointing to the changes in education caused by

psychology Ryan has written, “In many schools of today one finds an atmosphere of friendliness and happy activity. Much of the traditional formality, the forced silence, the tension, the marching is gone. Children’s voices are heard in the halls and class-rooms.

The younger children come gaily down the stairways, naturally and relatively unstrained, the older boys and girls through the corridor or outside walk making their way to school rooms, shops, studios, libraries, laboratories and playing fields to tasks that mean something to them, that make demands upon their energies and their imagination, that often involve hard, difficult work, but work that they recognise as creative.

Beauty of surroundings is considered a first, requirement in these schools- there are flowers about, brightly coloured murals painted by the children, attractive informal work rooms for the various groups. Art and music has begun to play the role that being to them as fundamental in education and life.”

### **Child-Centred Education**

In early times the teachers were mainly engaged in imparting various kinds of information to the children. In those times children were less the centre to attention, the school claimed more of their time. Today, it is the child who is the centre of attention in education.

Every child is individually considered and treated. Efforts are always made to adapt the curriculum of study to the needs of the child with the result that the brilliant and dull witted children do not study the same subjects.

Applied psychology has directed attention to the differing abilities and capacities of people. Such an attitude has made it possible for the teacher to gauge the special abilities of his wards and to make the best arrangements for the guidance of individual children.

The teacher of today not only must be acquainted with teaching but also with his students since his profession is now centred about the child and not about the subject or teacher. The consequence of this kind of reasoning is that what matters isn’t the beauty, knowledge or ability of the teacher but the extent to which he succeeds in developing the personality of his students.

### **Process of Education**

Previously, education was believed to be a comprehensive process that trained the individual, provided him with a moral character and made him more cultured. In psychology as it is understood today, the conception of mind has completely changed.

Analysis has led to the discovery that many kinds of forces and mental activities take place within the human being so that for the development of the child it is necessary to provide him with different kinds of programmes and subjects so that he may succeed in properly developing all his mental faculties and abilities. At present, variety is believed to be essential not only in education itself but it is equally held to be true that the education of one individual subject

includes many different activities and functions. The teacher should be aware of all these functions. It is only then that he can understand the difficulties of the children in understanding the subject.

If a child fails to memorise some one lesson, it can hardly be taken to indicate only a lack of effort on his part and no other cause. It is equally probable that he has a weak memory, or is not intelligent, or has no interest in the subject or that he is suffering from ill health.

Learning is a complex activity and it is only through a complete knowledge of its various parts that one can diagnose the difficulty of a particular child in memorising or learning a lesson. The teacher has no alternative but to attend to the activity of learning.

### **Reform in Curriculum**

Psychology has also managed to bring about important variations and reforms in educational curricula. Now it is the mental age and not the chronological age of the child that helps to determine the course of study to which he is to be subjected. Intelligence tests reveal the mental age of the child. Different courses are devised for brilliant and deficient children.

After the eighth or delta class, the curriculum is sub-divided into various parts such as literary, scientific, agricultural or art class. The child then has the opportunity of selecting his subject according to his interest and aptitude.

Various extra-curricular activities are organised for the emotional and sentimental development of the child. These include picnics, dramatic societies, *etc.* Other programmes are organised in order to develop the qualities of leadership, public speaking, *etc.*, in the child. But no course of study or programme is foisted upon the child against his inclination.

Inspiration is awakened in him according to his interests and his tastes. Education has now been made more interesting and appealing with the use of audio-visual aids such as television, film projection, *etc.* Many schools are also equipped with radio sets that provide both entertainment and information to the child.

The use of analogies to penetrate the defences of the child is an important method in education. Children who choose to study history are also taken to visit historical places and even a glance at the curriculum of basic education makes clear the extent to which psychology has revolutionised education. And special curricula are also devised to meet the needs of adult education. They suit the psychology of adult individuals.

### **Discipline**

Discipline has an important place in education. One of the aims of education is to instill respect for discipline in the child. But the recent discoveries of psychology have changed the ways and means in which discipline is taught. Previously physical punishment was one of the chief methods of teaching and imparting discipline in the children. The main motive behind the discipline was

fear of physical violence and injury. But instead of injuring the body of the child it injured his personality by making it distorted. Psychologists attracted the attention of enlightened people to the injurious effects of physical punishment and also suggested alternative means of making children disciplined. One suggestive example is here described. The inmates of a hostel were given to indiscipline during lunch time. They threw morsels of food at each other and wasted much more. The warden made every effort to stop this nuisance. Used every means of arousing fear in the children but without success.

He never discovered the name of the mischief makers and neither did the boys give up their behaviour. Sometime later he was replaced by a new warden who resorted to psychological methods for solving this menace. He made an announcement to the effect that the best behaved table with the most seemly boys would win a flag that would entitle them to twice the normal ration of the most succulent food. The strategy took immediate effect and the indiscipline promptly ceased.

The children seated at various tables were now busily engaged in trying to look more disciplined and seemly than all the others so that they now even prevented the more hardened and incorrigible boys among them from mischief. In this way, the warden took advantage of the psychology of children to effortlessly perform a task that had completely foiled all the efforts of the earlier warden with his shock and fear tactics.

Nowadays it has become customary in schools to allow the children to adopt discipline rather than foist it upon them. At the college level it is from among the students that the prefects are chosen to create and maintain discipline among their fellow mates and to help the proctor in maintaining order within the college.

Very recently there was a high level debate on the spreading indiscipline among university students in India and almost all speakers put forward psychological solutions because the problem of indiscipline is fundamentally and basically a psychological one.

It need hardly be pointed out that the more a teacher knows of child psychology, the easier will it be for him to create discipline in the motley group with which he is faced in the class.

### **Education on Personality**

The modern methods of education place great emphasis upon the education of personality. Education is now understood to mean something more than mere reading or writing, it is also understood to involve the development of personality. Many schools have resident psychologists who solve problems related to personality of the students and give advice to teachers and parents in this regard. At places there are also child guidance clinics that make special efforts towards the correction and normal rehabilitation of problem children or juvenile delinquents.

A study of psychology is an essential part of the curriculum of teacher's training. In addition to these individual efforts most states and districts have a

bureau of psychology whose functions are to solve all problems of students relating to their personality, to give personal guidance and to give advice to their parents and teachers regarding them. The truth of the matter is that the psychologist has become a link for the child's adjustment between the home and the school since such an adjustment helps to improve his personality. In the role of specialist his contribution to the school has become indispensable.

### **Teaching Method**

In the manner already described psychology has changed teaching methods lock stock and barrel. All new research aims at evolving teaching methods that induce the child to learn for himself and thus himself achieve his development. The means of a changed teaching method are radio, cinema, cultural programmes, debates and other competitions, picnics, visits to historical places, games, election contests, students' unions, *etc.* It is psychology that has contributed the Kinder garden and Montessori methods of teaching. Special learning and teaching methods have been evolved for the use of blind, dumb and deaf children and mentally backward or handicapped children.

### **Individual Differences**

In days gone by, the same curriculum was prescribed for all students in the class. The development of applied psychology led to the fact that different individuals differ from each other in respect of their interests, intelligence, ability, capabilities, *etc.* This knowledge of individual differences proved a variable source of revolution for education. Now-a-days the essential pre-requisite to guidance of an educational nature is knowledge of the subject's ability and interests. Choice of his curriculum and other extra-curricular activities are definitely governed by these individual differences.

### **Process of Learning**

The experiments that psychology has carried on in connection with the process of learning have led to the discovery of many laws that economise time and yet produce good results in terms of material learned. One example would be Thorndike's laws. It is the psychologist who has stressed the importance of reward and punishment in learning. Research in psychology has aimed at discovering the efficacy and inefficacy of the various methods of learning. The employment of the various methods of learning is improved and made more scientific by knowledge of their qualities and drawbacks.

### **Mental Testing and Guidance**

Mental testing and guidance are important factors in applied psychology. Psychologists have evolved scientific tests to measure intelligence and other abilities. Students can be guided in educational and vocational matters with the help of these tests. Now, education aims both at the complete development of the individual as well as his best possible adjustment to his vocation and of his

vocation to his natural abilities Teachers need the help of psychologists in either of these two matters. Psychologists solve the problems of students through personal guidance and inform them of the job they are best suited to through vocational guidance. In this way, the co-operation and co-ordination between the teacher and the psychologist in the field of education is on the increase.

### **Reform of Problem Children**

One of the most notable contributions of psychology to education is the improvement and reform of juvenile delinquents, absconding children, morons, backward children, unsocial and problem children, and advice to their parents regarding them. To this end the state and district psychological bureau assist the educational institutions.

### **Extra-Curricular Activities**

The aim of education is the complete development of the child so that mere book knowledge is insufficient to gain this end In this connection many other programmes are included in the curriculum on the suggestion of psychologists apart from the normal theoretical knowledge.

In this manner, educational psychology provides the teacher with the means to attaining knowledge of the student's nature, capacity, characteristics, needs and motive. This knowledge is the equipment for him to modify his teaching methods sufficiently to attain die goal for education.

# 3

## Educational Psychology for Adults

### INTRODUCTION

Although the characteristics and qualities of adult development are increasingly of interest to developmental psychologists, and to adult educators, only recently have educational psychologists devoted much attention to adults. This is due, primarily, to the large numbers of adults who are pursuing continuing education and training—whether due to occupational demands, avocational interests, or because—on average—adults are living longer, healthier lives. This trend, combined with an increasingly earlier retirement and greater leisure time available to adults, have combined to send adults “back to school”—not just in formal educational settings, but through a variety of alternatives.

While adult educators have grappled with understanding the most effective ways to provide instruction to adult learners, who vary greatly in their learning needs, interests, and abilities, these practitioners can undoubtedly benefit from a greater understanding of the psychology of learning and development, as applied to educational contexts. Educational psychologists are uniquely qualified to provide this kind of information to practitioners. Adult education has been called a developmental enterprise, in that adult education is said to promote the development of adults in a variety of domains—cognitive and intellectual, social and emotional.

Still, there is very little evidence that adult educators are well-versed in developmental principles and that adult education does, in fact, serve to promote development.

## **TWO DOMAINS OF THEORY AND RESEARCH**

Traditionally, there are two domains of theory and research in adult development, according to Tennant and Pogson (1995): intellectual and cognitive development comprises one domain—and will be an emphasis of this course; personality and social development comprises the second domain of research and theorizing. While the study of personality development in adulthood is important to a broader understanding of the impacts of adult education on adulthood, this has occupied less attention from adult educators. Adult social development through education has, however, been of much greater interest to adult educators.

### **ADULT INTELLECTUAL DEVELOPMENT**

In regards to adult intellectual development, two descriptive models have predominated in the literature: the stability model and the decrement model, according to Tennant and Pogson (1995). The stability model assumes that adult cognition remains essentially the same after maturity, with no qualitative or quantitative growth. The decrement model, on the other hand, assumes that there is a gradual decrease in the person's ability to utilize and organize information (likely due to biological deterioration of the cognitive system with age). Peak intellectual functioning, from this perspective, occurs in the late 20s/early 30s.

Because of the influence of the life span developmental perspective over the past 25 years, an alternative model has replaced both the stability and the decrement perspectives on cognitive aging. This new model suggests that there is increasing cognitive ability with age. Because adults are faced with a variety of socially determined problem-solving situations—at work, in the community, at home and in the family—there are multiple opportunities to exercise and improve one's cognitive and intellectual abilities. These kinds of socially defined problems rarely are found on the paper-and-pencil tests of intellectual functioning that are typically used in cognitive aging research.

Also, even more traditional theorists have modified their perspectives in regards to adult intellectual abilities—particularly those working from the cognitive developmental perspective of Piaget. Piaget, of course, argued that intellectual development reached its zenith with the full attainment of formal operations in late adolescence, and no further growth is possible, save for some specialization in areas of interest to the individual. Formal operations, however, pertains to only one dimension of adult thinking, that is, logical-mathematical and scientific reasoning.

### **PROBLEMS IN ADULT LIFE**

But most problems in adult life have little to do with formal logical or mathematical thinking, but are more often fuzzy, open-ended sorts of problems and issues within the social and interpersonal domains. Other forms of reasoning

may, therefore, be equally or more important. Thus, a number of so-called post-formal models of adult thinking have been proposed over the past 25 years, including Labouvie-Vief (1980), Rybash, Hoyer and Roodin (1986); Riegel (1973), and Basseches (1984). Such models recognize the significance of real-life experience in problem-solving.

## **THE ROLE OF THE SELF IN LEARNING**

Adult cognitive development, rather than social and personality development in adulthood. However, we would be remiss if we didn't devote some attention to several theories and theorists that have been significant to adult educators and researchers concerned with adult learning. These theorists have been primarily interested in describing various age-related stages, or phases, of self-and/or personality development over the course of adulthood. The theorists include Erik Erikson (1963), Daniel Levinson (1978), and George Vaillant (1977). Their ideas are significant to adult educators because they tend to agree that the development of personality and social roles have origins in social practices, rather than innate psychological processes. Adult education, obviously, consists of a set of social practices that can, and do, operate to shape the development of the person in a variety of ways.

## **PIAGET'S STAGES OF COGNITIVE DEVELOPMENT**

Jean Piaget, a child psychologist, traced four broad stages in the logical and cognitive development of children, in his studies from the 1930s to the '70s. The first stage, from birth to two years, is the stage of Sensori-Motor intelligence: the infant's coordination of reflexes and sensori-motor repetition, leading up to basic recall of absent objects and to an experimental search for new means to achieve pleasurable ends, bounded by what the child can physically perform and observe being performed.

During the course of a child's cognitive development there are changes in the way that the individual represents (*i.e.*, stores and retrieves) information that is perceived through the senses. A small infant is limited to the actions which it can make upon the immediate world surrounding it, when it first learns to separate the world into 'me' and 'not me', discovering its body schema. From then on its learning consists of developing and revising that schema as it performs more operations on the outside world and learns from the effects that result.

It is hard to imagine how a baby thinks. It cannot think in pictures of objects because it has not really discovered what objects are yet, or what properties they have, in a real enough way to picture them. Instead it remembers things as a kind of 'muscle memory' (in the sensori-motor kinesthetic system) using an internal representation of the 'feel' of things to code the information.

Before 4 or 5 years of age traumatic memories and their accompanying considerations and decisions that affect future behaviour, are not available to recall in the way that an adult recalls, like a full-perceptive movie, but rather in

terms of emotional body-centred feelings of needs and wants, or fears and pains, although there will be an element of auditory and visual imagery particularly accompanying poignant moments. There will be hardly any visual representation of the first eighteen months, until the infant becomes ambulatory and starts to walk and talk.

The second stage, of the toddler up to 5 years, is the stage of Pre-logical intuitive thought. This is a period of 'magical thinking' in the sense that he easily confuses apparent or imagined events with real events. He would, if allowed, jump out of a window expecting to fly, because he has seen birds fly. It is something of a 'dream world'; a toy car is very much the real thing to a toddler. This is a state commonly regressed to by those on hallucinogenic drugs.

In normal development, at about the age of five, a relatively sudden transition occurs. Control passes from the mammalian brain (with schemata based on classical conditioning) to the fully human brain (a structure operating on associative, operant and cognitive processes). After this transition, many lower order mechanisms become inhibited and they are replaced by higher order cortical mechanisms, which operate cognitively. As part of this transition, language begins to function as a vehicle for logical thought at the concrete level, rather than solely a means to serve social and emotional needs. The predominant mode of representation of the world has become auditory, with memories featuring received commands.

The third stage, between 6 - 12, is Concrete Operational thought, when the child can symbolize (*i.e.*, can make a concrete mental image of) operations, without having to do them physically. The child has developed realistic internal imaging of the world around him, so that by 7 or 8 years of age a concrete visual mode of representation has become the predominant way of thinking about and remembering experience, alongside kinesthetic and auditory representations.

He learns to classify and relate, and to measure distances and quantities, and thereby performs constructive thinking. Contact with the environment is maintained during such mental operations, because by reversing them, a return to the perceived form is always possible. A child will build and knock down Lego constructions. Concrete operations are the foundation upon which more abstract intellectual operations can be built. Young children and those restricted to concrete operations tend to focus attention on only one salient aspect of an object, situation or problem at a time, to the exclusion of other potentially relevant aspects. Piaget called this tendency 'centration.'

Pretty soon though, the child's world widens further still, until it includes information which isn't easily represented using pictures. (Try imaging a concept like 'freedom' or 'fairness'). When this happens, the child becomes more likely to use symbolic representation, including inner speech, using words as formalized symbols which 'stand for' the concepts. This is the beginning of the conceptual, auditory digital stage of development. At this point the child's own decisions and intentions may be expressed as inner speech, whereas before they were 'felt' intentions. This is the beginning of conceptual cognitive ability, which is developed through effective education.

The fourth stage, that takes place from age 12 (given sufficient IQ, education and stimuli) to adulthood, is Formal Operations. This is a more objective way of perceiving the world with the ability to focus simultaneously on several aspects of a problem - this is 'decentration.' Even adults, before they obtain the full abilities of formal operations - or if (as is common) they do not develop that far - continue with a centred, single-minded point of view, intolerant of alternatives. Adult centration is the rule rather than the exception. The centred person has tunnel vision when it comes to the world of ideas; the decentred person is open to considering new ideas from all directions.

Typically, a person of average intelligence (which is only 100 by definition) would remain below the sub-stage 1 of Formal Operations, predominantly using Concrete Operations. A higher level of mental maturity would only be manifest in emotionally neutral situations or in a domain specific manner, perhaps in the context of work requiring concentrated problem solving. When "off duty" or when under emotional pressure most people would tend to regress to the level of Concrete Operational thought, and under severe pressure to the Pre-Logical thinking of Stage 2.

Only about 17 per cent of the population, those with an IQ above 110, use Formal Operations on an everyday basis. And only about 5 per cent of the population reach the final stage of Formal Operations, true formal thought, and probably about 2 per cent continue to develop at the Postformal Level. Of them, about 0.1 per cent go on to complete this process. This is mainly because a person needs to be in an educational or otherwise stimulating environment, until he or she is about thirty. Most university students leave university after gaining a first degree at between the ages of twenty-two to twenty-four, so the process of Postformal development all but ceases, unless they continue to work in an intellectually stimulating environment.

Having a wealth of concrete information which he is unable to understand, the person attempts to rearrange this information in order to simplify it. He discovers he can do this by keeping some variables constant, while he experiments with the others. The person induces generalized laws which he can apply to data of the most diverse kinds. The person can think about thoughts, classify classifications, and 'operate on operations' and so conceive of general laws behind the array of particular instances. Hypotheses can be made and tested, and implications deduced, through scientific experiment.

To summarize, the baby's mode of representation is primarily kinesthetic, at the sensori-motor stage of development. By 4 years of age, during the pre-logical stage, the predominant representation has become auditory. The child then develops realistic internal imaging of the world around him, so that by 7 or 8 years of age a concrete visual mode of representation has become predominant. Conceptual thought as inner speech then develops and by 10 years of age at the earliest, or more typically 12-14 years, the young person is ready, given sufficient and competent schooling, to develop towards Formal operations.

Note: The following research showed that subjects with a high IQ pass through the Piagetian stages more rapidly. One hundred nine fifth and seventh graders,

classified as either bright or average, were tested to determine the relationship of intelligence (as defined by scores on psychometrically derived tasks) and developmental precocity (defined in terms of Piagetian theory). Specific measures used were the Iowa Tests of Basic Skills, Raven's Standard Progressive Matrices, and Piagetian tasks (conservation of volume, displacement, the balance, and the period of a pendulum). The major finding was that students who scored higher on psychometric measures of intelligence were also developmentally advanced in Piaget's sequence of cognitive developmental stages. The finding did not contradict Piagetian theory since out-of-sequence successes were not observed.

Very bright (mean IQ = 152) third graders were compared with both average IQ third graders and average IQ sixth graders on perceptual, cognitive, and affective perspective-taking tasks. The role-taking skills of the intellectually-gifted children were more similar to those of their mental age mates than to those of their chronological age mates on both the cognitive and affective tasks. On the perceptual task, the bright children's performance fell between that of the two comparison groups. The results provide evidence that gifted children are advanced in thinking about both the social and physical worlds, and have implications for educational issues such as curriculum development and acceleration vs. enrichment.

Jean Piaget offers a helpful description of developmental stages as they relate to learning. Gifted students are often in his "formal operations" stage when their peers are still in his "pre-operational" or "concrete operations" stages. When a child is developmentally advanced he/she has different learning abilities and needs. This is where Bloom's Taxonomy can be a particularly useful. Students in the "formal operations" developmental stage need learning experiences at the upper end of Bloom's Taxonomy. Essentially all assignments should offer the student the opportunity to utilize higher level thinking skills like analysis, synthesis and evaluation, as defined by Bloom.

Piaget has written that somewhere around puberty, given sufficient educational stimulus the thinking process changes from concrete operations to formal operations. Neurological change is not the only change at this time; the social environment of an adolescent plays a major role along with quality of education being another key factor. Children construct reality out of their experience with the environment. As children grow older and their thought process matures they can construct reality more closer to that of an adult.

## **ADULT EDUCATORS AND EDUCATIONAL PSYCHOLOGISTS**

It is interesting to note that adult educators have, traditionally, been interested in understanding the different "styles" or modes of learning that adults demonstrate—much more so than they have been in understanding or assessing cognitive and intellectual abilities. This has taken place despite the fact that the psychological research fails to find compelling evidence for quantitative—as

opposed to qualitative—differences in these learning styles. There is no evidence to support some adult educators' claims that instruction which is designed to capitalize upon an individual's preferred manner of learning (sometimes called attribute X treatment interaction, or ATI research) has any benefit over and above "traditional" group-oriented approaches to teaching.

Educational psychologists have traditionally studied learning and instruction as these activities and processes occur in K-12 classroom and schools. Their work has resulted in a number of psychological and instructional principles in regards to cause-effect relationships between teaching and learning. Because the best place to establish such relationships is in the laboratory, where many extraneous variables can be controlled or eliminated, educational psychologists' work has rarely been viewed as applicable to adult education, with its focus on authentic learning for real-world application. In fairness, however, it must be said that, over the past generation or more, educational psychologists have returned to the classroom and have investigated a number of variables pertinent to learning, such as teacher expertise, the effects of students' prior knowledge, and motivation. A laboratory is not the real world with all of its inherent messiness, and so, adult educators have been reluctant to apply the principles derived from decades of educational psychology research with young learners to the teaching of adults.

Adult educators and educational psychologists rarely travel in the same circles. They don't attend the same professional conferences and they don't read the same journals. They rarely collaborate on research—although there is much evidence that both professions would benefit from such interactions. For one thing, adult educators are loathe to assume that the teacher necessarily knows more than does the adult student, which is a fundamental assumption of pedagogy. The adult educator is often viewed as a "facilitator" of learning rather than as one who imparts knowledge and facts to a passive adult learner. However, the traditional view of the active teacher-passive learner in regards to childhood education has fallen out of favour with the emergence—and dominance—of constructivist (neo-Piagetian models) and social-constructivist perspectives on learning and instruction in educational psychology over the past two decades. Thus, there may be some areas of "common ground" between adult educators and educational psychologists.

Still, as adult educators have often pointed out, psychologists have generally been more concerned with understanding the "average" or "typical" performance of a group of learners rather than focusing on the phenomenological experience of the individual learner. And, historically, psychologists have rarely studied women, minorities, and members of socially-disenfranchised groups (although this has changed over the past 25 years or so)—the very groups that are of most interest to adult educators.

Despite these differences in emphasis, there is a lot of evidence that adult educators and educational psychologists can benefit from working together. Tennent and Pogson (1995) suggest that there are essentially three fundamental concerns of adult educators. These concerns are to:

- Acknowledge the (life) experience of learners;
- Establish an adult teacher-adult learner relationship
- Promote the autonomy and self-direction of the adult learner.

No contemporary educational psychologist would suggest that the learner (at any age) comes into the learning situation as a “blank slate” given the impact of the social environment on the individual. Among the important questions, for the educational psychologist, are:

- What life experiences are most relevant to learning?
- How does a learner’s prior knowledge affect their current learning?
- How can instruction be conducted in order to capitalize upon the learners’ relevant experiences?

## **THE ROLE OF THE RELATIONSHIP BETWEEN THE TEACHER AND STUDENT**

Few adult educational psychologists would ignore the role of the relationship between the teacher and student in the instructional situation. The teacher’s ability to motivate the student, the student’s sense of “attraction” to the teacher, the establishment of mutual trust (the teacher will teach, the student will learn)—all are relevant aspects of “relationship” to the educational psychologist. Finally, adult educational psychologists are also concerned with how individual autonomy and self-direction (“achievement motivation”) can best be fostered through effective teaching.

## **CRITICAL FOUNDATIONS FOR EDUCATIONAL PSYCHOLOGY**

In general terms, the field of educational psychology is in many ways one of the furthest from the critical project in psychology mooted by overviews such as provided by Henriques, Hollway, Urwin, Venn and Walkerdine (1984) or Parker and Shotter (1990). There has been a longstanding focus on the individual as the source of problems in the classroom, since the under-achieving child was put under scrutiny by Cyril Burt, a founder of psychological services for education in England.

In my view, a more critical educational psychology would provide more possibilities for innovative practice by deconstructing notions such as normality, competence and coping. Important foundational texts would include Foucault’s (1977) work on discourses involved in the history of western schooling, and Walkerdine’s (1984) use of Foucauldian analysis to critique ‘child-centred’ discourses in modern pedagogy.

The critique of individualism in psychology can be applied par excellence to educational psychology, which has so often spotlighted the struggling individual in the classroom, whether an unmotivated learner or a child with ‘brain damage’.

Earlier this century such a child might be labelled as deviant, while in more recent times there have been attempts to ensure that some children get extra

help. This individualist bias led in the past to an unbalanced emphasis on individuals as causal agents of their problems. Contemporary critical work has begun to move away from the intense focus on the individual, acknowledging that such a focus misses not only the interactions amongst people in a group, but the complexities of lived culture and language.

A critical educational psychology informed by a more collective focus should be reflexive about its progressivist and normalising tendencies. Critiques of western views of development by indigenous scholars who question the focus on the individual are emerging in the Pacific. My own institution has begun to consider seriously the indigenous Maori perspectives on human learning and development. These are oppositional to views of the individual based on Cartesian dualisms of mind and body. A Maori view of human existence encompasses corporeal and spiritual aspects of the whole family or tribal group, including both the living and the dead.

This work could go further, in interrogating the facile dichotomy often assumed between hereditary and environmental factors ('nature/nurture') which contribute to individual differences. For example, there are deconstructive possibilities for considering competence as something beyond the internalised abilities of individuals. Contributing forces appear different when the lens is widened to take in a larger group of people, and considering those influences that are not so readily visible, such as influences of parents (even imagined/ previously voiced expectations of long gone caregivers) and the impact of particular government policies about delivery of the curriculum or of welfare benefits to sole parents.

A critical educational psychology informed by other poststructural questioning about the individual self in western culture must also put at the forefront a consideration of language and social practices that create multiple possibilities for subject-positionings in the classroom and beyond.

Given the diversity of topics in the field of educational psychology, it is worth considering each separately, to give at least a Cook's tour of some critical possibilities. There are several broad areas covered by educational psychology: learning, intelligence/abilities, education for special needs, motivation (with some mention of 'self esteem' and personality issues), educational assessment and empirical research methods. There are developmental aspects of many of the above fields, though developmental psychology is another complex sub-discipline of psychology.

### **Abilities and Intelligence**

Earlier this century there was more focus on describing individual differences amongst students, in order to help teachers to work with different students. Cyril Burt was influential not only for his studies of the heritability of intelligence, but for his typology of 'backward children' (1946) which included the 'lazy', and the left-handed as well as the 'dull' student. There has been a long history of critique of intelligence testing and its tendencies towards labelling

of individuals. Gould (1981) has written a sombre account of the nefarious activities of researchers determined to prove the heritability of intelligence.

Recent work on the ‘architecture’ of intelligence has expanded from the focus of Spearman on a single general factor of intelligence (thought to be largely hereditary) towards more complex models. One model that has become influential with educational psychologists in New Zealand and the US is Howard Gardner’s theory of ‘multiple intelligences’. Gardner has expanded the idea of intelligence beyond the narrow versions favoured within the traditional psychometric approaches to include linguistic, musical, logical-mathematical, spatial, bodily-kinaesthetic, interpersonal and intrapersonal intelligences.

Though Gardner recognised the importance of cultural input in determining the value of one domain of competence, his seven intelligences are tied to an unproblematic ‘biological’ basis.

MI [Multiple Intelligence] theory is framed in light of the biological origins of each problem-solving skill. Only those skills that are universal to the human species are treated. Even so, the biological proclivity to participate in a particular form of problem solving must also be coupled with the cultural nurturing of that domain. The focus on culture seems undercut here by the search for a ‘universal’ underpinned by the ‘biological’. The dichotomy of the social and biological has been subject to critique for some time. A critical educational psychology could be strengthened with a focus on multiple competencies if this were extended by a critique of nature/nurture as a socially constructed dichotomy.

There are also strong normative concerns about the unfolding of each intelligence in Gardner’s approach, since the evidence for these is based on ‘knowledge about normal development’ and ‘data about the evolution of cognition over the millennia’. What are not considered are the cultural processes that make some domains of endeavour (*e.g.*, the chess players favoured by studies of gifted children) higher in status or more indicative of a worthwhile talent than others.

For example, much feminist work has considered the ways that mathematics is circumscribed as a domain of male rationality, even when activities of girls and boys may be similar. Adding ‘bodily-kinesthetic’ intelligence to a list alongside ‘logical-mathematical’ intelligence does not necessarily make these two equal intelligences for determining future educational or career possibilities. While it is helpful that this model goes beyond narrow cognitive definitions of ability to consider a plurality of talents, many assumptions used by more conventional psychometric theories of intelligence have not been challenged in this work. The concept of multiple intelligences may unintentionally reinforce popular beliefs that intelligence(s) is inherited and immutable.

Given the moves towards widening views of abilities and intelligence in the past 15 years, it is worrying that many contemporary textbooks still make assumptions based on the idea that intelligence is a more or less fixed capacity in individuals, bounded by some biological or genetic capacity. In the fifth edition of a popular UK text, a chapter on ‘Intelligence’ discussed ways to help teachers to be efficient:

the detection and measurement of differences are important for the teacher. It would be disastrous for children if we did not quickly recognize their cognitive strengths and weaknesses, because the intellectually dull cannot, in general, cope with the same cognitive tasks as the intellectually bright of the same age...'. In this view, there are dull bodies and bright bodies, far from the multiplicities of the postmodern body. A more far-reaching analysis of human 'ability' needs to take the deconstruction of the individual further, for example, in making moves towards Deleuze and Guattari's (1988) idea of 'bodies without organs'.

The competence of a body in one setting or another does not need to be conceptualised in terms of an internal capacity rooted in biology (as intelligence, personality and other human characteristics are conventionally described). The multiplicities of movement, of skills, can be viewed as belonging to an order beyond the division of individual body and external environment. Instead, a competence such as 'emotional stability' could be viewed as an event which occurs in a milieu which includes parts of various kinds, including hands, sound waves, electric lights, papers and pens, grey hair, pink cheeks, wooden surfaces.

It would be this collection of various items together which seem to create a recognised performance of 'competence'. It is difficult to imagine competence in this way, as something not connected intimately with an individual body. Part of the difficulty in such imagining is that our language is already formatted into subjects and objects, by individuals who take action and meet outcomes. Attempting to broaden language beyond the fixities of individual bodies with set quantities of ability could disrupt stereotypical interactions between students, teachers, parents and psychologists.

## **Learning**

There are interesting moves within the field of 'learning' that offer possibilities beyond the focus on individual learners. Learning has become the biggest area in educational psychology, since it encompasses many paradigms. Approaches to research in learning have been described as a move from the 'behaviourist/empiricist' to the 'cognitive/rationalist', with the recent addition of an approach more timely for the critical project, the 'situative/pragmatist-sociohistoric' perspective.

Research on metacognition, which refers to reflection on or strategic use of cognition, emerged later in the cognitive/rationalist era. When I began to question my 'training' as a cognitive psychologist, metacognition was a breath of fresh air in the highly technical world of cognition. Instead of the view that some children were just born with bright or dull minds, metacognitive work opened up the new possibility that some students had more sophisticated strategies, techniques and management skills for organising and using their knowledge than other students. This has led to an entire field of work with children who have 'learning problems' (perhaps better called 'teaching problems', to change the emphasis from the deficit of an individual learner). Such students have been found to benefit from specific instruction or reflection on particular learning strategies and techniques.

Much recent work within a developmental framework has also moved away from the Piagetian focus of earlier decades towards a now more fashionable Vygotskian purview. Vygotsky differed from western developmental theorists in his attention to the social and cultural milieu in which all people, including the newborn, are immersed. Neo-Vygotskian work which takes the emphasis on collective, community understandings of information is Moll and Greenberg's (1990) study of the transmission of knowledge in a Latin American community in Arizona. A literacy project began in a bilingual Spanish/English classroom, and unfolded into an exchange of information between school staff, researchers, and extended family members throughout the community. Students and their families began to set the agenda for the learning they wanted to document, using the languages of the community.

A more recent shift in learning studies, that of situative knowledge, offers further possibilities for considering learning as milieu, rather than as an internal change in a body. The situative approach has been described as viewing 'knowledge as distributed among people and their environments, including the objects, artefacts, tools, books, and the communities of which they are a part'. An interesting example of situative knowledge is found in work on 'distributed cognitions' among groups of students and teachers. In work also influenced by Vygotsky, Ann Brown and colleagues considered ways that groups of students share information in working together on tasks in human biology, tracking this through on-line conversations with the tutor and amongst students.

A wider field of research on cooperative learning also centres on the functioning of learning outcomes for a group rather than dividing the learning by individuals. This approach has exciting possibilities for moving away from a focus on the individual student as responsible for particular actions, based on his/her capacities. There is more scope for considering learning as a group outcome, in which bodies and other objects play their part. Though much of this work centres on the specific bodies, technologies and curriculum content of a particular learning setting, this could be broadened to consider a wider milieu framed by historically-shaped language and cultural practice.

## **Motivation**

The field of motivation in educational psychology has a well-documented historical narrative. Graham and Weiner (1996) described the change from the 'Mechanistic Period: 1930-1960', which emphasised biological drives and processes, to a cognitive approach (1960-1970), in which the personality variable of achievement motivation became dominant, and finally to 'Contemporary Motivation Research: 1970-1990', centring on attributional approaches to motivation. At present, much research is broadly concerned with the reasoning processes involved in students' attributions about successful or poor performances. The field has branched into concerns beyond controlled testing towards more naturalistic, classroom-based contexts for tapping attributions and expectations. There has been work on widening the cultural context of

motivational concerns beyond those of unmarked white, middle class students, in, for example, Sandra Graham's research with African-American students and teachers.

There are a number of problems with the focus on attributions as the dominant approach to motivation at present, given recent critiques of attribution research. Much of the research of the 1980s was based on written vignettes, which have been criticised for their lack of acknowledgement of textual effects. The above-mentioned review by Greeno et al. suggested that 'Engaged Participation' might characterise motivation from a situative or sociohistorical position rather than the cognitive/rational approach of attribution theorists. This seems an intriguing possibility for a critical psychology of motivation. Unfortunately the studies listed in that review did not appear to be studies of motivation, but rather studies of learning influenced by such wider issues as identity and reflection in communities of learners. A major problem that has not been addressed is that motivation needs to be reconceptualised within a critical educational psychology.

Recent work on motivation is still fixed firmly on the individual, even if the context for the individual is considered more interactively than in the past. Part of the problem is that traditional psychological research has defined motivation as an inner property of the individual. This reinstates an uninterrupted dualism of inner self/outer context, which has been the subject of so much philosophical critique in recent times. This is also a problematic issue for the study of 'self esteem'.

### **'Self Esteem'**

The issue of self esteem is usually raised briefly in many educational psychology textbooks, within a section on motivation. There has been a fortunate move away from the psychometric tradition of 'self esteem' scales. Contemporary work on self esteem has moved from uni-dimensional omnibus scales towards work on multiple aspects of self esteem such as academic, sporting and social components. The scaling paradigm has been examined by critical psychologists who have considered other aspects of testing.

The use of scales to examine self esteem is subject to the same limitations as other simple measurements of this type, such as the reliance on verbal expression to identify an 'inner' personality dimension. Given the complexities of theoretical work on the 'self' this century, from psychoanalysis through contemporary poststructural theorising, the attempt to map out a particular individual's 'self esteem' on the basis of a paper and pencil scale seems extraordinary. Perhaps it is an indication that there is still institutional support to be found for researchers who have not ventured outside the psychometric certainties of the 1960s.

There is a newer branch of work on self esteem related to attribution approaches. Weiner's work on educational attributions made clear links between expectations of future success or failure and attributions to stable causes. (In this theory, attributions to stable factors such as ability should lead to expectations to perform similarly in future, while attributions to unstable factors such as

effort should lead to more variable expectations of future performance.) This idea was taken further in the 'self-worth' theory of Covington (1992) which proposes that students' self-concepts are shaped by their ideas of their 'ability'. What is needed in a more critical study of 'self esteem' is an analysis of the cultural vocabularies available to construct the kind of self that is characterised by terms such as 'ability'.

The related issue of children's marginalisation at school was the focus of the Disaffected Pupils project. This English study focused on student 'alienation' in schools, relating this to school management rather than interactions solely in the classroom. The work involved teachers, psychologists and researchers. There was a focus on a number of categories of marginalisation for students labelled by disability as well as gender and/or race. I like the word 'disaffection', with its non-punitive allusions to the idea that some children just don't like school (perhaps for good reason). However, I am less sanguine about the normative assumptions of future happiness for the disaffected pupils. In the Preface to the book, Jones provided an overview of the goals of the work on disaffection as inclusion in the normative: 'The aim should be that all pupils feel normal, valued, and achieving.' Foucault's work has surely made norms less attractive as a given standard for acceptability. Perhaps Jones was arguing for a wider definition of normality than conventionally offered, but the concept is fraught with difficult assumptions. Again, the cultural vocabulary relating to norms, happiness and the value of particular people needs more critical scrutiny.

A more critical approach to the whole issue of esteem was taken by the various projects mentioned in Kenway and Willis's (1990) provocative book. They included whole-school programmes for 'self esteem' which go beyond intervention for individual children identified as 'low self esteem'. In the project reported by Jonas (1990), an entire secondary school was involved in creating a climate supportive of democratic student processes, which led to formal questioning of the university entrance procedures that disadvantaged their students.

This supportive climate was created by policies within the school, no doubt the product of a concerted effort by many teachers, students and senior staff at the school. Instead of focusing on coping of individual students, there could be a wider concern with the practices and resources that are linked with energised, creative action in people working against racism, sexism and 'ableism' in schools.

## **EDUCATIONAL ASSESSMENT**

Educational assessment is an interesting interdisciplinary field, having its traditions in the psychometric testing field including IQ testing, but also being well grounded at present in issues of comparative educational policy. One reason for this is that assessment, particularly national assessment in which countries compete for the best test scores in science, maths and other fields, can lead to huge investments of money in particular educational regimes. Researchers and

practitioners can become overly grounded in the political fashions and government edicts of the day (perhaps for sound survival reasons). A number of British writers have become influential writers on the purposes and contexts of assessment.

The critique of testing this century has led to great awareness of the problems involved in norm-referenced assessment. While such standardised tests are used for determining university entrance in the US, they have few enthusiasts in the UK, Australia or New Zealand. There are subtle uses of norm-referencing which can be quite influential, however, such as in the use of such tests to 'moderate' results across classes or schools.

Caroline Gipps referred to the 'paradigm shift' in assessment over the last 25 years or so from a focus on testing towards greater use of more fluid, situation-specific assessment. This has meant a turn away from norm-referenced tests towards criterion-referenced, formative and performance-based assessment. She also argued that contemporary assumptions about the learner have changed from the psychometrists' assumption that individual differences are based largely on innate factors. Now there is more recognition of the importance of context, curriculum and pedagogies in learning.

The influence of Foucault's analyses on schooling and disciplinary regimes is found in Patricia Broadfoot's work on the system by which particular areas of knowledge come to be regarded as higher in status, with assessment functioning as a legitimating authority for particular practices and hierarchical social structures. She has also been an advocate for more use of self-assessment by students. Students who are involved in reflecting on their own learning and performance provide a more open-ended, fluid and ongoing process of assessment closer to a critical educational psychology than assessment centred solidly on technicist concerns about 'objective' measurement.

It is ironic that the work of British researchers mentioned in this section has been used in New Zealand to argue against the national testing of all children at particular ages (*e.g.*, as done with SATs in the UK) in favour of testing samples of children from different schools. This helps to avoid creating records of individual student achievement based on norm-referenced tests. Unfortunately the New Zealand government is at present planning to follow where Britain leads in introducing national testing of children, under the guise of accountability to parents.

## Research Methods

Like traditional research in psychology, educational psychology has been defined by its positivist methodologies, and was earlier aligned with experimental research and quantitative statistical analyses. Fortunately there is now more attention given to introducing both qualitative and quantitative methods in educational psychology textbooks. The clinical case study has also been a key method throughout this century, especially as related to the practising educational psychologist in the field. Though the research summarised by contemporary

educational psychology textbooks would not usually refer to interdisciplinary work, there is more openness to post-positivist approaches and a consideration of complexities beyond the old quantitative/qualitative divide.

There are encouraging hints that methodologies in educational psychology are changing as they are elsewhere in the 'social sciences'. A critical educational psychology should surely include the diversity of issues and paradigms in qualitative methodologies. Of particular interest would be a contemporary overview of grounded theory as well as an introduction to contemporary tensions regarding crises of legitimation and multiple perspectives. These approaches emphasise reflexive practices in contemporary research informed by postmodern questioning.

The use of reflexivity incorporated as part of a research methodology is more than a contemporary fashion. It is a way to link the conceptual and practical, to make research fit some of the dimensions of 'action' research so that educational psychologists, students, teachers and researchers work together on issues of relevance. A good example of this kind of research is Patti Lather's (1990) study of Women's Studies students' 'resistance' to the liberatory curriculum. During the research, Lather began to question her own practice, and the study changed towards a more collaborative project with students and other staff, questioning the hidden agenda that students would become liberated along a predetermined path of enlightenment. Such reflexive and open-ended exploration of issues such as student power, teacher's agendas, discourses about liberation, and educational goals towards personal development holds much promise for critical educational psychology research.

### **'Special' Educational Needs**

The field of education concerned with students who have disabilities or other 'special' requirements as learners different to the generic 'normal child' is an area of central concern for educational psychologists. The creators of the first formal test of intelligence, Binet and Simon, were concerned with differentiating children thought to be capable of benefiting from mass education from those thought to need special educational facilities. At about the same time, the field of child development was being established with strong progressivist views explicitly tied to Darwin's evolutionary ideas. The 'normal child' was created as a subject-position in opposition to its 'other', the abnormal child, who did not fit the developmental stages and timetables being canonised by writers such as Gesell. Even today, most textbooks of human development focus on the 'normal' child, with little attention to the 'outliers' on the IQ distribution.

The field of 'special education' is contested ground between parents, teachers, educational psychologists and government policies about funding. Political moves were underway in the 1960s to bring some children formerly labelled as 'mildly retarded' into regular classrooms. Special facilities for segregationist residential care were put under scrutiny in many countries. The IQ test had been criticised for its racist biases in the 1960s. Suddenly the dominant medical

discourses which defined a divide between the able-bodied and the 'handicapped' did not seem so convincing. The political movement for disabled people's rights provided an alternative to medical discourses: that of social oppression. In the 1970s and 1980s, humanist calls for equal rights began to add disability to the inequities of race, gender, and sexuality. In education, 'mainstreaming', in which children with disabilities were placed in ordinary classrooms, became a rights issue for students and their parents. Unfortunately, some of these ordinary classrooms did not have facilities to be able to assist students with disabilities with their education.

In the 1980s there was a more postmodern move towards the idea of 'inclusion' in education. There was a shift in perspective away from the idea that some students with 'mild' or 'moderate' disabilities should be moved into ordinary, business-as-usual classrooms. Instead, inclusion began to consider the processes by which a student becomes a member of the classroom group, in a two-way process in which both 'regular' and 'disabled' students learn to get along and work with each other.

Recently the work on inclusion in education has become more critical about the dualism of able/disabled as another socially constructed divide. Stone (1993) and others argued that inclusive approaches may hide an assumption that there is still a dominant group which makes the decision about which children will be 'included'. Inclusion, in this view, is a more sophisticated strategy of assimilation. The 'disabled' must still 'fit in' to a reconstituted 'diverse' classroom or be excluded from school life. One future project in a critical educational psychology could be to consider the similarities between political aspirations of groups who wish to claim an identity based on disability with peoples from minority ethnic groups. Deaf parents have lobbied in several countries against forcing non-hearing children to assimilate to the norm of spoken language, arguing that it is a suppression of Deaf culture.

This has some similarities to the *kura kaupapa* movement in New Zealand, which is a parallel schooling system for indigenous students who are taught in the Maori language. In future there could be more attention paid to the preferences of students with disabilities regarding the kinds of classrooms and facilities they would prefer.

There might also be further critical deconstruction of the able/disabled dichotomy that could lead to more recognition that each person has multiple selves that may be abled or disabled at different times and places in life.

The local and national context for considering issues of special need is directly affected by government policy changes. As Dessent noted regarding the situation in the UK, educational psychologists now do not just focus on defining which children are special and deciding how to work with such children; they must also work towards 'defining resource-worthiness'. New Zealand has undergone similar policy changes. Resourcing of special needs has become the province of individual advocacy, making it harder for communities to work together to create schools that make room for all kinds of difference amongst students.

These policy moves point to the urgent need for critical work in educational psychology which challenges these individualising assumptions. There are already strong links between people working together towards more responsive, inclusive education across various countries.

## FORWARD MOVES

Some emerging examples in practice are already around to show what educational psychology might look with a stronger critical direction. Rather than focus on the specific areas identified earlier as crucial parts of educational psychology (*e.g.*, learning, motivation, *etc.*), a challenging possibility for the future is to create more fractures across areas. A more radical deconstruction of the individual would have huge implications for reconceptualising areas such as learning, abilities, motivation and self esteem.

There could also be new kinds of relationships between research and practice, between writing, reading, deciding, acting, discussing. Research in educational psychology could become part of the ongoing revisioning of the field and its place in the lives of children and adults as part of lives reflective about their governing circumstances. Bringing together collaborative research groups with some of the new methodological techniques provides other possibilities. There could be a widening of the collaborative research process to include children and young people as well as researchers, teachers and educational psychologists, all providing different perspectives on problems of mutual concern.

What I have focused on in this chapter are some of the innovative directions taken in the here-and-now by concerned people struggling within the broad boundaries of 'educational psychology'. The people to whom I have referred in this chapter have been mostly English-speaking writers whose work can be linked in some way to the British-American origins of the field earlier this century. This is to some extent inevitable in writing about a particular 'discipline' which, as Foucault suggested, contains the production of its own future.

I have also mentioned the work of some indigenous writers and people further from the discipline's barbed-wire boundaries. To expand critical educational psychology with further energies will require more voices of innovation from around the world, and from a diversity of educational and cultural communities. Part of this work will involve western teachers, researchers and academics who have been entrusted by the governments of developing countries with the training of their future elites. A greater focus on critical work in educational psychology will provide an interruption to the cycle of academic cloning whereby traditional ideas about IQ testing, normed assessment and the culture of positivism are sent to another generation in southeast Asia or Africa. Such a shift - which would lead to more equitable dialogue between parts of the world about issues such as special needs or assessment - would be much more troubling for the discipline. And surely unsettling the discipline so that it becomes more reflexive about its positionings and unforeseen consequences is what critical psychology is all about.

## **CRITICAL EDUCATIONAL PSYCHOLOGY**

Educational psychology remains one of the prominent ways through which psychological theory and research enter the public sphere. In schools and other educational settings, educational psychologists occupy a potentially powerful position. Their work to support children's learning in educational institutions engages them in close professional relationships with educational authorities, teachers, headteachers, parents and other professionals from health and social care.

Moreover, educational psychologists are expected to respond to an ever changing educational and social policy landscape in which childhood, learning, teaching and assessment are regularly revised. This leads to huge impacts upon the meaning of education and the experience of learning. Furthermore, educational psychologists are tasked with assessing the specific learning and educational needs of children which inevitably ensures that they are party to the inclusion and exclusion of children from educational settings. Just as educational psychology has developed so has psychology. Increasingly psychology has fostered a number of relationships with political, social and cultural discourses.

The contemporary emphasis on the importance of community; understanding social exclusion, and working towards social inclusion; stakeholder interests in social change and 'bottom up' or participatory ways of working; the development of social capital and community participation; urban regeneration, and citizenship, for example, all coincide with the particular emphases within community and critical psychologies of understanding marginalised human behaviour and experience within different social contexts and of working in partnership with those affected by both psychological work and social changes.

Furthermore, developments in relation to what has been termed critical psychology has had a number of impacts upon the ways in which educational psychology theories, conceptualises and practices alongside children, childhood, difference, education and disability.

## **TRADITIONAL EDUCATION PSYCHOLOGY**

Traditionally, educational psychology has sometimes been a bewildered traveller at the crossroads of Psychology and Education. Educational psychology can be defined as any area of education which is informed by psychological theories or techniques.

At its broadest outlines, this field encompasses a number of areas related to student learning and individual difference considered to be crucial knowledge for teachers in training requiring more in-depth knowledge for managing difficult students or for their own professional development. There is a focus on the normative learner, with a tendency to position students with 'special educational needs' as exceptions to the norm. Professional educational psychologists (or school psychologists, in some countries) tend to be employed by education authorities and to work with students who have been identified as having learning

or behavioural difficulties in the school system. Such psychologists receive postgraduate training in educational psychology with more emphasis on dealing with disabilities.

Professional educational psychology includes applications of research in educational psychology but also overlaps with clinical fields of child and adolescent psychology. Teachers who undergo further postgraduate training in special education would also receive grounding in these issues, but with specific emphasis on applying knowledge to the classroom.

The influence of the parent discipline can be seen throughout educational psychology, particularly in the emphasis on psychology as a 'science'. Many contemporary textbooks lean heavily upon 'scientific method', especially experimentation and objectivity (*e.g.*, Child, 1993; McCormick and Pressley, 1997). Thomas, writing critically of British practice, argued that professional educational psychologists 'are steeped in the view of themselves as applied scientists'. The field may be marked by some fears of being 'not scientific enough' to count as a real branch of psychology, creating tensions regarding the status of the field.

Within education, educational psychology has sometimes been seen as an atavism, a reminder of earlier times and values. During the 1960s and early 1970s the debates between 'behaviourism' and more humanistic views of learning and emotion left their scars on the visage of the field. Today some tertiary education programmes in New Zealand and Australia have no courses titled 'Educational Psychology'; instead they offer similar material under more general titles such as 'social contexts of learning'.

## CRITICAL PSYCHOLOGY

Critical psychology is a perspective on psychology that draws extensively on critical theory. Critical psychology challenges mainstream psychology and attempts to apply psychological understandings in more progressive ways, often looking towards social change as a means of preventing and treating psychopathology. One of critical psychology's main criticisms of conventional psychology is that it fails to consider or deliberately ignores the way power differences between social classes and groups can impact the mental and physical well-being of individuals or groups of people. It does this, in part, because it tends to explain behaviour at the level of the individual.

### ORIGINS

Criticisms of mainstream psychology consistent with current critical psychology usage have existed since psychology's modern development in the late 19th century. Use of the term "critical psychology" started in the 1970s in Berlin at Freie Universität Berlin. The German branch of critical psychology predates and has developed largely separately from the rest of the field.

As of May 2007, only a few works have been translated into English. The German Critical Psychology movement is rooted in the post-war baby boomers'

student revolt of the late '60s; see German student movement. Marx's Critique of Political Economy played an important role in the German branch of the student revolt, which was centered in Berlin. Then Berlin was a capitalist city surrounded by communist-ruled East Germany, represented a "hot spot" of political and ideological controversy for the revolting German students. The sociological foundations of critical psychology are decidedly Marxist.

### **Klaus Holzkamp**

One of the most important and sophisticated books in the field is the *Grundlegung der Psychologie* (Foundations of Psychology) by Klaus Holzkamp, who might be considered the theoretical founder of critical psychology. Holzkamp, who had written two books on theory of science and one on sensory perception before publishing the *Grundlegung der Psychologie* in 1983, thought this major work provided a solid paradigm for psychological research, as he viewed psychology as a pre-paradigmatic scientific discipline. Holzkamp mostly based his sophisticated attempt to provide a comprehensive and integrated set of categories defining the field of psychological research on Aleksey Leontyev's approach to cultural-historical psychology and activity theory. Leontyev had seen human action as a result of biological as well as cultural evolution and, drawing on Marx's materialist conception of culture, stressed that individual cognition is always part of social action which in turn is mediated by man-made tools (cultural artifacts), language and other man-made systems of symbols, which he viewed as a major distinguishing feature of human culture and, thus, human cognition.

Another important source was Lucien Séve's theory of personality, which provided the concept of "social activity matrices" as mediating structure between individual and social reproduction. At the same time, the *Grundlegung* systematically integrated previous specialized work done at Free University of Berlin in the '70s by critical psychologists who also had been influenced by Marx, Leontyev and Seve. This included books on animal behaviour/ethology, sensory perception, motivation and cognition. He also incorporated ideas from Freud's psychoanalysis and Merleau-Ponty's phenomenology into his approach.

One core result of Holzkamp's historical and comparative analysis of human reproductive action, perception and cognition is a very specific concept of meaning that identifies symbolic meaning as historically and culturally constructed, purposeful conceptual structures that humans create in close relationship to material culture and within the context of historically specific formations of social reproduction.

Coming from this phenomenological perspective on culturally mediated and socially situated action, Holzkamp launched a devastating and original methodological attack on behaviourism (which he termed S-R (stimulus-response) psychology) based on linguistic analysis, showing in minute detail the rhetorical patterns by which this approach to psychology creates the illusion of "scientific objectivity" while at the same time losing relevance for

understanding culturally situated, intentional human actions. Against this approach, he developed his own approach to generalization and objectivity, drawing on ideas from Kurt Lewin in Chapter 9 of *Grundlegung der Psychologie*.

His last major publication before his death in 1995 was about learning. It appeared in 1993 and contained a phenomenological theory of learning from the standpoint of the subject. One important concept Holzkamp developed was “reinterpretation” of theories developed by conventional psychology.

This meant to look at these concepts from the standpoint of the paradigm of critical psychology, thereby integrating their useful insights into critical psychology while at the same time identifying and criticizing their limiting implications while (which in the case of S–R psychology were the rhetorical elimination of the subject and intentional action, and in the case of cognitive psychology which did take into account subjective motives and intentional actions, methodological individualism). The first part of the book thus contains an extensive look at the history of psychological theories of learning and a minute re-interpretation of those concepts from the perspective of the paradigm of critical psychology, which focuses on intentional action situated in specific socio-historical/cultural contexts.

The conceptions of learning he found most useful in his own detailed analysis of “classroom learning” came from cognitive anthropologists Jean Lave (situated learning) and Edwin Hutchins (distributed cognition). The book’s second part contained an extensive analysis on the modern state’s institutionalized forms of “classroom learning” as the cultural–historical context that shapes much of modern learning and socialization. In this analysis, he heavily drew upon Michel Foucault’s *Discipline and Punish*. Holzkamp felt that classroom learning as the historically specific form of learning does not make full use of student’s potentials, but rather limits her or his learning potentials by a number of “teaching strategies.” Part of his motivation for the book was to look for alternative forms of learning that made use of the enormous potential of the human psyche in more fruitful ways. Consequently, in the last section of the book, Holzkamp discusses forms of “expansive learning” that seem to avoid the limitations of classroom learning, such as apprenticeship and learning in contexts other than classrooms.

This search culminated in plans to write a major work on life leadership in the specific historical context of modern (capitalist) society. Due to his death in 1995, this work never got past the stage of early (and premature) conceptualizations, some of which were published in the journals *Forum Kritische Psychologie* and *Argument*.

### **1960 through 1970**

In the 1960s and 1970s the term radical psychology was used by psychologists to denote a branch of the field which rejected conventional psychology’s focus on the individual as the basic unit of analysis and sole source of psychopathology. Instead, radical psychologists examined the role of society in causing and treating

problems and looked towards social change as an alternative to therapy to treat mental illness and as a means of preventing psychopathology. Within psychiatry the term anti-psychiatry was often used and now British activists prefer the term critical psychiatry. Critical psychology is currently the preferred term for the discipline of psychology keen to find alternatives to the way the discipline of psychology reduces human experience to the level of the individual and thereby strips away possibilities for radical social change.

### **In the 1990s**

Starting in the 1990s a new wave of books started to appear on critical psychology, the most influential being the edited book *Critical Psychology* by Dennis Fox and Isaac Prilleltensky. Various introductory texts to critical psychology written in the United Kingdom have tended to focus on discourse, but this has been seen by some proponents of critical psychology as a reduction of human experience to language which is as politically dangerous as the way mainstream psychology reduces experience to the individual mind. Attention to language and ideological processes, others would argue, is essential to effective critical psychology - it is not simply a matter of applying mainstream psychological concepts to issues of social change.

### **Ian Parker**

In 1999 Ian Parker published an influential manifesto in both the online journal *Radical Psychology* and the *Annual Review of Critical Psychology*. This manifesto argues that critical psychology should include the following four components:

- Systematic examination of how some varieties of psychological action and experience are privileged over others, how dominant accounts of “psychology” operate ideologically and in the service of power;
- Study of the ways in which all varieties of psychology are culturally historically constructed, and how alternative varieties of psychology may confirm or resist ideological assumptions in mainstream models;
- Study of forms of surveillance and self-regulation in everyday life and the ways in which psychological culture operates beyond the boundaries of academic and professional practice; and
- Exploration of the way everyday “ordinary psychology” structures academic and professional work in psychology and how everyday activities might provide the basis for resistance to contemporary disciplinary practices.

# 4

## **Understanding Educational Psychology from a Sociocultural Perspective**

Sociocultural approaches share the conviction that children's learning and development take place in historically-situated activities that are mediated by their culture through intersubjective experiences in which they participate with the other members of their communities. These approaches emphasize that each culture presents its children with activities that are deemed valuable for their education and appropriate for their participation. Often these opportunities are tailored in some way to the developmental and individual capabilities of children in tacit or explicit ways. Depending on the priorities of their culture, children's participation occurs in formal and informal school, home, and community activities with their teachers, peers, and family and community members.

Children's engagement is mediated through artifacts such as language and technology, and guidance that can range from playing to observational opportunities and explicit instruction. By participating in cultural activity mediated as such, children negotiate the meanings of their culture, accepting, rejecting, or transforming them. Thus, sociocultural views do not see development as predetermined. The social world provides the developing mind with a dynamic and mutually generated context that originates in and is maintained by the contributions and goals of the participants. Sociocultural views recognize individual variation. Unique characteristics of the individual, ranging from multiple cultural affiliations to tendencies and constraints of the biological system such as temperament and certain learning disabilities, coordinate with the social and cultural context in ways that yield a unique process

of cognitive development matched to the conditions in which a child lives. For instance, as Super and Harkness (1982) showed, the interpretation of “difficult infant syndrome” is not independent of the cultural context. Whereas babies with irregular habits, problems adjusting to new circumstances, and negative mood are viewed as temperamentally difficult in the metropolitan U.S., difficult babies in rural Kenya are those who have trouble adapting to sibling caregivers and traditional methods of soothing, such as being carried on an adult’s back. These different pathways have myriad developmental implications including the process of children’s learning, especially in social settings. This is because, as described in the sociocultural approach, the individual emerges through transactions with others in the cultural context of development.

The elaboration of these ideas. We begin our presentation with a brief history of the emergence of sociocultural approaches in response to “mainstream” research practice in psychology. Next, we illustrate the evolution of sociocultural approaches and describe their shared vision along with their differences where relevant. We begin by discussing cultural approaches followed by a discussion of Vygotsky’s contribution and Activity Theory.

We move on to the substantive contributions of sociocultural approaches in the study of teaching and learning with particular attention to cognitive processes such as attention, memory, and problem-solving, which are important for learning both in and outside of school. We discuss how children’s cognitive functioning is examined in relation to different social and cultural contexts, institutions, and activities. We end with illustrations of the influences of sociocultural approaches in schooling practices regarding curriculum, and teacher-child and peer collaboration. Due to space limitations, we confine our presentation to the discussion of sociocultural approaches in the U.S although we draw from work conducted elsewhere where relevant.

## **THE EMERGENCE OF SOCIOCULTURAL APPROACHES**

Late in the 20<sup>th</sup> century the field of educational psychology showed increasing incorporation of sociocultural views. An examination of several textbooks reveals that sociocultural approaches are included in the introductory chapters on guiding theories of the field and the research findings in sociocultural approaches are integrated into the fabric of narratives throughout the texts. This change reflected shifts in educational psychology’s primary focus on a search for universals based on the study of isolated learners in experimental laboratories to consideration of the role of community and social relationships in children’s learning and development in natural contexts.

The mainstream perspective in developmental and educational psychology considered culture only when the search for universals was inadequate for explaining individual or group variation. This use of culture-as-cover, that is, to cover-up lack of understanding of human variation, rarely made explicit reference to culture as playing a role in children’s learning and development. Recourse to

cultural features occurred only when findings did not support researchers' expectations with regard to certain variables such as "age" and "sex" that are assumed to follow a universal developmental course. Childhood was characterized in a decontextualized manner without integrative discussions of the affective, social, and cultural contexts in which children's learning and development take place. The contemporary research supports the claim that children's learning is guided by the goals and activities of culture and such goals and activities may vary substantially from one culture to another. As such, children's learning and development contains both similarities and dissimilarities across different cultures.

Consideration of cultural goals and activities as frames for children's learning and development enables us to recognize that variables such as age and sex that are regarded as universally constant characteristics of childhood are cultural constructions as expressed in developmental capacity and gender.

Thus, addressing questions of educational psychology from a (socio)cultural perspective presents a fuller and more accurate picture of children's learning and development. At the same time, it provides insights relevant to designing and examining educational settings for children especially in multicultural contexts that are increasingly common in the world. Reflecting this view, the *Journal of Educational Psychology* called for detailed description of study participants and the interpretation of research findings in relation to them. In addition to assumptions regarding the universality of child development and learning, previous research focused on the individual solitary child as the level of analysis.

Admittedly, such work yielded a substantial body of knowledge about individual and age-related differences in cognitive performance, at least under particular conditions. However, such research also failed to provide substantive generalization or transfer of learning across contexts. Moreover, when diverse samples were included in research, findings often revealed profound differences in cognitive performance across groups that varied in social or cultural background. Without a theory to connect cognitive functioning to the social and cultural context, these differences led to deficit hypotheses about those who differed from the standards of optimal development and learning adopted by the researchers.

An ancillary shortcoming of much of the research focused on the individual was that there was little enquiry into the experiences or processes that promote and support cognitive development and learning. This is surprising because few researchers who study individual performance endorse a maturational explanation of cognitive development, assuming that some exogenous forces are involved. However, prior to more widespread recognition of sociocultural approaches, examination of external forces tended to concentrate on physical and material conditions of a cognitive performance rather than on social or cultural contributions. For example, Piaget and his followers who studied concept development have attended to certain experiential features of performance, such

as variations in the onset of conservation across different forms of matter, without paying attention to social and cultural contributions to this development – even though research has established that cultural contributions are important in this development.

In like fashion, much of the research based on information processing and cognitive science approaches has been attentive to external influences that are part of the immediate problem context, as evident in careful task analysis, yet social and cultural contributions are not taken into account. In short, many of the long established approaches to the study of cognitive development and learning focus on the individual child and, in doing so, they have tended to ignore the real-life settings replete with other people and human-made resources and symbols, including communication, that support the development and use of these skills.

Although the individual level of analysis has been the mainstay in research on cognitive development and learning for, the scientific basis of this approach is open to enquiry. A focus on the individual is consistent with traditional cultural beliefs of many western societies, especially the U.S., As Kessen (1979) wrote: “The child – like the Pilgrim, the cowboy, and the detective on television – is invariably seen as a free-standing isolable being who moves through development as a self-contained and complete individual (p. 819).” Kessen suggested that developmental scientists might have adopted an approach that reflected deeply held cultural views. He also predicted that this position, or “dogma of individualism” as he called it, would resist alternative, more socially based, views of cognitive development and learning.

Consistent with Kessen’s observations, when the mainstream research has taken children’s relationships into account, it has often focused on dyadic relationships that are the most common form of relationship by which children’s learning activities are organized in the Western world. For example, research on the development of selective attention examines whether or not children follow instructions specified by an adult in a dyadic encounter. However, as we discuss in the third section of this chapter, in many parts of the world this social arrangement is not the norm; children’s activities usually take place in groups and their attention is monitored by a number of people and multiple events simultaneously.

Thus, studies inspired by sociocultural theory take myriad forms – some concentrate on dyads, others on triads or larger groups. Some studies focus on people in relationships (families, siblings, classmates) and others involve strangers (randomly assigned peers or instructors and learners). Yet all of these studies are united in their focus on cognitive functioning in a social context. Socio (cultural) approaches examine children’s learning and development as part of their existing social networks that support and guide this learning in order to reflect this process accurately.

Sociocultural approaches also espouse that children’s relationships and social and cultural activities are an essential part of the analysis even when the focus

is on the solo child. Examples of this perspective are seen in young children's solitary imaginative play. When a child pretends to be mother in her play, she is practising something she has experienced in non-playful cultural life about motherhood in her relationships with other people. Finally, sociocultural approaches question the validity of experimental research in which efforts are taken to minimize external influences on performance in presumably confound-free experiments with the aim of establishing cause-effect relationships. Often this means stripping children from their natural contexts in which their regular quotidian activities take place.

Children are usually tested or interviewed in isolated laboratory settings, either alone or in the company of an experimenter or proxy, *e.g.*, instructions are presented on a computer monitor. Even studies conducted in more naturalistic settings, such as the classroom, have tended to focus on the individual, *e.g.*, children are tested on their own either in a private space or group setting or they are observed in the classroom as they engage in independent work. As noted by many scholars of human development, most notably Bronfenbrenner (1979), when children are placed in experimental laboratories, their course of action is shaped by the lab setting and the resultant findings reflect a superficial reality that is different from children's day-to-day living.

The sociocultural approach offers ways in which experimental methods can be expanded as well as integrated with microgenetic, ethnographic, and comparative methods in order to accurately describe children's learning and development in relation to their social and cultural lives. We draw extensively from experimental research and use it in conjunction with research using observational and ethnographic methods in illustrating sociocultural approaches contributions to our field. We turn below to the discussion of sociocultural theories followed by research along with their methods.

## **SOCIO-CULTURAL APPROACH**

**Socio-Cultural Approach:** The socio-cultural approach is based on the idea that society and culture shape cognition. Social customs, beliefs, values, and language are all part of what shapes a person's identity and reality. According to this approach, what a person thinks is based on his or her socio-cultural background. A socio-cultural approach takes into account more than the individual in attempting to understand cognitive processes.

## **CULTURAL-HISTORICAL APPROACH AND ACTIVITY THEORY**

The most influential socio-cultural theorist who had brought together in a systematic way the notions of culture, development, and learning. He was a Soviet psychologist who wrote in the early twentieth century before he died of tuberculosis at the age of 38 in 1934. As Glick (1997) described, interest in Vygotsky's work began with the publication of *Thought and Language* (1962) introduced to the English speaking world by Bruner, a shortened version of what is today known either by the same title or as *Thinking and Speech*.

The latter appeared in Volume One of a six-volume series published as *Collected Works of L. S. Vygotsky*. Heightened interest in Vygotsky's ideas emerged after the publication of *Mind in Society* (1978), a collection of selected essays by Vygotsky that became available in English through the editorial work of Cole, John-Steiner, Scribner, and Sobelman, and continued with Wertsch's (1985) volume of Vygotsky and the *Social Formation of Mind*. There are now many other sources that make Vygotsky's theory available to the student of interest. Many of the scholars who follow and expand his legacy have been organized under a number of different institutions including the Laboratory of Comparative Human Cognition, the on-line discussion group xmca, the Cultural-Historical Special Interest Group of the American Educational Research Association, and the International Society for Cultural and Activity Research.

Journals make concerted efforts to disseminate and expand Vygotsky's ideas either as part of their explicit editorial policy on the role of culture in human functioning (*e.g.*, *Mind, Culture, and Activity: An international Journal*, *Cultural-Historical Psychology*) or by means of special issues. Vygotsky conceptualized children's development as a process of participation into and appropriation of cultural meanings that are historically-determined and socially-situated.

This process involves transformation of natural lines of development, *i.e.*, inherited capacities or elementary functions such as attention, perception, memory, interest, and volition, according to cultural lines of development, *i.e.*, mediation of these inherited capacities by cultural artifacts in order to enable individual's functioning within their cultural context. Children's participation in cultural activity guides shaping of these capacities and gives way to the development of higher psychological functions.

For example, a young child's effortful focus on relevant dimensions of a problem situation through the use of instructions instead of arbitrarily paying attention to naturally attractive physical properties of the environment (*e.g.*, bright colours) indicates functioning on a higher psychological plane. According to Vygotsky, development of higher psychological functions such as planning an activity, allocation of attention in a task, and strategies for remembering as well as the motive that guides such capacities is a process of learning to regulate them through speech and other signs.

Such functions are initially regulated either by the experienced members of the society in collaborative activity with children or by the play of young children. In both cases, children learn to use language in regulating their psychological functions and organizing the relations among them. Vygotsky called this process consciousness, regulation of cognitive and affective capacities and the relations among them in a reflective manner in controlling self and its relations with the culture. Higher psychological functions are parts of human cultural heritage and children's internalization of them cannot be understood unless we consider individual development in its historical context.

For Vygotsky, this meant consideration of four processes of development, *i.e.*, phylogenesis, sociocultural history, ontogenesis, and microgenesis, as

occurring in an overlapping fashion and dialectically influencing one another. Phylogenesis refers to evolutionary changes that characterize the ways different species adapt to their surroundings. Consideration of evolutionary changes enables understanding of the biological and cultural (dis)continuities between human functioning and the functioning of higher apes. Also, it invites the simultaneous investigation of biological and cultural influences on individual development as mutually occurring. Sociocultural history describes the evolutions of cultures and the related changes in members' dealing with their environments. Ontogenesis refers to changes an individual goes through in his/her life in dealing with the environment while microgenesis refers to minute-by-minute changes that describe development (or learning) within the context of an activity.

Central to Vygotsky's theory is the claim that these four kinds of development indicate the different ways in which the species' and individuals' interactions with the external world are mediated. For example, what differentiates human beings from other primates is our ability to engage in labour that is mediated through tools and speech. While other primates mediate actions through the use of tools such as sticks, human beings are able to use tools in organizing their interactions with objects while they use symbols such as words in organizing their interactions with other people that are determined by the distribution of labour.

With regard to sociocultural history, Vygotsky claimed that the availability of tools and signs in a culture has relevance to the ways in which the members organize their perceptions and actions. To illustrate this claim, Vygotsky and Luria used studies conducted with literate and illiterate adults who differed from one another in their use of mediational means. For example, when presented with pictures of a hatchet, saw, hammer, and a log, the literate adults used the label tool and the concept it denotes in classifying the hatchet, saw, and hammer together while leaving the log out. However, the illiterate adults included the log in the category system as well since the log has a functional relation to the tools used in their daily experiences. Although it remains open for fuller investigation whether it is literacy alone or a combination of schooling experiences and literacy that enable differences in literate and illiterate adults' functioning, what Vygotsky shows is that cultural tools have relevance to how individuals classify and talk about their experiences.

Ontogenesis refers to the development of the individual child where the elementary functions are guided by speech after it is internalized and integrated with thinking. Vygotsky stated that when speech first emerges it occurs only on the social plane and serves the function of communication.

However, around two years of age, speech and thinking converge and speech becomes private and enables children to regulate themselves. Finally, in the last phase, when private speech turns inward becoming silent and abbreviated, it allows individuals to represent their reality in the form of an internal dialogue with the external world and also guides their actions as inner speech.

According to Vygotsky, guidance of children's development through speech occurs in leading activities that function as the principal source of development and also gives way to other activities. The leading activities are imaginative play during early childhood and instruction during school years. The Zone of Proximal Development (ZPD) created in the leading activities (and in others) fosters the development of higher psychological functions and self-regulation.

Vygotsky (1987) defined the Zone of Proximal development as that level of development beyond a child's current independent level on which the child is able to function only with assistance.

For example, when a child is able to solve a mathematics problem by herself, her performance is said to indicate her individual developmental level. However, if the child solves the problem that she is not able to solve by herself only with the assistance of someone else, this supported level of development reflects the child's ZPD.

For Vygotsky (1967), imaginative play serves as the zone of proximal development where the child is able to function beyond her actual developmental level for two reasons. First, play is guided by the rules of the phenomenon imagined by the child (*e.g.*, doctor role.) These rules serve as the support for the child, creating a ZPD where the child can function beyond her existing level of development. A desire that is not possible to accomplish in real life leads the child to the world of play (*e.g.*, desire to be a doctor after a visit to her office.) Then, in her effort to understand the role, the child recreates the experience, testing her understanding of it. In the process, the child develops consciousness about the role and the rules that govern it. Second, play enables children to separate meaning from objects and actions that are initially fused with the concrete objects.

For example, when a stick becomes a horse, the child is able to sever the meaning of horse from the object that signifies it. This accomplishment contributes to the development of "word-meaning", *i.e.*, children realize that as they use one object to represent the meaning of another object, that they can also use words to represent the meaning of objects. During the school years when children are introduced to the scientific concepts, *i.e.*, hierarchically organized knowledge based on systematic enquiry, instructional activity constitutes the ZPD. Vygotsky (1987) stated that in contrast to everyday concepts that develop spontaneously as part of children's daily living and occur unconsciously such as learning the native language, scientific concepts require functioning in the ZPD and thus the assistance of teachers.

In Vygotsky's view, this is so because scientific concepts require exposure to meaning in a decontextualized manner without direct experience in the world. In addition, learning of scientific concepts requires exposure to general laws rather than individual instances to which the laws apply. For example, in Vygotsky's view, when children learn a foreign language, they learn the words of a new language in a context-free manner. Also, children learn the rules of the language as they begin to use them. Thus, children require assistance that helps

them establish a connection between what children already know and what they are in the process of learning. According to Bruner (1986), while Vygotsky called for teaching in the ZPD when adults introduced concepts as represented in words, he did not offer ways of collaborating with children in the ZPD. Initially, Bruner and his colleagues addressed this issue by proffering the notion of scaffolding whereby the adult supports children's actions to reach the goal defined for the task so that solution of the problem by the child alone becomes possible on later occasions.

In later work, Rogoff (1990) offered the notion of guided participation to illustrate that experts work with children in structuring the activity, constructing bridges between what children already know and what they are expected to learn, and transferring the responsibility of solving the problem to children for them to work on the problem alone when they are ready for it. In guided participation, adults support children's involvement in many ways, by encouraging the child's attention to certain aspects of the task, by pointing out relations between an action and the activity goal, and by demonstrating particular actions. Most importantly, guided participation takes place in different systems of communication reflecting varying cultural priorities of caregivers and children.

Related research indicates that assistance in the ZPD can be created in many different kinds of relationships and activities. Vygotsky provided a rich framework about the connection between children's development and their culture. The ideas of Vygotsky have been extended in a number of ways both in the former Soviet Union and in the Western world, and one such extension emerged as Activity Theory.

## **SOCIOCULTURAL THEORY**

A sociocultural approach to literacy has emerged from more general sociocultural theory, which itself developed from the theories of the Soviet psychologist L.S. Vygotsky. Three central aspects of sociocultural theory have contributed to a new interpretation of literacy: the concepts of (1) genetic analysis, (2) social learning, and (3) mediation.

**Genetic Analysis.** Genetic, or developmental, analysis suggests that it is possible to understand many aspects of mental functioning only if one understands their origin and the transition they went through. These origins include microgenesis (the unfolding of particular events), ontogenesis (the development of the individual), sociocultural history, and even phylogenesis (the development of the species).

From genetic analysis we understand the futility of seeing literacy as an isolated event. Rather a proper understanding of the emergence of literacy has to take into account broad social, cultural, and historic trends related to the significance and reading and writing for human cognition and communication.

**Social Learning.** A second major point of sociocultural theory is the notion of the social origin of mental functioning. According to Vygotsky (1978), "Every function in the child's cultural development appears twice: first, on the social

level, and later, on the individual level; the first, between people (interpsychological), and then inside the child (intrapsychological)” (p. 57, emphasis in original). Vygotsky further believed that this development principally took place through a form of apprenticeship learning; interaction with teachers or peers allowed students to advance through their zone of proximal development (*i.e.*, the distance between what they could achieve by themselves and what they could achieve when assisted by others).

This concept has been developed to a great extent by contemporary scholars such as Lave and Rogoff (1990), who have demonstrated that apprenticeship learning is not unique to children but is also an integral part of formal and informal adult learning throughout the world. In this view, learning, whether by children or adults, is not an isolated act of cognition, but rather a process of gaining entry to a discourse of practitioners via apprenticeship assistance from peers and teachers.

From this point, we gain the concept that learning to read and write is a social practice rather than an individual skill. As will be discussed further below, those who are considered literate in any community are those who have apprenticed into certain social practices.

Mediation. A third major concept of sociocultural theory is the notion of mediation, *i.e.*, the notion that all human activity is mediated by tools or signs. What is thus significant about various tools? such as computers, writing, or language itself? is not their abstract properties, but rather, how they fundamentally transform human action. For Vygotsky, the incorporation of mediational means does not simply facilitate action that could have occurred without them, but rather, by being included in the process of behaviour, alter the entire flow and structure of mental functions. The concept of mediation will help us interpret the significance of particular tools in the practice of literacy. For example, cognitive scientists have suggested that computer-mediated communication represents a mediational tool so powerful that it may have revolutionary effects on human cognition and communication, similar in scale to those of the printing press.

Putting the concepts of social learning and mediation together brings us to a text-mediational perspective of social apprenticeship, which emphasizes how learners participate together to socially construct knowledge. In this perspective, the significance of texts is not that they provide information or opportunities for practice, but rather that they can be used as “thinking devices” to promote epistemic engagement and interpretation.

## **SOCIOCULTURAL RESEARCH TO THE STUDY OF LEARNING**

Sociocultural researchers have studied a wide range of social and cultural factors that may contribute to learning and cognitive development. As such, sociocultural theory has played an important role in the more general paradigmatic shift towards contextual analysis by examining aspects of the

human context that are key components of intellectual development. Also, studies based on sociocultural theory extend research that examines how immediate contexts, or task parameters, affect cognitive performance by connecting variations in performance to the broader cultural context. For example, research on memory development has found that in parent-child conversations about their shared experiences some parents encourage children to elaborate on their descriptions whereas other parents promote little if any elaboration by children.

A sociocultural view may take this research another step by probing how these parental contributions reflect their societal or cultural values, practices, and goals. Throughout our discussion it is important to remember that although we distinguish learning in informal and formal settings, these two arrangements of learning are not entirely separate from one another. The pervasiveness of cultural modes and means of learning and thinking can blur the distinction between learning in formal and informal settings.

Learning in both types of settings draws on the symbols, tools and activities of the broader cultural context and, therefore, many, but not all, of the activities children do outside of school resemble their activities at school. Moreover, as children learn to use symbols and tools and participate in cultural activities, their thinking becomes increasingly aligned with many features of their culture. As an example, consider that before children begin school in societies with compulsory schooling, they participate in communicative exchanges that mimic school practices, such as answering questions to which the questioner knows the answer, *e.g.*, are those your shoes?

Adults use this type of exchange in conversation with young children because it gives children practice with a form of school discourse in which teachers ask children known-answer questions, that is questions to which the teacher knows the answer and children know that the teacher knows the answer.

We are not claiming that there are no differences between the cultural experiences children have in informal learning settings, such as the family and neighbourhood, and the cultural processes present in formal school contexts. Many of the social processes of learning differ dramatically across these settings. Also, differences between formal and informal learning practices are substantial in some cultural communities, which can lead to tensions between home-based learning experiences and learning when children enter school. Differences between learning in informal and formal settings can also exist across generations. Over time, some cross-generational differences in the content and process of learning are expected.

However, these differences may be exacerbated in families in which such differences are marked by dramatic cultural change, *e.g.*, among immigrant parents and their offspring, or in communities undergoing rapid reorganization. In this section we discuss some of the major changes to the study of cognitive development introduced by sociocultural theory. First, we discuss laboratory research on social contributions to cognitive development in the areas of attention, memory and problem solving because of their relevance to learning

in early and middle childhood. Each of these sections is offered in a parallel manner by focusing on deliberate efforts to instruct or transfer knowledge from more to less experienced partners. We then turn to research on children's learning outside of the classroom, including in community settings such as after-school clubs and museums. After that we describe research that applies the concepts of sociocultural theory to pedagogy.

Before we describe the research, a few disclaimers are in order. What we present is not intended to be a comprehensive review of research since such a task would far exceed the space allotted for this chapter, and there are already several reviews in the literature. Our goal is to use research to support the claim that sociocultural theory offers an innovative and valuable approach to the study of cognitive development and learning. It is important to note that the studies we describe were not all explicitly based on sociocultural theory and that even among the studies that adopted this view, researchers did not always hold identical positions on the theory. As we hope the theoretical discussion made clear, there are many aspects of sociocultural theory and many of these are still under development and debate.

## **RESEARCH ON SOCIAL PROCESSES OF COGNITIVE DEVELOPMENT**

**Attention.** Attention is critical to knowledge acquisition and skill development. It involves directing limited cognitive resources towards specific information in the environment. Attention can be voluntary or involuntary; our discussion concentrates on voluntary attention because of the important role it plays in learning and cognitive development and because it is mediated by social and cultural processes.

Voluntary attention, the active use of cognitive skills to reach a goal, develops rapidly in infancy and early childhood. From early in life, social experiences help children learn how to use their emerging capabilities to allocate attention across the various sources of information in the environment. Social processes that contribute to this development in the first two years are intersubjectivity, joint attention, and social referencing. Research demonstrates that the cultural context also contributes to this development. Chavajay and Rogoff (1999) found differences in the allocation of attention to objects and events by Guatemalan Mayan and U.S., middle-class mothers and their 12- to 24-month-old children. Mayan children and mothers were more likely to attend to several events simultaneously whereas U.S., children and mothers usually attended to one object or event at a time. The researchers argue that whether young children attend to one or several events at a time may reflect a cultural practice and not attentional capacity.

With increasing age, social input continues to help children as they develop and refine strategies for regulating attention. For instance, maternal scaffolding can aid young school-age children as they learn how to construct objects using a pictorial, step-by-step plan. Further, skill in allocating attention and using it

to direct action towards a goal may be especially useful for children when they enter school and are expected to engage in activities that place many demands on their attention. Guidance from social partners can help young school-age children with attention difficulties learn how to direct and focus their attention during problem solving, which can ease their transition to school.

When children are in school and developing expertise in subject areas, they are, in part, developing skill at regulating and directing their attention. Research comparing novices and experts reveals that experts, more so than novices, pay attention to or notice features of a problem situation that helps them identify and solve the problem. To this end, a significant feature of many successful intervention programmes in school learning involves instructing the learner's attention to pertinent features or patterns.

For instance, the instructional approach called reciprocal teaching, which is based on Vygotsky's (1978) idea of the zone of proximal development, aims to improve children's reading comprehension by gradually transferring responsibility for effective reading and study behaviours from the teacher to the learner. An important element of this approach involves identifying sentences that need clarification, a process that entails directing attention to the text in ways that aid comprehension. These and other findings suggest that some attention difficulties that impede children's success in school may be remedied by social practices that help direct and focus students' attention on relevant aspects of a learning activity. Assistance in regulating attention can be provided by the teacher or a more experienced peer.

In observations of sixth-grade children solving mathematics problems in small groups, Barron (2003) found that joint attention by the partners at critical junctures of the activity was essential both for reaching a successful group solution and for individual learning as assessed by a solitary posttest on a related problem. Barron also found that when partners did not share attention at critical junctures, other social processes that have been shown to be important for learning from collaborative activity, such as shared perspective taking, were compromised.

Sociocultural research has advanced our understanding of attention by demonstrating that social processes are linked to the development and use of attention in children, supporting Vygotsky's claim that the regulation of cognition is accomplished through the internalization of guidance in interaction. Attention-related difficulties can place children at risk for academic failure. Improved understanding of social processes that can support the development and use of attention skills may help enhance children's adjustment to and success in school.

Memory. Memory includes all the concepts, categories, skills, and knowledge a person has acquired. There are several different types of memory, including event or episodic memory, which is memory of specific experiences, and semantic memory, which is knowledge such as concepts, skills, and categories. Both event memory and semantic memory are affected by social and cultural experience.

Event memory emerges in the second year of life when children are capable of reflecting on their own ideas or representations. Social processes play a vital role in this development. Over the preschool years, the rapid explosion of language supports the development of event memory as children engage in conversations about the past and as events unfold.

These early conversations influence the content of children's event memories as well as the development of techniques for organizing and retrieving these memories. Research indicates that the narrative form, which includes actions in a temporal sequence and a cast of characters, is useful for organizing event knowledge in memory and for helping retain and retrieve this information and communicate it to others.

Children learn to use the narrative form in their conversations with more experienced partners and the nature of these conversations, especially the child's contribution, changes with development. For instance, early on in these memory interactions, parents provide significant guidance or scaffolding for children's participation. With time, as children's language and social skills develop, their participation increases and by 3 years of age, children's contributions to shared remembering are substantial.

In addition to teaching children the narrative form, memory conversations between parents and preschool children also encourage and support the development of other cognitive skills that benefit children when they enter school, such as language, reflection, and negotiation. Experience with narratives supports literacy development and this development takes place in several ways: First, such experience helps children comprehend stories and, in so doing, it supports the development of literacy skills.

Children's skill at following narratives helps them make inferences about the goals of characters in stories as well as understand stories from the multiple vantage points or perspectives of the characters. Second, experience with narratives aids school children in their understanding or ability to imagine sequences of actions, which is important in learning to read and in mastering other subject areas. Third, social support, such as encouraging children to manipulate the events or objects that are represented in a story, can help young children formulate mental images, which, in turn, enhances children's memory for what was read.

Skill at imaging action sequences may also be important for comprehending sequential processes in subjects such as mathematics, in which children might be asked to imagine an object or substance as it changes shape or how a space might appear from different points of view.

Although the links between young children's experience with narratives and other early learning experiences are presently unknown, research suggests that experience with narratives before children enter school – experience that is inherently sociocultural – may provide some important foundations when children transition to school. Cultural differences in adult-child conversations about past events and events as they unfold, including practices of turn-taking,

storytelling, and the role and appropriateness of questioning or negotiating knowledge, can have consequences for children's adjustment to and success in school. Event conversations and narratives of African American adults and children in the rural southeastern United States resemble storytelling and include efforts to get and sustain the attention of the listener, such as non-verbal gestures, exaggeration, and distinct stylistic features like poems. In Japan, conversations by mothers and children about past events, and the child's subsequent memory of these events, are quite brief with little embellishment, reflecting cultural values of self-presentation. This research suggests that children enter school with different experiences in social practices related to event memory.

When the manner and foci of event memories and narratives are aligned with school practices and expectations, the transition to school may be easier for children than when they are not so aligned. Research has also demonstrated that cultural practices related to event memory can be used effectively in the classroom to support children's learning. In the Kamehameha Early Education Programme (KEEP), the Native Hawaiian tradition of storytelling was used to develop the classroom practice of "talk-story," an approach to literacy instruction in which the teacher and the children jointly produce narratives about the focus of the day's lessons. This approach emphasizes social participation, along with story creation and comprehension, and its use has been related to improvements in the standardized reading scores of Native Hawaiian children. The KEEP teacher's instructional repertoire includes the techniques of modelling, questioning, and feedback, all of which are related to the zone of proximal development and the method of scaffolding.

Thus, when the social and cultural foundations of early memory development are incorporated into classroom learning, children can make a smoother transition to school. Research on social support for the development of strategic memory also has important implications for children's learning in school. Strategies are deliberate behaviours used to enhance memory performance.

Formal schooling often involves the processing of large amounts of information and this information is typically presented in a form that is difficult to remember without the use of overt and explicit strategies. Between 5 and 10 years of age, children acquire various complex memory strategies such as rehearsal, organization and elaboration. With increasing age children become more skilled in the use of these strategies; they are able to use them more effectively and efficiently as well as in a wider range of circumstances.

Advances in content knowledge, speed of processing, and memory capacity contribute to these age-related changes. However, the development of memory strategies is also facilitated by social experience. Laboratory research has shown that both adults and peers can support the development of memory strategies such as organizing or grouping items in ways that aid memory. Similar results have been reported in classroom research. Early research by Michenbaum and colleagues demonstrated that when adults teach children reading comprehension strategies, such as focusing on the main idea and the sequence of events in a

story, children's understanding and retention of a text improve. Other research showed how instructional techniques that focus on strategy development, such as summarization, self-questioning, and seeking clarification, can advance children's reading comprehension and retention skills. Research has also revealed that social processes can facilitate the development of strategic memory in relation to a range of other subject areas including writing, mathematics, and scientific reasoning.

Research has made it clear that school-age children do not necessarily devise and use memory strategies effectively on their own. This suggests that instruction in memory strategies is crucial in the school years as children confront many demands on memory and associated expectations for performance.

Classroom observations indicate that teachers do instruct children in the development and use of memory strategies; however, this instruction varies considerably by grade level, subject matter, and across classrooms. When social support for memory development occurs either in the form of explicit instruction, in memory-related language by the teacher, or in the context of computer games, children improve in their use of memory strategies in a range of subject areas. In summary, social processes both inside and outside of school are important in the acquisition of skills for remembering events of personal significance and for developing strategic skills that are vital for school success.

## **ANTICIPATING FUTURE EXPANSIONS OF SOCIOCULTURAL APPROACHES**

Simultaneous consideration of perspectives of culture as a system of meanings and theory of Vygotsky reveal important similarities between them and provide shared directions for future theory construction and research. These expansions are as follows.

First, both views share the conviction that children's learning and development should be studied by paying attention to the availability of cultural practices or activities, and children's participation in, learning from, and transformations in relation to practices and activities. Consistent with related works that called for a focus on children's everyday functioning, the current plea is also for description of children's learning and development in natural contexts. However, in recognition of the difficulties involved in developing universally valid theories of context and development, the current work calls for local and unique forms of participation, practice, and appropriation of children's learning in their communities.

Second, future work needs to focus on how children's guidance occurs in their collaborations with the members of their community by making recourse to local forms of participation and communication. As some scholars have stressed, we need to pay attention to the construction of ZPD in different cultural activities, such as classrooms, where children's collaborations involve multiple partners. Moreover, children participate in many other activities such as after-school programmes, museums, religious practices, household chores, and income-producing activity.

These practices need to be considered in providing a fuller account of how ZPD is created in communal lives, as we also pay attention to unique communicative rituals and language praxis through which guidance occurs. Also, forms of guidance vary depending on what the guidance is about. Supporting children as they learn interesting and fun content, for instance in play, differs from helping children learn how to solve problems that are distressing, such as how to deal with bullies on the playground. Finally and very importantly, it is plausible to argue that the same collaboration creates a ZPD for the learner as well as the teacher. As a child advances her skill and knowledge in working with a teacher (*e.g.*, in mathematics), the teacher learns to improve his teaching skills. Therefore, future work needs to conceptualize how ZPD is created and accomplished in different institutions and settings for all involved.

Third, sociocultural theory and research has not paid sufficient attention to Vygotsky's thesis that higher psychological functions are internalized through speech in collaboration with others in the ZPD. Except a few earlier contributions on the process of mediation and internalization, there is little research that articulates how children appropriate the artifacts of their culture. Research conducted by Cole (2006b) and others in relation to the Fifth Dimension and other after-school computer clubs is a notable exception.

Rogoff (1995), Wertsch and Stone (1985), and more recently Wells (1999) and Holzman (2009) offered some insights about what it means to represent or appropriate knowledge or skill that is initially only externally available. The shared insight in these different views is that internalization is not an all or none process of transferring knowledge from the external to the internal plane of existence. Rather, internalization is an ongoing process of appropriation. Children take in and make meaning from the experience as they go through it.

# 5

## **Different Psychological Approaches to Learning**

Psychology is the branch of science that is concerned with the study of behaviour and experience. It is one of the largest and most ubiquitous of all the sciences, and, given its concern with human behaviour and methods of changing same, has had an enormous influence on educational thinking. Although psychology is undoubtedly a well-established and universally-recognised scientific discipline, it is still in many ways an 'immature science', in the sense of the term used by the historian and philosopher of science Thomas S. Kuhn. In a seminal book published in 1962, Kuhn presented the thesis that a branch of science only reaches true maturity when it acquires a paradigm - a generally-accepted underlying model, set of beliefs and methodology. By Kuhn's criterion, psychology has certainly not yet attained such a status, since it is still characterised by several different approaches, or schools, none of which has gained universal acceptance among practitioners. The most important of these are psychoanalysis, behaviourism, humanistic psychology, the neurobiological approach and cognitive psychology. Let us now take a look at each of these approaches, and see how they have influenced our ideas about the nature of the learning process.

### **Psychoanalysis**

Psychoanalysis was one of the first schools of psychological thought to develop, and is still what many people think of when the word 'psychology' is mentioned, largely due to the influence of its founder, Sigmund Freud. Freud worked in Vienna

at the turn of the century, and developed the theory that the individual human being lives in a continuous state of internal conflict due to demands made by different parts of the personality, particularly at a subconscious level. He identified three basic components of personality, the ego, superego and id. Of these, the ego can be thought of as the rational, conscious part of the mind, whereas the superego and id are conflicting aspects of the subconscious mind. According to Freud, the superego is a primeval, instinctive force which represents a drive towards the individual's ideal self. The id is a similar primeval force which expresses itself either through the love instinct (*eros*) and the internal drive known as the *libido*, or through the destructive or death instinct (*thanatos*). According to Freud, the well-adjusted individual uses the ego to maintain a reasonable balance between the conflicting demands of the superego and id, only encountering problems when the two drives become seriously out of balance. Psychoanalysis involves trying to resolve such internal conflicts by looking for clues as to what is happening within the individual's subconscious mind.

The ideas of Freud were developed by a number of 'post-Freudians' such as Carl Jung, Erik Erikson and Alfred Adler, who modified and extended his ideas and founded their own 'schools' of psychoanalysis. Although many modern psychologists disagree profoundly with several of the ideas put forward by Freud and his successors, the psychoanalytic approach has had an enormous influence both on psychology and on society at large. It has not, however, had very much influence on mainstream educational thinking or the theory of learning, and is not an approach that teachers and tutors are advised to have anything to do with. Without proper training in psychoanalysis, any attempt to 'play the therapist' with one's students could be extremely dangerous, and could cause permanent psychological damage. In other words, psychoanalysis should be left to the experts. If a student does start to become introspective during a tutorial or counselling session, suggest a break or use the appropriate referral system.

## **Behaviourism**

Origins of behaviourism lie in the Russian psychologist, Pavlov's, work with dogs. At about the same time as Freud was developing his basic ideas of psychoanalysis in Vienna, an American psychologist, John Watson, was laying the foundations for the development of Pavlov's and Freud's work into what was to become a whole new - and highly influential - school of psychology. Watson argued that the Freudian approach based on self-observation (introspection) had yielded poor results, and that if psychology was to be considered to be a true science, its data would have to be both observable and measurable, like Pavlov's. His approach, which was later to become known as 'behaviourism', thus adopted the systematic study of observable behaviour as its focus. Behaviourists argue that nearly all behaviour is learned, and that the main function of psychology should be to seek to discover what the basic laws of learning are. Largely because of the work of the later American behavioural psychologist B.F. Skinner during the 1950's, behaviourism has had a tremendous

influence on educational thinking. Behavioural psychological theory is based on what is commonly referred to as stimulus/response or S-R learning. It assumes that learning has occurred if a specific response is elicited from a learner when he or she is placed in a particular situation and is given a particular stimulus. Learning of relatively complex behaviour can (it is claimed) be achieved through an appropriate series of stimulus-response situations. At each stage, the learner must actively participate by performing a set task, after which he or she is then supplied with immediate feedback in the form of the correct answer. This is known as successive reinforcement. Skinner also argued that each successive stimulus-response step should be small enough to ensure that the learner is almost always correct in their response. Use of these small steps, plus successive reinforcement, led to what behavioural psychologists believed was an efficient way of 'shaping behaviour'. Skinner's original work was with animals, mostly with pigeons. His later work, which evolved from this, was with humans, and was largely responsible for triggering the bandwagon programmed learning movement that so dominated progressive educational thinking during the 1960's and early 1970's. This, in turn, led to more recent developments such as open learning, distance learning, computer-based learning and multimedia. Although Skinner's original behavioural model of learning has since been rejected or at least greatly modified by many educational psychologists, he has probably had a greater influence on educational thinking than any other psychologist. Indeed, every teacher who makes use of individualised learning methods today owes him a very real debt.

### **Humanistic Psychology**

Humanistic psychology emerged during the 1950's and 1960's out of a reaction against the two schools that had dominated psychology up till then - psychoanalysis and behaviourism. Humanistic psychologists such as Abraham Maslow and Carl Rogers rejected the psychoanalytical approach as regarding human beings as being little better than animals, driven and controlled by a bundle of unconscious, instinctive forces. They similarly rejected the behaviourist approach as regarding people as nothing more than unthinking products of their environment, shaped and programmed by the patterns of rewards and punishments that they receive in the course of their lives. Humanistic psychologists rejected these two models of man in favour of one which emphasized the uniqueness and essential 'humanness' of every individual person, and concerned themselves mainly with concepts such as self-fulfilment and actualisation, the importance of subjective experience, and the development of human values. As an ex-Freudian, Rogers developed a new, 'client-centred therapy' in which he aimed to give his patients the self-knowledge and skills needed to find their own solutions to their problems rather than simply telling them what to do.

Humanistic psychology has had a considerable influence on progressive educational thinking since the early 1970's, when the early research findings of

people like Rogers started to feed back into educational development. Just as the earlier work of Skinner led to the programmed learning movement, so the work of Rogers led to the modern student-centred learning approach. In this, the teacher is no longer seen as an expert who hands down knowledge and understanding to the student. Rather, the teacher facilitates learning, first providing the student with guidance on how to learn and then providing a variety of learning opportunities and experiences through which such learning can occur. One of the most important manifestations of the student-centred learning approach has been the dramatic increase in the use of group learning since the mid-1970's, and the more recent appearance of flexible learning and competence-based learning. This last attempts to link student-centred learning with behaviourist reinforcement.

### **The Neurobiological Approach**

This essentially physiological approach to psychology attempts to relate human behaviour to electrical and chemical activities taking place in the brain and central nervous system. Much of what has been discovered via this approach has proved extremely useful in improving the effectiveness and efficiency of human learning. Increased knowledge about how the eyes, ears and other sensory organs work and pass information to the brain, for example, has led to a greater understanding of how to attract and maintain a learner's attention. Similarly, increased knowledge about how sensory information and other types of information is actually processed in the brain is leading to a greater understanding of such things as the nature of memory.

Ultimately, it may be possible to explain complex human behaviour purely in terms of neurobiological activities, but, at present, such a prospect seems highly remote. In the meantime, the neurobiological approach is proving extremely useful in providing basic data for the fifth and last major branch of psychology - cognitive psychology.

### **Cognitive Psychology**

The early behavioural psychologists treated the human mind as a 'black box', being concerned only with the relationship between the input to the system (the stimulus) and the output from the system (the response). None of the processes that occurred between the stimulus and the response were considered to be the legitimate concern of psychology, since they could not be directly observed. Dissatisfaction with this strict view, together with an increasing realisation that internal higher-order mental processes are an important part of psychology, has since led to the development of cognitive psychology. This is concerned with what actually happens within the mind/brain system when we think, reason, remember, develop language skills, *etc.*, as well as with how we process information received from the outside world. Cognitive psychology is currently having an increasing influence on educational thinking, especially through the burgeoning field of artificial intelligence and the design of expert

systems. Intelligence. A concept which does not fit neatly into any of the above perspectives of psychology but which has profound implications for educational practice is the idea of intelligence, whereby verbal, numerical, reasoning and spatial skills can be measured to give a quotient of a person's ability. Intelligence Quotient (IQ) is supposedly normally distributed amongst the population, and is the concept that ostensibly justifies selection at both secondary school and university level.

### Models of the Learning Process

Let us now turn our attention to some of the models of learning that educational psychologists and educationalists have developed over the years. We will start by examining the three that have probably proved most influential - Gagné's 1956 hierarchy of learning, Piaget's 1969 model of cognitive development and Kolb's 1984 experiential cycle - before turning to one of the most recent - Race's 1993 'ripples' model of learning.

### Gagné's Hierarchy of Learning

In 1956, the American educational psychologist Robert M. Gagné proposed a system of classifying different types of learning in terms of the degree of complexity of the mental processes involved. He identified eight basic types, and arranged these in the hierarchy shown in Figure.

According to Gagné, the higher orders of learning in this hierarchy build upon the lower levels, requiring progressively greater amounts of previous learning for their success. The lowest four orders tend to focus on the more behavioural aspects of learning, while the highest four focus on the more cognitive aspects. Increasing complexity.

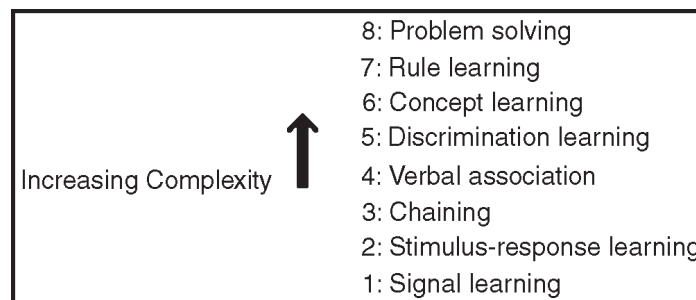


Fig. Gagné's Hierarchy of Learning.

Let us now take a closer look at Gagné's eight categories of learning.

### Signal Learning

This is the simplest form of learning, and consists essentially of the classical conditioning first described by the behavioural psychologist Pavlov. In this, the subject is 'conditioned' to emit a desired response as a result of a stimulus that would not normally produce that response.

This is done by first exposing the subject to the chosen stimulus (known as the conditioned stimulus) along with another stimulus (known as the unconditioned stimulus) which produces the desired response naturally; after a certain number of repetitions of the double stimulus, it is found that the subject emits the desired response when exposed to the conditioned stimulus on its own. The applications of classical conditioning in facilitating human learning are, however, very limited.

### ***Stimulus-response Learning***

This somewhat more sophisticated form of learning, which is also known as operant conditioning, was originally developed by Skinner. It involves developing desired stimulus-response bonds in the subject through a carefully-planned reinforcement schedule based on the use of 'rewards' and 'punishments'. Operant conditioning differs from classical conditioning in that the reinforcing agent (the 'reward' or 'punishment') is presented after the response. It is this type of conditioning that forms the basis of programmed learning in all its various manifestations.

### ***Chaining***

This is a more advanced form of learning in which the subject develops the ability to connect two or more previously-learned stimulus-response bonds into a linked sequence. It is the process whereby most complex psychomotor skills (*e.g.*, riding a bicycle or playing the piano) are learned.

### ***Verbal Association***

This is a form of chaining in which the links between the items being connected are verbal in nature. Verbal association is one of the key processes in the development of language skills.

### ***Discrimination Learning***

This involves developing the ability to make appropriate (different) responses to a series of similar stimuli that differ in a systematic way. The process is made more complex (and hence more difficult) by the phenomenon of interference, whereby one piece of learning inhibits another. Interference is thought to be one of the main causes of forgetting.

### ***Concept Learning***

This involves developing the ability to make a consistent response to different stimuli that form a common class or category of some sort. It forms the basis of the ability to generalise, classify, *etc.*

Rule learning. This is a very-high-level cognitive process that involves being able to learn relationships between concepts and apply these relationships in different situations, including situations not previously encountered. It forms the basis of the learning of general rules, procedures, *etc.*

Problem solving. This is the highest level of cognitive process according to Gagné. It involves developing the ability to invent a complex rule, algorithm or procedure for the purpose of solving one particular problem, and then using the method to solve other problems of a similar nature.

### **Learning and Motivation**

Recognition of the meaning of a moment is a perception evolved from one's neurological equipment, past experience shaping the perception, a mixture of hormones in the blood stream, and the extent of knowledge to which one is aware. Most people consider learning as a level playing field that is available to everyone as just something we do. We are faced with a stimulus, something happens, and behaviour comes out the other side. "Learning" is the process that happens between the stimulus and response. Since the process of learning has been found among humans and most animals, we can assume that it is part of an evolutionary agenda.

Philosophy tends to examine cultural concepts as rational constructs; but, there's something deeper than that. For instance, the theist and the atheist can look at the same thing, as a friend and I were both enjoying a sunny afternoon in the backyard, and both drew support from this same experience for our very different concepts. We were both in awe, but one found no doubt that this glorious experience had to be created, while the other saw no indication of a creator.

When the temporal lobes are excited, as in temporal lobe epilepsy, the result is an intense heightening of the patient's sensory appreciation of the world and intense empathy for all beings to the extent of seeing no barriers between himself and the cosmos. This might be a clue as to the neurological basis of religious and mystical experiences: a neurological effect not experienced by the atheist. Einstein said "the most beautiful and most profound experience is the sensation of the mystical. It is the source of all true science. He to whom this emotion is a stranger, who can no longer wonder and stand rapt in awe, is as good as dead. To know that what is impenetrable to us really exists, manifesting itself as the highest wisdom and the most radiant beauty which our dull faculties can comprehend only in their primitive forms - this knowledge, this feeling is at the center of true religiousness."

We can see in this example: it can be the perception, or the experience, that is causal to the concept. Due to the philosophical tendency to categorise, and deliberate concepts through reason, we can ignore, or do not understand, the role of perceptual variations. Understanding the variation of perceptual processing is necessary for understanding how and what we learn.

### **Ethology**

Ethology is the study of "fixed action patterns" of behaviour among animals in their natural setting. Ethology introduced the concept of inherent perceptual equipment. Examples include: suckling by infant mammals, the dance of honey bees returning to their nest to communicating the location of nectar, and the

imprinting of ducklings on the first moving object that might be a mother duck among many other examples. The Ethologists carefully observed animals to describe what these fixed action patterns of behaviour were; their adaptive value to the species; the trigger or “releasing stimuli” that precedes the behaviour; the embodied physiological mechanisms that produce that behaviour; and what supportive learning is necessary to shape the behaviour. The Ethologists found there is virtually always some amount of experience and resulting reinforcement to shape the fixed action pattern beyond the initial inclination.

The importance of Ethology is that neurological “hard wiring” is an additional consideration to the Behaviourist’s various strategies of reinforcement in the development of behaviour. This study of the capabilities of numerous species and their species specific behaviour underscores the importance of having the necessary equipment for certain behaviours: flying requires an aerodynamic physique and an appropriate nervous system to use it; just as literacy (a human capability) requires the ability for symbolic perception and the appropriate nervous system to interpret, and use it. This means that each species, even each individual, including mankind, is limited in capabilities by their nature.

## **Conditioning**

### **Pavlov’s Experiments**

Ivan Petrovich Pavlov (1849-1936) in 1927 performed an experiment that demonstrated the conditioned reflex. In this experiment a dog was prepared with a cannula in a saliva gland. The dogs were not fed and were hungry. In the first part of the experiment a light was lit just before a drawer of food was opened in front of the dog. Naturally, the saliva gland reacted to the sight of food. At the same time the dog associated the light with the appearance of the food. After a short training period the dog would salivate at the sight of the light without the appearance of the food. The lessons to be learned are:

1. Glandular secretion can be due to stimulation through association in the cortex. An associated stimulus can lead to the secretion of glands, including those associated with emotions. Later understanding has lead us to believe that this is the case with virtually every stimulus. Even our thinking can produce a variation in hormonal levels in the blood. The hormones in our blood are one method our internal cells communicate what we think is happening in our environment. There are hormonal combinations for stress, freight, sex, success, and failure.
2. The dog’s responses were inappropriate to the associated signal (the light). The dogs responded to the signal (light) with ptyalin in the saliva, pepsin in the stomach, and trypsin in the pancreas. This association, or sequential memory, is a very primitive capability. In this case, the dog was shown to have sequential memory in that it quickly learned that the appearance of a light was followed by food. Even a flat worm can learn some significant sequences. An electric shock preceded by the

appearance of a light will eventually cause the animal to curl up at the appearance of the light without the electric shock. The flat worm is avoiding the shock.

3. The dog has specialised cells that detect the need for food and signal that message to the dog's mind. Since the time it was a puppy, the dog has learned from an inclination (fixed action pattern) to identify food with his nose, eyes, and motor skills. Pavlov's dogs had their food appreciation shaped to value the Russian dog food and started preparing for eating by exciting their digestive glands and attempting movement against the harness towards the food tray. The dog's cortex associated the light with the food as sequential events, and eventually prepared for the food with the appearance of the light.

Pavlov demonstrated this in several digestive glands. In other situations, danger causes the secretion of epinephrine, the hormone of fear. A threatening situation causes the secretion of norepinephrine, the hormone of aggression and anger. An attractive potential mate causes the secretion of ethylphenylamine from the hypothalamus and causes feelings of love. It should be noted that hormones both affect behaviour and are produced by behaviour. For instance, exercise increases testosterone in females as well as males. Then the testosterone sensitises aggressive parts of the brain and builds muscle tissue. Of course, these were not the conclusions that Pavlov drew. But there is no reason that in the light of subsequent findings regarding hormones and learning that we should not apply more sophisticated interpretations than he possibly could.

### **Individual Learning Variation**

Every individual human falls within a variety of capabilities that makeup their learning performance characteristics. The secret to a good education is to expose that individual to as many subjects as possible so they might discover where their talents lie. A great education allows a person to reach their ultimate potential capabilities. Some of these capabilities, such as the acquisition of language, or the establishment of attachments and bonding, emerge during a window of time during the maturational development of the individual while others are able to be developed at anytime during the life of the individual. Even though there have been many misdirected biases and prejudices established over time, such as the idea that males are better at math than females, each of us, even the most gifted, have limitations. We are limited by our established collection of knowledge, by what we are inherently able to comprehend, by what we believe is our ability to comprehend, and by our fears.

When I was in graduate school, and behaviourism was the answer, I was required to virtually memorise a book of hundreds of animal experiments trying to decipher what learning was all about. One experiment jumped off the page, even though I have not seen it since. This seemingly insignificant experiment explained the difference between positive (reward) and negative (fear based) reinforcement. It is a simple experiment with two white rats in two shoe box

sized containers. The idea was to train them to jump through a sliding door from one side of the box to the other. In both cases there was a light turned on just prior to the delivery of the reinforcement. The only difference was the motivation for learning this trick. For rat “A” they placed food on the other side of the door. This encouraged him to make the jump. For rat “B” they electrified a grid under his feet. He jumped around till he realised that he could escape the shock by jumping to the other side. This encouraged him to make the jump. It took both rats about the same number of trials to learn the trick. The rat that learned to jump for the food was experiencing “positive reinforcement” while the rat that jumped to avoid the shock was experiencing “negative reinforcement”.

The important lesson in this experiment was shown during what they call the “extinction trials”. Why they chose that name, I do not know. During the extinction trials, the light was turned on, but no food or shock was delivered. Soon the rat jumping for food no longer associated food with the light and began sniffing around for another solution. However, the rat jumping to avoid the shock continued to jump and jump for many trials after the shock was turned off. The animal’s behaviour was rigid and did not change even though the shock was no longer present.

The rat which learned with positive reinforcement was adaptive and flexible while the rat which learned with negative reinforcement became rigid and fixed. Similarly to Pavlov’s dogs, there is an inappropriate response to an associated signal (the bell or light) when the original stimulus is gone. One of the characteristics of neurotic behaviour is that it takes place inappropriately. Neurotic behaviour and neurotic emotional reactions can often be traced back to a negatively reinforced experience.

Another important aspect of learning was introduced by B. F. Skinner who illustrated general learning principles with pigeons. Skinner probably was too enthusiastic about the application of his concepts. The Behaviourist movement overlooked the fixed action patterns of behaviour and attributed everything to reinforcement. As you are introduced to these few experiments of the many he produced, you will easily be able to identify with the experience of the pigeon.



In all his experiments Skinner deprived the pigeons of food for twenty-four hours to insure the need for food would be a good motivation. The animal was then placed in a cage with a small target disc attached to a lever in such a way that when the pigeon pecks at the disc, a pellet will drop into a nearby tray. The number of pecks on the disc per minute is recorded. As would be expected, the hungry pigeon discovers the disc pecking behaviour, and the number of pecks per minute increases over time to create an upward inclined graph. This is called the “learning curve”.

There are three factors that he found to affect the learning curve.

1. *One to one reinforcement*: In this experiment the pigeon received one pellet per peck. The learning curve was fast, but the animal was soon satiated and the curve crashed.
2. *Fixed interval reinforcement*: In this experiment the pellets were released at regular intervals, such as one every fourth peck. The learning curve is not as steep, but the pigeon had to peck more times before it was satiated. The animal hurried the process along by pecking faster. Do you want faster work? Pay people by commission.
3. *Random-interval reinforcement*: The intervals were selected from a list of random numbers; so, there was no way to predict how many pecks will be necessary to get the next pellet. In this study the learning curve was the least rapid, but the pecking behaviour is eventually the most vigorous by far. This is the principle of the addiction to the unpredictable fruits of gambling. There are other factors involved, of course, but this is one.

All these aspects of learning are motivated by the fulfilment of needs. Each need is initially detected by some neuro-sensitivity that triggers a fixed action pattern. In time, this pattern is shaped by neurologically successful need satisfaction and the resulting repetition. This process can often be a long, subtle evolution of development, beginning in maturation and continuing over a lifetime.

Neurobiology tells us that the continued use of a neural pathway strengthens that pathway with each use. This is why we learn and remember things in school: repetition. Meeting needs on a continual basis is the evolution of establishing pathways. Sometimes need fulfilment is not so immediate. Such as in school. Our frontal cortex has something to do with our ability to keep our eye on a distant goal.

### **The Role of Needs**

The fulfilment of needs is our motivation for learning. The struggle to fulfil our needs is the driving force of our life as we have evolved. The fulfilment of these needs holds the fabric of human society together by motivating human communication and community work. Needs are the essence of what we pursue, what we strive for, what reinforces our efforts. It stands to reason, in a fruitful society, that each one of us should feel the desire and the possibility of

successfully fulfilling our needs. Karl Marx postulated that it is the frustration of need fulfilment that leads to aggression and revolt. The association of stress and aggression has been biologically linked. Some examples of our needs are: food, shelter, waste removal, activity, sex, safety, belongingness, power, achievement, knowledge, encouragement, beauty, and creativity. The order is not important.

Everyone has these needs, but to different degrees depending on environment, culture, and individual variation. All these roads to need fulfilment are shaped from some original fixed action pattern or heritable inclination that emerges during the maturational development of the individual. The achievement of need fulfilment is the reinforcement necessary for learning.

### **The Effect of Generalisation**

Generalisation is a vague concept describing a combination of neurological events. We are generalising when we see an object in different positions and we can recognise it as the same object. This is known as “gestalt”. We generalise when we have an emotional response to a specific subject through experience and then ascribe that emotion to all other similar subjects. As we have shown, this would be more lasting with a negatively reinforced experience than with a positively reinforced experience.

An example of generalisation is people who say, “all women are the same!” as a person ascribes a characteristic to every member of a class. On the other hand, generalisation could be the prejudicial application of a characteristic of a class to a specific member.

Here we have examples of two natural neurological events, both propensities are evolved through time by nature because they are beneficial to survival. Once again we see problems of rigidity when negative reinforcement is involved. This generalisation characteristic is the basis for racism and prejudice. It has been a primary ingredient in the dehumanisation of a class of people as a preliminary preparation for their eradication in warfare. On the other hand it is the basic requirement of a positive philosophy, or religion, that includes all people.

### **Reading and Writing**

This is an interesting subject because of its correlation with general intelligence and education. I say “correlation” because the two do not always go hand in hand. For instance Charlemagne, an important leader in the eighth century Europe, was credited with many letters but was noted by his biographer as not being able to write his name. On the other hand, I have known a few families with children who learned to read, with little encouragement, a couple of years before they entered school.

Reading and writing are, without a doubt, tied to the maturational development of specific parts of the brain. This is part of the post birth recapitulation of

humanity's evolutionary development through the threshold of literacy. Most children begin to learn to read, with instruction, by age six. About five percent of the children learn to read on their own by age four. Twenty-five percent will not learn to read till age ten; but, will have caught up to the others by age twelve. A small percentage of children will never learn to read.

The lack of acceptance of this simple principle of the maturing brain has cost untold thousands of academically shattered lives. Since the pressure has been on the schools to show results by second grade, teachers have been trying every method they can think of to cram reading down the throats of students who are slow to mature. As a result, when they finally do mature, they don't want anything to do with reading.

Reading readiness tests are very accurate and well developed. Children who are determined to be unready to read should be deferred from reading instruction. By fourth grade virtually all children are ready for reading instruction and by sixth grade those children are performing as well as the other students. Recognising this phenomenon, a talented teacher, who introduced me to these realisations, started a private learning facility specialising in reading instruction to only fourth, fifth and sixth graders.

He was careful to use teaching methods that were different from their previous schools. The teaching methods were actually no more effective, but were able to introduce the student to reading in a way that the student had not been previously negatively conditioned.

With people who cannot draw, cannot spell, cannot sing, cannot learn foreign languages, it is amazing to me that it is difficult for some people to understand there are people who cannot read, or are poor readers. Low reading ability is a perfectly natural and normal occurrence for a percentage of the population just as is advanced reading ability.

For the poor readers, the written word makes as much sense as a blackboard full of advanced calculus does to most of us. The percentage of non-readers and poor readers is growing; but, it is not the fault of the schools or the parents. Reading is not a heritably guaranteed ability. There are powerful political forces which are unfairly punishing teachers and schools who happen to be populated by children of low reading ability.

Some would like to think that anyone can be anything they want to be; that every human is capable of becoming a college graduate, a physician, a classical musician, a fighter pilot, or an author. Unfortunately, this quixotic idea comes under the heading of "unrealistic idealism" for it is opposed to all evidence. Every attempt to measure the performance of any human behaviour (when displaying performance measure against numbers of people) always produces some sort of Gaussian curve (a bell shaped curve) as would be predicted by the requirement of variation in biological evolution. The majority of the performers fall in a range around the average while the high and low performers fall off in number.

## Transfer of Learning

Transfer of learning is the study of the dependency of human conduct, learning, or performance on prior experience. The notion was originally introduced as *transfer of practice* by Edward Thorndike and Robert S. Woodworth. They explored how individuals would transfer learning in one context to another context that shared similar characteristics – or more formally how “improvement in one mental function” could influence another related one.

Their theory implied that transfer of learning depends on the proportion to which the learning task and the transfer task are similar, or where “identical elements are concerned in the influencing and influenced function”, now known as *identical element theory*. Transfer research has since attracted much attention in numerous domains, producing a wealth of empirical findings and theoretical interpretations. However, there remains considerable controversy about how transfer of learning should be conceptualised and explained, what its probability occurrence is, what its relation is to learning in general, or whether it may be said to exist at all.

Most discussions of transfer to date can be developed from a common operational definition, describing it as the process and the effective extent to which past experiences (also referred to as the transfer source) affect learning and performance in a current novel situation (the transfer target) (Ellis, 1965; Woodworth, 1938). This, however, is usually where the general consensus between various research approaches ends.

*There are a wide variety of viewpoints and theoretical frameworks apparent in the literature. For review purposes, these are categorised as follows:*

- A taxonomical approach to transfer research that usually intends to categorise transfer into different types;
- An application domain-driven approach by focusing on developments and contributions of different disciplines that have traditionally been interested in transfer;
- The examination of the psychological scope of transfer models with respect to the psychological functions or faculties that are being regarded; and
- A concept-driven evaluation, which reveals underlying relationships and differences between theoretical and empirical traditions.

## Transfer Taxonomies

Of the various attempts to delineate transfer, typological and taxonomic approaches belong to the more common ones. Taxonomies are concerned with distinguishing different types of transfer, and therefore less involved with labelling the actual vehicle of transfer, *i.e.*, what is the explanatory mental unit of transfer that is carried over. Hence, a key problem with many transfer taxonomies is that they offer an excessive number of labels for different types of transfer without engaging in a discussion of the underlying concepts that

would justify their distinction; *i.e.*, similarity and the nature of transferred information. This makes it very difficult to appreciate the internal validity of the models.

The following table presents different types of transfer, as adapted from Schunk (2004, p. 220).

Type	Characteristics
Near	Overlap between situations, original and transfer contexts are similar.
Far	Little overlap between situations, original and transfer settings are dissimilar.
Positive	What is learned in one context enhances learning in a different setting.
Negative	What is learned in one context hinders or delays learning in a different setting.
Vertical	Knowledge of a previous topic is essential to acquire new knowledge.
Horizontal	Knowledge of a previous topic is not essential but helpful to learn a new topic.
Literal	Intact knowledge transfers to new task.
Figural	Use some aspect of general knowledge to think or learn about a problem.
Low Road	Transfer of well-established skills in almost automatic fashion.
High Road	Transfer involves abstraction so conscious formulations of connections between contexts.
High Road/ Forward	Abstracting situations from a learning context to a potential transfer context.
Reaching	
High Road/ Backward	Abstracting in the transfer context features of a previous situation where new skills and knowledge were learned.
Reaching	

Apart from the effect-based distinction between negative and positive transfer, taxonomies have largely been constructed along two, mostly tacit, dimensions. One concerns the predicted relationship between the primary and secondary learning situation in terms of the categorical overlap of features and knowledge specificity constraints. The other concerns general assumptions about how transfer relationships are established, in terms of mental effort and cognitive process.

### **The Effect-perspective: Positive vs Negative Transfer**

Starting by looking at the effect side of transfer – in terms of the common performance criteria, speed and accuracy – transfer theories distinguish between two broad classes that underlie all other classifications: *negative* and *positive* transfer. Negative transfer refers to the impairment of current learning and performance due to the application of non-adaptive or inappropriate information or behaviour. Therefore, negative transfer is a type of interference effect of

prior experience causing a slow-down in learning, completion or solving of a new task when compared to the performance of a hypothetical control group with no respective prior experience. Positive transfer, in contrast, emphasizes the beneficial effects of prior experience on current thinking and action. It is important to understand that the positive and negative effects of transfer are not mutually exclusive, and therefore real-life transfer effects are probably mostly a mixture of both. Positive transfer: transfer of learning or training is said to be positive when the learning or training carried out in one situation proves helpful to learning in another situation. Examples of such transfer are:

- The knowledge and skills related to school mathematics help in the learning of statistical computation;
- The knowledge and skills acquired in terms of addition and subtraction in mathematics in school may help a child in the acquisition of knowledge and skills regarding multiplication and division;
- Learning to play badminton may help an individual to play ping pong (table tennis) and lawn tennis.

### **The Situation Perspective: Specific vs General, Near vs Far Transfer**

The situation-driven perspective on transfer taxonomies is concerned with describing the relation between transfer source (*i.e.*, the prior experience) and transfer target (*i.e.*, the novel situation). In other words, the notion of novelty of the target situation *per se* is worthless without specifying the degree of novelty in relation to something that existed before. Butterfield and Nelson (1991), for example, distinguish between *within-task*, *across-task*, and *inventive* transfer. A similar classification approach reappears in many situation-driven transfer taxonomies (*e.g.*, *similar* vs. *different* situations, *example-to-principle* and vice versa, *simple-to-complex* and vice versa) and can be noted as distinctions made along the *specific vs. general* dimension. Mayer and Wittrock (1996, pp. 49ff.) discuss transfer under the labels of general “transfer of general skill” (*e.g.*, “Formal Discipline”, Binet, 1899), “specific transfer of specific skill” (*e.g.*, Thorndike’s, 1924a, b, “identical elements” theory), “specific transfer of general skill”, and “meta-cognitive control of general and specific skills” as a sort of combination of the previous three views.

Haskell’s (2001) taxonomy proposes a more gradual scheme of similarity between tasks and situations. It distinguishes between non-specific transfer (*i.e.*, the constructivist idea that all learning builds on present knowledge), application transfer (*i.e.*, the retrieval and use of knowledge on a previously learned task), context transfer (actually meaning context-free transfer between similar tasks), near vs. far transfer, and finally displacement or creative transfer (*i.e.*, an inventive or analytic type of transfer that refers to the creation of a new solution during problem solving as a result of a synthesis of past and current learning experiences). Both near and far transfer are widely used terms in the literature. The former refers to transfer of learning when task and/or context change slightly but remain largely similar, the latter to the application of learning experiences to related but largely dissimilar problems.

## The Process Perspective

The *specific vs. general* dimension applies not just to the focus on the relation between source and target, *i.e.*, from where to where is transferred, but also to the question about the transfer process itself, *i.e.*, what is transferred and how. *Reproductive vs. productive* transfer are good examples of this type of distinction, whereas reproductive transfer refers to the simple application of knowledge to a novel task, productive transfer implies adaptation; *i.e.*, mutation and enhancement of retained information.

A similar dichotomous distinction is the one between *knowledge* transfer and *problem-solving* transfer (Mayer and Wittrock, 1996). Knowledge transfer takes place when knowing something after learning task *A* facilitates or interferes with the learning process or performance in task *B*. Knowledge used is referred to by many different terms, such as declarative or procedural types (Anderson, 1976), but it means that there are representational elements that suit *A* and *B*. Problem solving transfer, on the other hand, is described as somewhat more “fluid knowledge” transfer, so that experience in solving a problem *A* helps finding a solution to problem *B*. This can mean that the two problems share little in terms of specific declarative knowledge entities or procedures, but call for a similar approach, or solution search strategies (*e.g.*, heuristics and problem solving methods).

The issues discussed in problem-solving transfer literature are also closely related to the concepts of *strategic* and *theoretic* transfer (Haskell, 2001, p. 31), and cognitive research on analogical reasoning, rule-based thinking and meta-cognition. Indeed, far transfer can be considered as the prototypical type of transfer, and it is closely related to the study of analogical reasoning. Within the problem-solving literature the distinction between specific and general methods is made mostly with reference to Newell and Simon’s (1972) strong vs. weak problem solving methods.

Another concern that is frequently addressed in transfer taxonomies is the question of conscious effort. *High-road vs. low-road* transfer (Mayer and Wittrock, 1996; Salomon and Perkins, 1989) expresses a distinction between such instances of transfer where active retrieval, mapping, and inference processes take place, as opposed to those instances that occur rather spontaneously or automatically. Hence, low-road transfer concerns frequently employed mental representations and automated, proceduralised knowledge, and occurs preferably in near transfer settings. In contrast, high-road transfer is more conception-driven, and requires cognitive and meta-cognitive effort.

## Traditional Fields of Transfer Research

There are a nearly unlimited number of research fields that share some applied interest into the study of transfer, as it pertains to learning in general. Three fields that contributed in most substantial ways to the progress of transfer research, both from a conception and empirical point of view, are the fields of

education science, linguistics, and human-computer interaction (HCI). In fact, most transfer research has been conducted in reference to one of these applied settings, rather than in basic cognitive psychological laboratory conditions.

### **Education Science: Teaching for Transfer**

Due to their core concern with learning, educational science and practice are the classic fields of interest regarding transfer research, and probably the prime target for the application of theories. Transfer of learning represents much of the very basis of the educational purpose itself. What is learned inside one classroom about a certain subject should aid in the attainment of related goals in other classroom settings, and beyond that it should be applicable to the student's developmental tasks outside the school; the need for transfer becomes more accentuated. This is because the world educators teach in today is different from the world they themselves experienced as students, and differs equally from the one their students will have to cope with in the future. This is why the promotion of instruction designed to educate students on the process of enquiry so that they can apply it readily for themselves is recommended.

By nature of their applied interest, educationalists' main concern has been less with the question of how transfer takes place, and much more with under what conditions, or, that it happens at all. The basic conviction that student's learning and achievement levels depend primarily on learning and achievement prerequisites, has constituted a central part in educational learning theories for quite some time. The major focus in educational transfer studies has, therefore, been on what kind of initial learning enables subsequent transfer: *teaching for transfer*. Research on learning and transfer has identified key characteristics with implications for educational practice.

# 6

## Student Diversity

### LANGUAGE DISCOURSE

We can “know” the real and represent it through language — offer an analogy of it, a mirrored reflection, so to speak. He established three primary criteria for such discourse. Discourse should be coherent — a whole consisting of interrelated parts; comprehensive — an exhaustive representation of the relevant parts and their relationships to themselves and to the whole; and simple — uncomplicated in its representation of truth by issues of contingency, locality, established opinion, or other matters that might blur the distinction between discourse and reality. In short, the world is and discourse should be compositional.

Plato’s chief notion that meaning is produced by correlating language with the real continued to exert its influence long after his suggestion that Being was a totality of Ideal Forms. I only hinted at this rather complicated history of the transformation of “substance”, discussing just enough, I hope, to suggest that the concept of “culture” in the late nineteenth and early twentieth centuries could be seen as a transformation of God-substance (as Burke would have put it), one taking over the discursive function of the ground or foundation that had previously been attributed to Scripture.

As such transformations, concepts of culture cannot help but contribute to the creation of the conditions they purport to describe. Cultures exist by virtue of their being believed to exist. They are a peculiar product of compositional discourse. When alternatives are available, it is impossible for an individual to make the distinctions and decisions that consistently would associate her or

him with one culture rather than another unless that individual intentionally defers to a preconceived notion of cultural wholeness. Once that deferral takes place, however, something strange happens. First, the world divides up into two types of people, those who “belong” to our culture and those who do not. The way we actually behave and interpret then changes. We interpret the actions of those whom we presume to be “one of us” precisely as we would our own behaviour under the same conditions, as a set of systematic conformities to and deviations from the norm we ourselves project.

This mode of “cultural understanding” prevents us from even considering the possibility that the conditions affecting the other’s behaviour may be quite different from those that would affect us. We presume to understand and so free ourselves to judge. Obviously, such a mode of understanding can be very efficient and therefore have considerable survival value for small groups of people living in similar conditions, and who thus actually say and do similar things for similar purposes.

As societies become more complex, however, maintaining the illusion of living under the same conditions — a requirement of cultural understanding — becomes more and more difficult. Laws have to become more abstract and generalized as behaviours become more diverse and the society’s need to “transcend” particular differences becomes more acute. The less effective the sameness among individuals’ activities and their aims and purposes becomes, the more consciously the society has to impose standards of unity if it is to maintain its old modes of interpretation and persuasion. There have been, of course, many strategies for imposing standards of unity.

Besides law, however, the standardization of language has been attempted the most aggressively. In this chapter I am particularly interested in a line of change that leads to the structural theories of language and the political and rhetorical paralysis associated with modernism and postmodernism. I’m not so much interested in historical correctness here, in the sense of an exposition of cause and effect, as I am in exposing the consistency of an assumption about the requirements of meaningful discourse — an assumption deriving from the Platonic distinction between reality and appearance that reduced power to force, opposed truth to opinion, and so eventually led towards the twentieth century’s sense of human powerlessness within a relativistic universe. Church scholasticism following Augustine had put the world out of the epistemological loop.

To Augustine, the world as perceived was insignificant; the Bible, however, was “the canon” of “divinely inspired writings” that “could not have been said in any other way”. Consider what this pronouncement implies. As a canon, the Bible is a closed system of writings. That the writings could contradict themselves or one another is, to Augustine, inconceivable.

As he exclaims when examining an apparent contradiction in Paul’s first epistle to Timothy, “Does the Apostle contradict himself?” Of course, he cannot. It is not just that Paul speaks truth and, therefore, as with Plato’s texts, that any

apparent contradictions have to be resolved in favour of coherence; it is that Paul could not have spoken otherwise. Augustine, concerned about the apparent ineloquence of Biblical writings in comparison to pagan, declared that where “I do not understand these [Biblical writings] their eloquence appears to me to be less, but I do not doubt that it is like that eloquence I find in places where I do understand them”.

By declaring that the Biblical authors could not have spoken otherwise, he implies that they could not have stylistically varied their words and still said the same thing, could not vary the part without substantially altering the whole. With this declaration, Augustine establishes the Bible as a closed system reflecting the cosmic totality, a unity of form and content, and therefore the standard of Truth and Beauty against which historically concrete beliefs and values are to be measured.

In short, with a gesture he created the grounds of a discursive tradition that would last more than a thousand years. During the Renaissance, however, the medieval assumption that the Bible alone could sufficiently ground discourse had begun to dissolve. As it did, rhetorical theory, which had received little attention after Augustine, again became a central intellectual concern.

The reasons for this renewed interest are, of course, multifold. Thomas M. Conley in *Rhetoric in the European Tradition* refers to two significant conditions in particular. The first is the internecine conflict both among Western Christians and between Rome and Constantinople. Something more than a mutual reference to Biblical authority was evidently required, and something less destructive than force of arms was urgently desired as a means towards resolving differences. Rhetoric seemed to be a practical, although hardly an ideal, instrument for peace.

The second change in condition was the radical revision of the past stimulated in the Latin world by the discovery and dissemination of significant, previously unknown Latin and Greek rhetorical texts. Especially influential were Cicero's speeches, correspondence, and, crucially, his *De oratore*. Together these presented an image of thought and speech actively engaged in solving concrete human problems, in resolving human conflicts, and, perhaps most important, debating the nature and aims of rhetoric itself.

One response to this new set of conditions has become known as “humanism,” primarily because of the humanists' redirection of interest away from celestial and towards mundane concerns. One of the humanists, Erasmus, is of special interest to the story I am now telling because he represents a way not taken that contrasts sharply with the narrative lines leading to today's culturalist rhetoric. Erasmus was indeed Christian, but he was also a skeptic for whom the chief characteristic of human beings is our finitude, a characteristic that so limits our rationality that faith necessarily overshadows epistemology at every turn.

For Erasmus, the severe limits of reason suggest that true rationality requires devising modes of thought and discourse that foreground uncertainty and make it obvious that decisions spring from ultimately unjustifiable beliefs guided by individual desire. Erasmus's understanding of the human condition resulted in

a rhetoric that in practice consumed all invention and magnified it through the ideal of *copia*. . . an abundance of alternatives in both expression and subject matter that “are so interconnected in reality that one cannot easily separate one from the other”.

*Copia* exerted itself in argumentation through a balanced presentation of possibilities, rather like the Sophists’ *antilogic*. These possibilities were primarily generated from scholarly tradition, classical thought, and Scripture, all of which, the Bible included, were open to multiple interpretations that weighed more heavily in some contextualization than in others, but that ultimately had to be remanded to the individual for a decision.

Social coherence — peace — then, depended, first, upon the persuasive power of learned individuals capable of taking an enormous number of possibilities into consideration and, second, upon the willingness of those individuals to submit to authority once the possibilities had been played out. In an uncertain world, faith in authoritative figures must ultimately prevail. Erasmus’s political and religious conservatism notwithstanding, the important thing to note is that for him the very grounds of discourse are negotiable and debatable, even though ultimately the authority of those grounds, once established, must be treated as if absolute.

Moreover, that authority rests upon its access to and active consideration of the alternatives discovered in a controversial and very obviously plural scholarly tradition. And most important, fluency in that tradition defined membership in the community the humanist addressed, not narrow political, geographical, or linguistical boundaries.

Such a community was certainly elitist; nevertheless, those with the education and training necessary to enter it could have the sense of actively shaping their world, not simply sojourning in a world ready-made. For Ramus the world was ready-made, and by God. Unlike Erasmus, who doubted the ability of humans to understand the world, Ramus thought he knew precisely how both the world and God’s mind worked. The real and the divine were sublimely logical, binomially logical, and an integrated whole. Theoretically, one could catalogue the entire universe in terms of its dichotomous logical interrelationships of part to part — an epistemological and ontological totality Ramists would call “encyclopedia.”

Thus, by aligning the closed Biblical canon with a closed system of logic to create an image of total intelligibility, Ramus could claim that meanings and beings were knowable in terms of their relationships. Even human beings were to be understood in relational terms. Richardson would extend this claim saying that the truth of how things are — including what the Bible means — is to be found only through involvement in social life, through engagement with the world and with others, not through detachment from social life and encyclopedic natural life.

In other words, “God’s Idea” regulated the natural world, and if social life was meant to mirror the mutual dependencies of natural elements, then “God’s

Word” could be understood as reflecting the former and refracting the latter. The Bible’s meaning, therefore, was accessible to anyone to whom God had given the grace to “experience,” and not merely to know abstractly, the isomorphism of God’s World and Word. To anyone without grace, however, the Bible was as subject to multiple, self-interested interpretations as any other text.

Since to Ramus God’s Word was *logos*, binomially logical, and the world, made by God, was also logical, and since dialectical logic was available to and in fact defined human beings, it was possible to know with near certainty exactly how God wanted human beings to resolve their controversies. Ramists like Richardson would argue, for instance, that human relationships could function logically only in what Ramus had called “relative” relationships (relationships of mutual causality such that, for one half of a dichotomy to exist the other half has to exist) of which there are only two types, natural (as a father and son) and consensual (as a buyer and seller, or husband and wife).

To be legitimate (*i.e.*, divinely authorized because logical), the latter required mutual consent. By this logic, the appointment of a minister to a congregation without the prior consent of both minister and congregation is simply, flatly wrong. There can be no argument about it. The difference between Erasmus and Ramus can be described as one between an assumption that discursive grounds are fully negotiable until authoritatively established and the contrary assumption that they are fixed in advance.

For Erasmus, what matters most is what the individual believes others will believe, thus his focus upon tradition, historical situations, and the invention of copious alternatives to the description and solution of problems. For Ramus, what matters most is a non-negotiable truth completely unaffected by what others believe, by historical circumstances, or by personal desire — a truth accessible because the method for finding it and the language for expressing it have been fixed in advance.

In short, Erasmus is concerned almost exclusively with discursive power — persuasion to a possible conceptual whole from elements that others will consider relevant; Ramus is concerned almost exclusively with rhetorical force — persuasion from a conceptual whole towards conclusions that others will (by virtue of the method entailed in the whole to which they have already agreed) consider necessary.

Historically, Ramus won and Erasmus lost; that is, force won out over power in the battle for theoretical attention. The single notable exception lay in the work of Giambattista Vico, who, in his struggle against the domination of Cartesianism during the early eighteenth century, argued that the concept of truth should not be restricted to “eternal” abstract truth. Prudence demands attention as well to those “concrete or specific truths” which “change momentarily from truths to untruths”.

Part of truth, part of the reality of any situation, was the opinions about it held by others. Vico considered the failure to be concerned “with the opinions

of others” to be the chief source of political and rhetorical ineptitude, whereas attention to the opinions of one’s audience was the “essence” of eloquence. When we recognize human opinion as being part of the reality one is trying to describe, we can no longer, like the abstract scientist, be satisfied with “reducing a large multitude of physical effects of a single cause”; instead, we will “ferret out the greatest possible number of causes which may have produced the single event, and . . . conjecture which of all these causes is the true one”.

To Vico, in the world as lived, appearance is as effective as reality, and to ignore reality’s social dimension was simply foolish. Unfortunately, although today scholars have recognized that Vico was grappling with issues that would not reemerge until the late nineteenth and twentieth centuries, he had almost no influence during his time and was seen by most as a reactionary against the new science.

The revolutionary spirit of the times demanded a view of discourse and truth that could ignore tradition and the beliefs of others. Unlike Erasmus’s and Vico’s humanism, Ramism had encouraged a casual disregard of traditional authority and, through its alignment with Protestantism, reliance upon individual experience.

Ramism, too, would lose adherents as that same reliance upon experience, once it became directed towards the natural world, would contradict the Ramist claim that the logical mechanisms of the universe could be known a priori and knowledge of individual truths could be deduced from it. Nevertheless, Erasmus and Ramus continued to influence discourse theory after the Renaissance in its two opposing tendencies predominant in the eighteenth and nineteenth centuries.

One tendency would be to claim that normative discursive patterns are discoverable and accessible, while the other would be to claim that such patterns have yet to be discovered or produced. Both, however, will subscribe to the old Platonic assumption that discourse *should* be “correct” and subordinated to some normative pattern.

## NEW RHETORIC

These reasons may be best seen through a brief examination of how Bacon revised the traditional rhetorical canon. In traditional rhetoric, the processes of invention were designed to discover what a rhetor’s audience believed and how they thought. Aristotle’s rhetoric, by far the most influential, had pursued invention through two lists of topics, or “places,” where arguments could be found.

One of these lists mapped out general modes of thinking; the other was an incomplete list suggesting that people used different kinds of arguments for different subjects in different settings. The aim here was to know the audience. If the ancients believed that knowledge was power, the knowledge was of the communities to whom they spoke.

In contrast, for Bacon, who coined the phrase “knowledge is power,” the knowledge was of empirical “reality,” as for Ramus it had been knowledge of

the dialectical encyclopedia. Accordingly, like Ramus, Bacon degraded rhetorical invention. The only knowledge that matters, knowledge about how the world works, Bacon assigned to science. Rhetorical invention was “no Invention, but a Remembrance or Suggestion” of what we have learned through scientific methods.

Bacon’s famous definition of rhetoric therefore completely altered the very notion of persuasion. He said, “The duty and office of Rhetoric is to apply Reason to Imagination for the better moving of the will”. If classical rhetors had adjusted their arguments in order to accommodate the established will of their audiences, this new rhetoric sought to alter the audience’s will itself, by subordinating it to “reason” — to scientific, inductively established knowledge. This is why knowledge is power.

In effect, empirical knowledge became the rhetorical substitute for the Holy Scripture that in the Middle Ages had founded communion. Whereas in classical rhetorics, power was achieved through establishing one’s solidarity with a community, through the identification of the rhetor’s desires with those of a community’s members, now power was defined as the capacity to alter what the audience wants — to change the audience’s minds by bringing them under the domination of reason, as defined by scientific method.

With the alteration of the notion of persuasion came corresponding alterations in the aims and methods of persuasion. Primarily, rhetoric came to be seen unabashedly as manipulative power-seeking, although ideally subservient to scientific truth. By the late eighteenth century, as George Campbell put it in his highly influential treatise *The Philosophy of Rhetoric*, the best orator was thought to combine appeals to the intellect and the passions in order to produce “an irresistible power over the thoughts and purposes of his audience.” Seeking such manipulative power was, however, quite legitimate:

It is this which hath been so justly celebrated as giving one man an ascendant over others, superior even to what despotism itself can bestow; since by the latter the more ignoble part only, the body and its members are enslaved; whereas from the dominion of the former, nothing is exempted, neither judgment nor affection, not even the inmost recesses, the most latent movements of the soul.

In other words, people want, and should want, what reason says is best, just as once they should have wanted to obey God. Nature becomes the general standard of what is desirable. However, we must remember that the trend influenced by Bacon and Locke saw the communication of the truth of nature facilitated by strict linguistic conventionality. What this meant socially and rhetorically can be quickly illustrated by Hugh Blair *Lectures on Rhetoric and Belles Lettres*.

For Blair, what correctness of diction was to communicability, correctness of taste was to desirability. It therefore could no more be possible that individuals could legitimately disagree about the desirability of the same object than they could legitimately disagree about the meaning of the same word.

A standard was necessary. Of course, “nature is the standard of taste”, and if there were “any one person who possessed in full perfection all the powers of

human nature, whose internal senses were in every instance exquisite and just, and whose reason was unerring and sure” we could rely upon that person for our standard (just as Jesus’s life had provided a moral standard).

There being no one person with this kind of authority, however, the next best standard is human nature in general. That is, “That which men concur the most in admiring, must be held the most beautiful. His taste must be esteemed just and true, which coincides with the general sentiments of men”. Blair’s standard is certainly not a simple majority rule; rather, “when we refer to the concurring sentiments of men as the ultimate test of what is to be accounted beautiful in the arts, this is to be always understood of men placed in such situations as are favourable to the proper exertions of taste”. These, obviously, are the educated men of “polished and flourishing nations”.

All that is to be said about correctness of taste goes also for correctness of diction. Thus, linguistic and rhetorical standards are to be found in the established conventionality of the upper classes. Richard Whately articulated this as a general principle in his *Elements of Rhetoric*: “There is a Presumption,” he said, “in favour of every existing institution”.

When language is perceived as a kind of measuring stick, a tool for the correct transmission of information, then it is obvious that “a change is not good in itself”; so, “he that demands change should show cause for it:”

## STANDARDIZING LANGUAGE

Nineteenth-century theories of rhetoric and language did offer cause for altering, or rather, standardizing, language, which had now come to be regarded as an institution, and in the Victorian age, institutions had come to be regarded as the proper seats of power. Tony Crowley has done a fine, although brief, study of the history of the English movement towards standardization. The term “standard language,” he says, was “coined in the 1858 Proposal for the New/Oxford English Dictionary” during the debate over what was to be included in its volumes.

He notes that “the arguments about whether there was such a standard form had raged for well over a century and a half, its locus classicus being Locke’s extension of his arguments in favour of social stability to language, particularly in his warnings of the dangers of formal and semantic instability.” According to Crowley, nineteenth-century scholars saw “standard language” as a project to be accomplished rather than as a fact to be described.

Unlike their eighteenth-century counterparts, they saw linguistic unity as more a political than an epistemological necessity. As one nineteenth-century linguistic historian put it, “Unity of speech is essential to the unity of a people. Community of language is a stronger bond than identity of religion or government, and contemporaneous nations of one speech, however formally separated by differences of creed or of political organization, are essentially one in culture, one in tendency, one in influence”.

The felt need for linguistic norms for politics' sake was echoed in other areas, as well, especially in education and aesthetics. In literary aesthetics, the eventual conviction that there was a norm would lead during the first half of the twentieth century to an extraordinary emphasis upon aesthetic effects such as parody, irony, and personal "style" that rely for their recognition upon the assumption of there being linguistic norms. Typically, those who believe in the necessity of such norms also believe that in their time the language is degraded and in need of rehabilitation. For example, in 1948 Cleanth Brooks would lament "the depletion and corruption of the very language itself" and insist that "the modern poet has the task of rehabilitating a tired and drained language so that it can convey meanings once more with force and with exactitude".

Crowley's study makes it clear, however, that norms such as those Brooks laments exist only as an ideal for the elite. Thus, we should suspect claims that "linguistic fragmentation" is a recent and specifically postmodern phenomenon. Fredric Jameson, for instance, has suggested that postmodern "pastiche" has displaced high modernist parody, and this in turn, has been followed by a linguistic fragmentation of social life itself to the point where the norm itself is eclipsed: reduced to a neutral and reified media speech (far enough from the Utopian aspirations of the inventors of Esperanto or Basic English), which itself then becomes but one more ideolect among many. The loss of the "norm," however, could only be a loss for those few who had convinced themselves that there ever was a norm to lose.

## WORD GENERALISM

Such words as credible, certitude, intangible are entirely welcome in English because each represents a unitary, well-nuanced idea and because their formal analysis (cred-ible, certitude, in-tang-ible) is not a necessary act of the unconscious mind (cred-, cert-, and tang- have no real existence in English comparable to that of good- in goodness).

A word like intangible, once it is acclimated, is nearly as simple a psychological entity as any radical monosyllable (say vague, thin, grasp). In German, however, polysyllabic words strive to analyse themselves into significant elements. Hence vast numbers of French and Latin words, borrowed at the height of certain cultural influences, could not maintain themselves in the language.

Latin-German words like *kredibel* "credible" and French-German words like *reussieren* "to succeed" offered nothing that the unconscious mind could assimilate to its customary method of feeling and handling words. It is as though this unconscious mind said: "I am perfectly willing to accept *kredibel* if you will just tell me what you mean by *kred-*."

Hence German has generally found it easier to create new words out of its own resources, as the necessity for them arose. The psychological contrast between English and German as regards the treatment of foreign material is a contrast that may be studied in all parts of the world. The Athabaskan languages

of America are spoken by peoples that have had astonishingly varied cultural contacts, yet nowhere do we find that an Athabaskan dialect has borrowed at all freely from a neighbouring language.

These languages have always found it easier to create new words by compounding afresh elements ready to hand. They have for this reason been highly resistant to receiving the linguistic impress of the external cultural experiences of their speakers. Cambodian and Tibetan offer a highly instructive contrast in their reaction to Sanskrit influence. Both are analytic languages, each totally different from the highly wrought, inflective language of India. Cambodian is isolating, but, unlike Chinese, it contains many polysyllabic words whose etymological analysis does not matter. Like English, therefore, in its relation to French and Latin, it welcomed immense numbers of Sanskrit loan-words, many of which are in common use to-day.

There was no psychological resistance to them. Classical Tibetan literature was a slavish adaptation of Hindu Buddhist literature and nowhere has Buddhism implanted itself more firmly than in Tibet, yet it is strange how few Sanskrit words have found their way into the language. Tibetan was highly resistant to the polysyllabic words of Sanskrit because they could not automatically fall into significant syllables, as they should have in order to satisfy the Tibetan feeling for form. Tibetan was therefore driven to translating the great majority of these Sanskrit words into native equivalents.

The Tibetan craving for form was satisfied, though the literally translated foreign terms must often have done violence to genuine Tibetan idiom. Even the proper names of the Sanskrit originals were carefully translated, element for element, into Tibetan; *e.g.*, Suryagarbha “Sun-bosomed” was carefully Tibetanized into Nyi-mai snying-po “Sun-of heart-the, the heart (or essence) of the sun.” The study of how a language reacts to the presence of foreign words — rejecting them, translating them, or freely accepting them — may throw much valuable light on its innate formal tendencies.

The borrowing of foreign words always entails their phonetic modification. There are sure to be foreign sounds or accentual peculiarities that do not fit the native phonetic habits. They are then so changed as to do as little violence as possible to these habits. Frequently we have phonetic compromises. Such an English word as the recently introduced camouflage, as now ordinarily pronounced, corresponds to the typical phonetic usage of neither English nor French.

The aspirated *k*, the obscure vowel of the second syllable, the precise quality of the *l* and of the last *a*, and, above all, the strong accent on the first syllable, are all the results of unconscious assimilation to our English habits of pronunciation.

They differentiate our camouflage clearly from the same word as pronounced by the French. On the other hand, the long, heavy vowel in the third syllable and the final position of the “zh” sound (like *z* in *azure*) are distinctly un-English, just as, in Middle English, the initial *j* and *v* must have been felt at first as not

strictly in accord with English usage, though the strangeness has worn off by now. In all four of these cases — initial *j*, initial *v*, final “*zh*,” and unaccented *a* of *father* — English has not taken on a new sound but has merely extended the use of an old one.

Occasionally a new sound is introduced, but it is likely to melt away before long. In Chaucer’s day the old Anglo-Saxon *ü* (written *y*) had long become unrounded to *i*, but a new set of *ü*-vowels had come in from the French (in such words as *due*, *value*, *nature*). The new *ü* did not long hold its own; it became diphthongized to *iu* and was amalgamated with the native *iw* of words like *new* and *slew*. Eventually this diphthong appears as *yu*, with change of stress — *dew* (from Anglo-Saxon *deaw*) like *due* (Chaucerian *dü*). Facts like these show how stubbornly a language resists radical tampering with its phonetic pattern.

Nevertheless, we know that languages do influence each other in phonetic respects, and that quite aside from the taking over of foreign sounds with borrowed words. One of the most curious facts that linguistics has to note is the occurrence of striking phonetic parallels in totally unrelated or very remotely related languages of a restricted geographical area. These parallels become especially impressive when they are seen contrastively from a wide phonetic perspective. Here are a few examples.

The Germanic languages as a whole have not developed nasalized vowels. Certain Upper German (Suabian) dialects, however, have now nasalized vowels in lieu of the older vowel + nasal consonant (*n*). Is it only accidental that these dialects are spoken in proximity to French, which makes abundant use of nasalized vowels? Again, there are certain general phonetic features that mark off Dutch and Flemish in contrast, say, to North German and Scandinavian dialects.

One of these is the presence of unaspirated voiceless stops (*p*, *t*, *k*), which have a precise, metallic quality reminiscent of the corresponding French sounds, but which contrast with the stronger, aspirated stops of English, North German, and Danish.

Even if we assume that the unaspirated stops are more archaic, that they are the unmodified descendants of the old Germanic consonants, is it not perhaps a significant historical fact that the Dutch dialects, neighbours of French, were inhibited from modifying these consonants in accordance with what seems to have been a general Germanic phonetic drift?

Even more striking than these instances is the peculiar resemblance, in certain special phonetic respects, of Russian and other Slavic languages to the unrelated Ural-Altaic languages of the Volga region. The peculiar, dull vowel, for instance, known in Russian as “*yeri*” has Ural-Altaic analogues, but is entirely wanting in Germanic, Greek, Armenian, and IndoIranian, the nearest Indo-European congeners of Slavic.

We may at least suspect that the Slavic vowel is not historically unconnected with its Ural-Altaic parallels. One of the most puzzling cases of phonetic parallelism is afforded by a large number of American Indian languages spoken west of the Rockies.

Even at the most radical estimate there are at least four totally unrelated linguistic stocks represented in the region from southern Alaska to central California. Nevertheless all, or practically all, the languages of this immense area have some important phonetic features in common.

Chief of these is the presence of a “glottalized” series of stopped consonants of very distinctive formation and of quite unusual acoustic effect. In the northern part of the area all the languages, whether related or not, also possess various voiceless l-sounds and a series of “velar” (backguttural) stopped consonants which are etymologically distinct from the ordinary k-series. It is difficult to believe that three such peculiar phonetic features as I have mentioned could have evolved independently in neighbouring groups of languages.

How are we to explain these and hundreds of similar phonetic convergences? In particular cases we may really be dealing with archaic similarities due to a genetic relationship that it is beyond our present power to demonstrate. But this interpretation will not get us far.

It must be ruled entirely out of court, for instance, in two of the three European examples I have instanced; both nasalized vowels and the Slavic “yeri” are demonstrably of secondary origin in Indo-European. However we envisage the process in detail, we cannot avoid the inference that there is a tendency for speech sounds or certain distinctive manners of articulation to spread over a continuous area in somewhat the same way that elements of culture ray out from a geographical centre.

We may suppose that individual variations arising at linguistic borderlands — whether by the unconscious suggestive influence of foreign speech habits or by the actual transfer of foreign sounds into the speech of bilingual individuals — have gradually been incorporated into the phonetic drift of a language.

So long as its main phonetic concern is the preservation of its sound patterning, not of its sounds as such, there is really no reason why a language may not unconsciously assimilate foreign sounds that have succeeded in worming their way into its gamut of individual variations, provided always that these new variations (or reinforced old variations) are in the direction of the native drift.

A simple illustration will throw light on this conception. Let us suppose that two neighbouring and unrelated languages, A and B, each possess voiceless l-sounds (compare Welsh ll). We surmise that this is not an accident. Perhaps comparative study reveals the fact that in language A the voiceless l-sounds correspond to a sibilant series in other related languages, that an old alternation s: sh has been shifted to the new alternation l (voiceless): s. Does it follow that the voiceless l of language B has had the same history? Not in the least. Perhaps B has a strong tendency towards audible breath release at the end of a word, so that the final l, like a final vowel, was originally followed by a marked aspiration. Individuals perhaps tended to anticipate a little the voiceless release and to “unvoice” the latter part of the final l-sound (very much as the l of English words like *felt* tends to be partly voiceless in anticipation of the voicelessness of the t).

Yet this final l with its latent tendency to unvoicing might never have actually developed into a fully voiceless l had not the presence of voiceless l-sounds in A acted as an un-conscious stimulus or suggestive push towards a more radical change in the line of B's own drift. Once the final voiceless l emerged, its alternation in related words with medial voiced l is very likely to have led to its analogical spread. The result would be that both A and B have an important phonetic trait in common.

Eventually their phonetic systems, judged as mere assemblages of sounds, might even become completely assimilated to each other, though this is an extreme case hardly ever realized in practice. The highly significant thing about such phonetic inter influencings is the strong tendency of each language to keep its phonetic pattern intact. So long as the respective alignments of the similar sounds is different, so long as they have differing "values" and "weights" in the unrelated languages, these languages cannot be said to have diverged materially from the line of their inherent drift.

In phonetics, as in vocabulary, we must be careful not to exaggerate the importance of interlinguistic influences. I have already pointed out in passing that English has taken over a certain number of morphological elements from French. English also uses a number of affixes that are derived from Latin and Greek.

Some of these foreign elements, like the -ize of materialize or the -able of breakable, are even productive to-day. Such examples as these are hardly true evidences of a morphological influence exerted by one language on another. Setting aside the fact that they belong to the sphere of derivational concepts and do not touch the central morphological problem of the expression of relational ideas, they have added nothing to the structural peculiarities of our language.

English was already prepared for the relation of pity to piteous by such a native pair as luck and lucky; material and materialize merely swelled the ranks of a form pattern familiar from such instances as wide and widen. In other words, the morphological influence exerted by foreign languages on English, if it is to be gauged by such examples as I have cited, is hardly different in kind from the mere borrowing of words. The introduction of the suffix -ize made hardly more difference to the essential build of the language than did the mere fact that it incorporated a given number of words.

## **INDIVIDUAL STYLES OF LEARNING AND THINKING**

All of us, including our students, have preferred ways of learning. Teachers often call these differences learning styles, though this term may imply more consistency across situations than is really the case. One student may like to make diagrams to help remember a reading assignment, whereas another student may prefer to write a sketchy outline instead. Yet in many cases the students could in principle reverse the strategies and still learn the material: if coaxed (or perhaps required), the diagram-maker could take notes for a change and

the note-taker could draw diagrams. Both might still learn using the alternate style, even if neither felt as comfortable as with the strategies they prefer.

This reality suggests that a balanced, middle-of-the-road approach may be a teacher's best response to students' learning styles. Or to put it another way: it is good to support students' preferred learning strategies where possible and appropriate, but neither necessary nor desirable to do so all of the time. Most of all, it is neither necessary nor possible to classify or label students according to seemingly fixed learning styles and then allow them to learn only according to those styles.

A student may prefer to hear new material rather than see it; he may prefer for you to explain something orally, for example, rather than to see it demonstrated in a video. But he may nonetheless tolerate or sometimes even prefer to see it demonstrated. In the long run, in fact, he may learn it best by encountering the material in both ways, regardless of his habitual preferences.

That said, there is evidence that individuals, including students, do differ in how they habitually think. These differences are more specific than learning styles or preferences, and psychologists sometimes call them cognitive styles, meaning typical ways of perceiving and remembering information, and typical ways of solving problems and making decisions. In a style of thinking called field dependence, for example, individuals perceive patterns as a whole rather than focus on the parts of the pattern separately. In a complementary tendency, called field independence, individuals are more inclined to analyse overall patterns into their parts. Cognitive research from the 1940s to the present has found field dependence/independence differences to be somewhat stable for any given person across situations, though not completely so. Someone who is field dependent (perceives globally or "wholistically") in one situation, that is, tends to a modest extent to perceive things globally or wholistically in other situations. Field dependence and independence can be important understanding students because the styles affect students' behaviours and preferences in school and classrooms. Field dependent persons tend to work better in groups, it seems, and to prefer "open-ended" fields of study like literature and history.

Field independent persons, on the other hand, tend to work better alone and to prefer highly analytic studies like math and science. The differences are only a tendency, however, and there are a lot of students who contradict the trends. As with the broader notion of learning styles, the cognitive styles of field dependence and independence are useful for tailoring instruction to particular students, but their guidance is only approximate. They neither can nor should be used to "lock" students to particular modes of learning or to replace students' own expressed preferences and choices about curriculum.

Another cognitive style is impulsivity as compared to reflectivity. As the names imply, an impulsive cognitive style is one in which a person reacts quickly, but as a result makes comparatively more errors. A reflective style is the opposite: the person reacts more slowly and therefore makes fewer errors. As you might expect, the reflective style would seem better suited to many academic demands

of school. Research has found that this is indeed the case for academic skills that clearly benefit from reflection, such as mathematical problem solving or certain reading tasks.

Some classroom or school-related skills, however, may actually develop better if a student is relatively impulsive. Being a good partner in a cooperative learning group, for example, may depend partly on responding spontaneously (*i.e.*, just a bit “impulsively”) to others’ suggestions; and being an effective member of an athletic team may depend on not taking time to reflect carefully on every move that you or your team mates make.

There are two major ways to use knowledge of students’ cognitive styles. The first and the more obvious is to build on students’ existing style strengths and preferences. A student who is field independent and reflective, for example, can be encouraged to explore tasks and activities that are relatively analytic and that require relatively independent work. One who is field dependent and impulsive, on the other hand, can be encouraged and supported to try tasks and activities that are more social or spontaneous. But a second, less obvious way to use knowledge of cognitive styles is to encourage more balance in cognitive styles for students who need it. A student who lacks field independence, for example, may need explicit help in organising and analysing key academic tasks (like organising a lab report in a science class). One who is already highly reflective may need encouragement to try ideas spontaneously, as in a creative writing lesson.

### **Multiple Intelligences**

For nearly a century, educators and psychologists have debated the nature of intelligence, and more specifically whether intelligence is just one broad ability or can take more than one form. Many classical definitions of the concept have tended to define intelligence as a single broad ability that allows a person to solve or complete many sorts of tasks, or at least many academic tasks like reading, knowledge of vocabulary, and the solving of logical problems. There is research evidence of such a global ability, and the idea of general intelligence often fits with society’s everyday beliefs about intelligence. Partly for these reasons, an entire mini-industry has grown up around publishing tests of intelligence, academic ability, and academic achievement. Since these tests affect the work of teachers.

But there are also problems with defining intelligence as one general ability. One way of summing up the problems is to say that conceiving of intelligence as something general tends to put it beyond teachers’ influence. When viewed as a single, all-purpose ability, students either have a lot of intelligence or they do not, and strengthening their intelligence becomes a major challenge, or perhaps even an impossible one. This conclusion is troubling to some educators, especially in recent years as testing school achievement has become more common and as students have become more diverse.

But alternate views of intelligence also exist that portray intelligence as having multiple forms, whether the forms are subparts of a single broader ability or are

multiple “intelligences” in their own right. For various reasons such this perspective has gained in popularity among teachers in recent years, probably because it reflects many teachers’ beliefs that students cannot simply be rated along a single scale of ability, but are fundamentally diverse.

One of the most prominent of these models is Howard Gardner’s theory of multiple intelligences. Gardner proposes that there are eight different forms of intelligence, each of which functions independently of the others. Each person has a mix of all eight abilities—more of one but less of another—that helps to constitute that person’s individual cognitive profile. Since most tasks—including most tasks in classrooms—require several forms of intelligence and can be completed in more than one way, it is possible for people with various profiles of talents to succeed on a task equally well.

In writing an essay, for example, a student with high interpersonal intelligence but rather average verbal intelligence might use his or her interpersonal strength to get a lot of help and advice from classmates and the teacher. A student with the opposite profile might work well alone, but without the benefit of help from others. Both students might end up with essays that are good, but good for different reasons.

As evidence for the possibility of multiple intelligences, Gardner cites descriptions of individuals with exceptional talent in one form of intelligence (for example, in playing the piano) but who are neither above nor below average in other areas. He also cites descriptions of individuals with brain damage, some of whom lose one particular form of intelligence (like the ability to talk) but retain other forms. In the opinion of many psychologists, however, the evidence for multiple intelligences is not strong enough to give up the “classical” view of general intelligence. Part of the problem is that the evidence for multiple intelligences relies primarily on anecdotes—examples or descriptions of particular individuals who illustrate the model—rather than on more widespread information or data. Nonetheless, whatever the status of the research evidence, the model itself can be useful as a way for teachers to think about their work. Multiple intelligences suggest the importance of diversifying instruction in order to honour and to respond to diversity in students’ talents and abilities. Viewed like this, whether Gardner’s classification scheme is actually accurate is probably less important than the fact there is (or may be) more than one way to be “smart.” In the end, as with cognitive and learning styles, it may not be important to label students’ talents or intellectual strengths.

It may be more important simply to provide important learning and knowledge in several modes or styles ways that draw on more than one possible form of intelligence or skill. A good example of this principle is your own development in learning to teach. It is well and good to read books about teaching (like this one, perhaps), but it is even better to read books and talk with classmates and educators about teaching and get actual experience in classrooms. The combination both invites and requires a wide range of your talents and usually proves more effective than any single type of activity, whatever your profile of cognitive styles or intellectual abilities happens to be.

## Gender Differences in the Classroom

Gender roles are the patterns of behaviours, attitudes, and expectations associated with a particular sex—with being either male or female. For clarity, psychologists sometimes distinguish gender differences, which are related to social roles, from sex differences, which are related only to physiology and anatomy.

## Differences in Cultural Expectations and Learning Styles

A culture is the system of attitudes, beliefs, and behaviours that constitute the distinctive way of life of a people. Although sometimes the term is also used to refer specifically to the artistic, intellectual and other “high-brow” aspects of life, I use it here more broadly to refer to everything that characterises a way of life—baseball games as well as symphony concerts, and McDonald’s as well as expensive restaurants.

## Accommodating Diversity in Practice

Briefly, then, Students differ in a multitude of ways, both individually and as groups. Individually, for example, students have *preferred learning styles* as well as preferred *cognitive or thinking styles*. They also have unique *cognitive profiles*, intelligence or competence that affect how and what they learn most successfully.

In addition to individual diversity, students tend to differ according to *behaviours associated with gender*, although there are many individual exceptions. *Motor abilities* as well as *motivation* and experience with athletics gradually differentiate boys and girls, especially when they reach high school and begin high school. *Socially*, boys tend to adopt relationships that are more active and wide-ranging than do girls. *Academically*, girls tend to be a bit more motivated and to receive slightly higher marks in school. *Teachers sometimes contribute to gender role differences*—perhaps without intending—by paying attention to boys more frequently and more publicly in class, and by distributing praise and criticism in ways differentiated by sex.

Students also differ according to *cultures, language, and ethnic groups* of their families. Many students are *bilingual*, with educational consequences that depend on their fluency in each of their two languages. If they have more difficulty with English, then programmes that add their first language together with English have proved to be helpful. If they have more difficulty with their first language, they are risk for language loss, and the consequences are also negative even if more hidden from teachers’ views.

In addition to language differences as such, students differ according to *how they use language*—in taking turns at speaking, in eye contact, social distance, wait time, and the use of questions. Some of these differences stem from cultural differences about self-identity, with non-Anglo culturally sometimes (but not always) supporting a more interdependent view of the self than Anglo culture or

the schools. Differences in attitudes and in use of language have several consequences for teachers. In particular—where appropriate—they should consider using cooperative activities, avoid highlighting individuals' accomplishments or failures, and be patient about students' learning to be punctual.

Hopefully, therefore, we have persuaded you—if you ever really needed persuading—that students are indeed diverse. The question that follows from this point is *what to do* about the diversity. We partially answered that question by making a number of teaching-related suggestions. But there is obviously more to be said about accommodating diversity—about actually working with students' differences and making them a resource rather than a burden or challenge. In the rest of this book therefore we offer more suggestions, not only about knowing how different one student can be from another, but also about diversifying teaching to acknowledge this fact. Differences among students are inevitably a challenge during all phases of teaching, from planning instruction, to implementing lessons and activities, to assessing students' learning after lessons or activities are all finished.

## STUDENT DEVELOPMENT

### Why Development Matters

Students' development matters for teachers, but the way it matters depends on the kind of teaching. If you teach a single, “self-contained” grade-level, then the benefits of knowing about development will be less explicit, but just as real, as if you teach many grade levels. Working exclusively with one grade (like, say, a third-grade classroom) highlights differences among students that happen in spite of their similar ages, and obscures similarities that happen because of their having similar ages.

Under these conditions it is easy to notice students' diversity, but somewhat harder to know how much of it comes from differences in their long-term development, as opposed to differences in shorter-term learning or immediate experiences. Yet this knowledge is useful in planning appropriate activities and in holding appropriate expectations about students. What changes can you expect to happen relatively soon simply from your current programme of activities, and which ones might not show up this year at all? These are questions that developmental psychology can help to answer.

If you teach multiple grade levels, as often happens to specialists or to teachers in middle school or high school, then your need for developmental knowledge will be more obvious because you will confront wide age differences on a daily basis. As a physical education teacher, for example, you may teach kindergarten children as well as sixth-graders, or seventh-graders as well as twelfth-graders, all in the course of a single day, or even of a single hour.

Diversity among your students will therefore be a more explicit mix of the developmental and non-developmental—of complex differences due to age as well as differences due to “other” factors, such as skills or knowledge learned

only recently. Nonetheless, your instructional challenge will be the same as the one faced by teachers of single-grade classes: you will want to know what activities and expectations are appropriate for your students. To answer this question, you will need to know something not only about your students, but also about general developmental trends during childhood and adolescence.

Note that developmental trends vary in two important ways. The first, as I indicated already, is in their generality. Some theories or models of development boldly assert that certain changes happen universally—happen, that is, to virtually every person on the planet. For example, a theory might assert that virtually every toddler acquires a spoken language, or that every teenager forms a sense of personal identity.

Individuals who do not experience these developments would be very rare as well as significantly disabled, no matter what family, community, or society they belong to. Other theories, however, propose developmental changes that are more limited in scope, claiming only that the changes happen to some people and only under certain conditions. Developing a female gender role, for example, does not happen to everyone, but only to the female part of the population, and the process differs according to the family, community, or society in which a child lives.

The second way that developmental trends vary is in how strictly they are sequenced and hierarchical. In some views about development, changes are thought to happen in a specific order and to build on each other—sort of a “staircase” model of development. For example, a developmental psychologist (and many of the rest of us, for that matter) might argue that young people must have tangible, hands-on experience with new materials before they can reason about the materials in the abstract.

The order cannot be reversed. In other viewpoints, developmental change happens, but not in a uniform sequence or with a common end point; change is more of a “kaleidoscope” than a staircase. A person who becomes permanently disabled, for example, may experience complex long-term changes in personal values and priorities. But the changes can in principle happen at any time during life, including childhood, and can take a variety of forms.

Except in the realm of physical development, educational psychologists have tended to emphasize explanations of development that are relatively general, universal and sequential, rather than specific to particular cultures or “merely” kaleidoscopic. Such models (sometimes called “grand theories”) have the advantages of concisely integrating many features of development, while also describing where “typical” children or adolescents end up in life. The preference for integrative perspectives makes sense given educators’ need to work with and teach large numbers of diverse students both efficiently and effectively. But the approach also risks overgeneralising or oversimplifying what happens to particular children and youth. It can also confuse what does happen as certain children (like the middle-class ones) develop with what should happen to all children. To understand these risks, imagine any two children of about the same

age who have clearly had very different experiences—for example, one child who grows up in poverty and another who grows up financially well-off. In what sense can we say that these two children experience the same underlying developmental changes as they grow up?

And how much should they even be expected to? Developmental psychology, and especially the broad theories of it emphasized in educational psychology, highlights the “sameness” or common ground between these two children as they mature, no matter how different they seem on the surface. Developmental knowledge, then, serves as counterpoint or balance to knowledge of the obvious complementary reality of teaching, diversity among students.

### **Physical Development During the School Years**

Although it may be tempting to think that physical development is the concern of physical education specialists, many aspects of it are actually quite relevant to other teachers as well. In first-grade, for example, it is important to know whether children can successfully manipulate a pencil. In later grades, it is important to know how long students can be expected to sit still without discomfort—actually a physical challenge itself. In all grades, it is important to have a sense of students’ health needs related to their age or maturity, if only to know who is likely to become ill with what illness, and what physical activities are reasonable and needed.

### **Trends in Height and Weight**

Typical growth in students’ height and weight are easy to summarise. The figure shows not only the average for each age from preschool through the end of high school, but also the range within which 90 per cent of children fall for each age. At age 6, for example, about when most children begin school, the average boy or girl is about 45 ½ inches tall, but 90 per cent of six year olds are between about 43 and 49 inches tall. Average weight at the same age is about 39 pounds, but ranges between about 35 and 53 pounds.

There are two important points to keep in mind. The first is that boys and girls are quite similar in height and weight during childhood, but diverge in the early teen-age years, when they reach puberty. For a time (approximately age 10-14), the average girl is taller, but not much heavier, than the average boy. After that the average boy becomes both taller and heavier than the average girl—though there remain individual exceptions. The preteen difference can be especially awkward for some children and youth, at least among those who aspire to looking like older teenagers or young adults. For young teens less concerned with “image,” though, the fact that girls are taller may not be especially important, or even noticed.

The second point is that as children get older, individual differences in weight diverge more radically than differences in height. Among 18-year-olds, the heaviest youngsters weigh almost twice as much as the lightest, but the tallest ones are only about 10 per cent taller than the shortest. Nonetheless, both height

and weight can be sensitive issues for some teenagers. Society (and therefore teenage peers) tends to favour relatively short women and tall men, as well as a thin body build, especially for girls and women.

Yet neither “socially correct” height nor thinness is the destiny for many individuals. Being overweight, in particular, has become a common, serious problem in modern society, due to the prevalence of diets high in sugar and trans fats and lifestyles low in activity. The educational system has unfortunately contributed to the problem as well, by gradually restricting the number of physical education courses and classes in the past two decades.

### **Puberty and Its Effects on Students**

The most universal physical development in students is puberty, which is the set of changes in early adolescence that bring about sexual maturity. Along with internal changes in reproductive organs are outward changes, such as growth of breasts in girls and of the penis in boys, as well as relatively sudden increases in height and weight. By about age 10 or 11, most children experience increased sexual attraction to others (usually heterosexual, though not always) that can affect social life both in school and elsewhere. By the end of high school, more than half of boys and girls report having experienced sexual intercourse at least once—though it is hard to be certain of the proportion because of the personal sensitivity of the information. In addition to creating obvious physical differences, puberty accentuates gender role differences for at least some teenagers. Girls who excelled at math or science in elementary school may curb some of their enthusiasm for and displays of success at these subjects. Boys who previously were not especially interested in sports may feel a new need to dedicate themselves to athletics in order to affirm their masculinity in the eyes of others.

Individual boys and girls who might have once worked together successfully on class projects may no longer feel comfortable doing so—or alternatively may now want to work together for non-academic rather than academic reasons. Such changes do not affect all youngsters equally, nor affect any one youngster equally on all occasions. An individual student may act like a young adult on one day, but more like a child on the next. In teaching children who are in the midst of puberty (especially early in the process), you will need to respond flexibly and supportively.

### **Development of Motor Skills**

Students’ fundamental motor skills are already developing when they begin kindergarten, but are still not yet perfectly coordinated. Five-year-olds generally can walk satisfactorily for most school-related purposes (if they could not, the schools would have to be organised very differently!). For some fives, running still looks a bit like a hurried walk, but usually it becomes more coordinated within a year or two. Similarly with jumping, throwing and catching: the large majority of children can do these things, though often a bit clumsily, by the

time they start school, and most improve their skills noticeably during the early elementary years. Whether or not physical skills become a special focus of teachers' concern, however, they can be quite important to students themselves. Whatever their grade level, students who are clumsy are aware of that fact and of its potentially negative effect on peer relationships. In the long term, self-consciousness and poor self-esteem can result for a child who is clumsy, especially if peers (or teachers and parents) place high value on participation in athletics. One research study confirmed, for example, what teachers and coaches sometimes suspect: that losers in athletic competitions tend to become less sociable and are more apt to miss athletic practices than winners.

### **Health and Illness**

By world standards, children and youth in the United States and other developed societies tend to be remarkably healthy, though much depends on how well-off their families are and on how much health care is available to them. Children from middle- and higher-income families experience far fewer serious or life-threatening illnesses than children whose families lack resources. All across the economic spectrum, however, parents and teachers often rightly note that children—especially the youngest ones—get far more minor illnesses than do adults. In 2004, for example, one government survey estimated that children get an average of 6-10 colds per year, but adults get only about 2-4 per year (National Institute of Allergies and Infectious Diseases, 2005). The difference probably exists because children's immune systems are not as fully formed as adults', while at the same time children are continually exposed to others at school, many of whom may be contagious themselves.

An indirect result of children's frequent illnesses is that teachers (along with airline flight attendants, incidentally) also report more frequent minor illnesses than do adults in general—about five colds per year, for example, instead of just 2-4. These "simple" illnesses are responsible for many lost days of school, both for students and for teachers, as well as many days when a student is present physically, but functions below par and simultaneously infects classmates. Learning, and often also teaching, therefore suffer because health is suffering.

The problem is not only the prevalence of illness as such (in the United States in winter, approximately one person gets infected with a minor illness every few seconds), but the fact that illnesses are not distributed uniformly among students, schools, or communities. Whether it is a simple cold or something more serious, illness is particularly common where living conditions are crowded, where health care is scarce or unaffordable, and where individuals live with frequent stresses of any kind.

As students get older and become teenagers, illnesses become less frequent, but other health risks emerge. The most widespread is the consumption of alcohol and the smoking of cigarettes. As of 2004, about 75 per cent of teenagers reported drinking an alcoholic beverage at least occasionally, and 22 per cent reported

smoking cigarettes. The good news about these figures is that they are part of a small, but steady decline in the frequencies over the past ten years or so.

The bad news is that teenagers also show increases in the abuse of some prescription drugs, such as inhalants, that act as stimulants. As with the prevalence of illnesses, the prevalence of drug use is not uniform, with a relatively small fraction of individuals accounting for a disproportionate proportion of usage. One survey, for example, found that a teenager was 3-5 times more likely to smoke or to use alcohol, smoke marijuana, or use drugs if he or she has a sibling who has also indulged these habits. Siblings, according to the research, seem to be more influential as role models than parents.

### **Cognitive Development**

Cognition refers to thinking and memory processes, and cognitive development refers to long-term changes in these processes. While cognition has been studied from several different perspectives and in the light of several theories, the one that is both the most widely known among educators and the most frankly “developmental” is the cognitive stage theory of a Swiss psychologist named Jean Piaget.

### **Social Development: Relationships and Personal Motives**

Social development refers to the long-term changes in relationships and interactions involving self, peers, and family. It includes both positive changes, such as how friendships develop, and negative changes, such as aggression or bullying.

### **Moral Development: Forming a Sense of Rights and Responsibilities**

Morality is a system of beliefs about ethics, about what is right and good compared to what is wrong or bad. Moral development refers to the changes in moral beliefs as a person grows older and gains maturity.

### **Understanding “The Typical Student” versus Understanding Students**

As every teacher knows, however, development is not that simple. A class of 25 or 30 students will contain 25 or 30 individuals who will be learning and developing along 25 or 30 distinct pathways. Why then study developmental patterns at all? Because underlying their obvious diversity, students do indeed show important similarities. My references to “the” student should not be understood, therefore, as referring to simple-minded stereotypes, but to tendencies around which real, live students often group themselves.

Pointing to developmental changes is like pointing to a flock of birds in flight: the flock has a general location, but individual birds also have their own locations and individual flight paths. As a teacher, I believe that the most helpful approach is to understand development and diversity not separately, but jointly. There are indeed similarities woven among the differences in students, but also differences woven among students’ commonalities.

## THE CRITICAL ROLE OF CLASSROOM MANAGEMENT

Teachers play various roles in a typical classroom, but surely one of the most important is that of classroom manager. Effective teaching and learning cannot take place in a poorly managed classroom. If students are disorderly and disrespectful, and no apparent rules and procedures guide behaviour, chaos becomes the norm. In these situations, both teachers and students suffer. Teachers struggle to teach, and students most likely learn much less than they should. In contrast, well-managed classrooms provide an environment in which teaching and learning can flourish. But a well-managed classroom doesn't just appear out of nowhere. It takes a good deal of effort to create—and the person who is most responsible for creating it is the teacher.

We live in an era when research tells us that the teacher is probably the single most important factor affecting student achievement—at least the single most important factor that we can do much about. To illustrate, as a result of their study involving some 60,000 students, S. Paul Wright, Sandra Horn, and William Sanders (1997) note the following:

The results of this study will document that the most important factor affecting student learning is the teacher. In addition, the results show wide variation in effectiveness among teachers. The immediate and clear implication of this finding is that seemingly more can be done to improve education by improving the effectiveness of teachers than by any other single factor. *Effective teachers appear to be effective with students of all achievement levels regardless of the levels of heterogeneity in their classes.* If the teacher is ineffective, students under that teacher's tutelage will achieve inadequate progress academically, regardless of how similar or different they are regarding their academic achievement.

Researcher Kati Haycock (1998) uses the findings of this study and others conducted by William Sanders and his colleagues to paint a dramatic picture of the profound impact an individual teacher can have on student achievement. The differences in achievement between students who spend a year in class with a highly effective teacher as opposed to a highly ineffective teacher.

The classes of teachers classified as the most effective can be expected to gain about 52 percentile points in their achievement over a year's time. Students in the classes of teachers classified as least effective can be expected to gain only about 14 percentile points over a year's time. This comparison is even more dramatic when one realizes that some researchers have estimated that students will exhibit a gain in learning of about 6 percentile points simply from maturation—from growing one year older and gleaning new knowledge and information through everyday life. The least effective teachers, then, add little to the development of students' knowledge and skill beyond what would be expected from simply growing one year older in our complex, information-rich society.

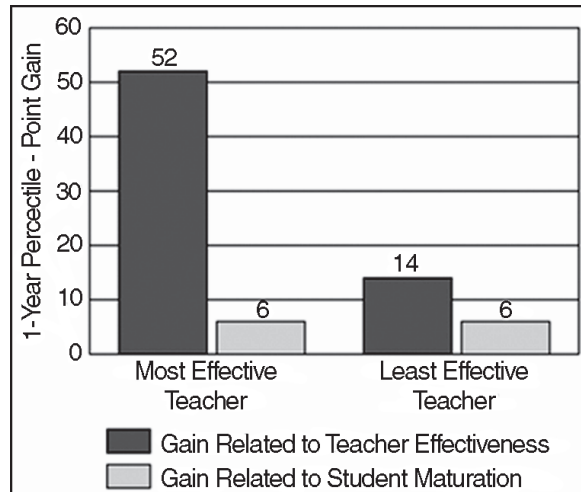


Fig. Impact of Teacher Effectiveness on Student Achievement.

Sanders and his colleagues, who gathered their data from elementary school students in Tennessee, are not the only ones to document dramatic differences in achievement between students in classes taught by highly ineffective versus highly effective teachers. Haycock (1998) reports similar findings from studies conducted in Dallas and Boston.

To understand the impact that a teacher can make, let's consider each of the five scenarios. A student begins at the 50th percentile in mathematics, let's say, and attends an average school and has an average teacher, her achievement will still be at the 50th percentile at the end of about two years. The student has learned enough to keep pace with her peers. But what happens to that student if she attends a school that is considered one of the least effective and is unfortunate enough to have a teacher who is classified as one of the least effective? After two years she has dropped from the 50th percentile to the 3rd percentile.

She may have learned something about mathematics, but that learning is so sporadic and unorganized that she has lost considerable ground in a short time. In the third scenario, the same student is in a school classified as most effective, but she has a teacher classified as least effective. Although the student entered the class at the 50th percentile, two years later she leaves the class at the 37th percentile. In contrast to the two previous scenarios, the fourth presents a very optimistic picture. The student is not only in a school classified as most effective, but also is in the class of a teacher classified as most effective. She enters the class at the 50th percentile, but she leaves at the 96th percentile. The fifth scenario most dramatically depicts the impact of an individual teacher. Again, the student is in a school that is considered least effective, but she is with a teacher classified as most effective. The student now leaves the class at the 63rd percentile—13 percentile points higher than the point at which she entered. It is this last scenario that truly depicts the importance of individual teachers. Even if the school they work in is highly ineffective, individual teachers can produce powerful gains in student learning.

Although the effect the classroom teacher can have on student achievement is clear, the dynamics of how a teacher produces such an effect are not simple. Rather, the effective teacher performs many functions. These functions can be organized into three major roles: (1) making wise choices about the most effective instructional strategies to employ, (2) designing classroom curriculum to facilitate student learning, and (3) making effective use of classroom management techniques. The first role deals with instructional strategies and their use. Effective teachers have a wide array of instructional strategies at their disposal. They are skilled in the use of cooperative learning and graphic organizers; they know how best to use homework and how to use questions and advance organizers, and so on. Additionally, they know when these strategies should be used with specific students and specific content. Although cooperative learning might be highly effective in one lesson, a different approach might be better in another lesson. Some general strategies that have a good research “track record” in terms of enhancing student achievement have been detailed in *Classroom Instruction That Works: Research-Based Strategies for Increasing Student Achievement*.

The second role associated with effective teaching is classroom curriculum design. This means that effective teachers are skilled at identifying and articulating the proper sequence and pacing of their content. Rather than relying totally on the scope and sequence provided by the district or the textbook, they consider the needs of their students collectively and individually and then determine the content that requires emphasis and the most appropriate sequencing and presentation of that content. They are also highly skilled at constructing and arranging learning activities that present new knowledge in different formats (*e.g.*, stories, explanations, demonstrations) and different media (*e.g.*, oral presentations, written presentations, video presentations, Web-based presentations, simulations, hands-on activities).

The third role involved in effective teaching is classroom management. This, of course, is the subject of this book.

Before delving into classroom management, however, it is important to note that each of these three roles is a necessary but not sufficient component of effective teaching. That is, no single role by itself is sufficient to guarantee student learning, but take one out of the mix and you probably guarantee that students will have difficulty learning. Nevertheless, a strong case can be made that effective instructional strategies and good classroom curriculum design are built on the foundation of effective classroom management. As Long and Frye (1985) note in their book, *Making It Till Friday: A Guide to Successful Classroom Management*, it is a myth to believe that... effective teachers can prevent all discipline problems by keeping students interested in learning through the use of exciting classroom materials and activities. The potential for problems exists beyond academics. Students experience difficulties at home which spill over into the classroom; students experience problems with peers during class breaks and in the classroom which often involve the teacher; and students

experience mood changes which can generate problems, to name just a few. Similarly, in their synthesis of the research, Edmund Emmer, Julie Sanford, Barbara Clements, and Jeanne Martin (1982) note that.

At all public school grade levels, effective classroom management has been recognized as a crucial element in effective teaching. If a teacher cannot obtain students' cooperation and involve them in instructional activities, it is unlikely that effective teaching will take place... In addition, poor management wastes class time, reduces students' time on task and detracts from the quality of the learning environment.

# 7

## Relationship among Languages

### MEANING OF LANGUAGE

Language is, above all, meaning. Meanings are attached to pieces of words, to words, or to groups of words. Meanings are attached to the spoken signals of language. Meanings are attached to the shifts and changes of grammar.

#### Meaning and No Meaning

The sounds of words have no meaning to begin with. People attach a meaning to them. Every day someone thinks up a new word. Or someone uses an old word in a new way. Someone might suddenly say, “Hey, that’s like *zonko*, you know? Boy, that’s totally *zonko*!” If no one pays much attention, that’s the end of *zonko*. But maybe friends and other people begin to use the word, too—“Wow! *Zonko*!” Then another word has been born.

#### Meaning More or Less

Some words have more of what might be called outside meaning than others. *Orange*, for instance, means “a reddish-yellow colour, a fruit,” *etc.* But it also means tigers and sunsets and excitement—meanings outside the dictionary definitions. Words like *the*, *and*, *to* have little outside meaning. They are sometimes called function words. Much-repeated words may mean less after a while. Clichés are an example. A cliché is an expression that loses its punch through overuse. Used sparingly, “That’s really great!” may get a listener’s special attention. If it’s used too often, however, it does not mean much to most listeners.

Common expressions of courtesy often lose meaning. Chances are that a casual acquaintance who asks “How are you?” doesn’t really want to know.

### Same and Different Meaning

Few words have exactly the same meaning. Not only are the Burmese and Arabic words for “house” different, they mean different things to a Burmese villager and a desert Arab.

*Return* and *take back* are much alike in English. But like all synonyms they do not always mean the same. There’s a world of difference between “We *took* Ralphie *back* to the monkey house” and “We *returned* Ralphie to the monkey house.” But in practice, speakers accept certain words as more or less the same. This helps them communicate more easily.

The same word often has different meanings, depending on how it’s used with other words. In English, *go* can mean “leave,” as in the phrase “Please don’t *go*”; “work,” as in “My watch won’t *go*”; and “reach,” as in “It doesn’t *go* far enough.” Homonyms, or homophones, like *bear* and *bare* are more or less the same word to a listener. It’s how they’re used with other words that gives them different meanings. Not only do the same words have different meanings; the same groups of words often do. “She drove into the bank this morning” is an example. Was it a drive-in bank? Or did she zig when she should have zagged? Or what? The surrounding sentences will give clues to the meaning.

A phrase or clause doesn’t always mean the same as its words. Idioms are an example. Another example is the way the words are spoken. “Oh, sure I will!” in a sarcastic tone means something very different from what the words say.

### Ways of Meaning

A word commonly has different ways of meaning. What a word refers to is only one way it means. Thus, the word *prunes* refers to a food. But much of the meaning of words has to do with the speaker’s attitude. So the meaning of *prunes* depends also on how the speaker feels about them. The word has a pleasant meaning if he likes them, an unpleasant meaning if he doesn’t. The meaning a word refers to is its denotation. What a word suggests because of the speaker’s or listener’s attitude is its connotation.

Languages have different ways of separating meaning. The Inuit language has separate words for falling snow and snow on the ground, while English uses only one word for both—*snow*. Shona, a language of Zimbabwe, has three words for all the colours. One word means “red, purple, orange.” Another means “white, yellow, green.”

### Social Meaning

People don’t usually talk to themselves. They talk to other people. And their talk has social meaning. Only part of the social meaning of a conversation is carried by words. Take saying hello or talking about the weather. Often such talk has little dictionary meaning. It is a way of being friendly or polite.

Choice of language often has social meaning. An informal “Yeah” in the neighbourhood carries a relaxed meaning. Often it is replaced by a formal “Yes” in a classroom or at a job interview. Spanish-speaking Americans often switch from Spanish at home to English in the classroom. The same principle applies to other bilingual students. Use of special work words may mean a speaker is an architect or plumber or foundry worker. In many countries, the words a speaker uses label him a member of the upper or lower classes.

Swear words have social meaning. So do expressions using God’s name in vain. The same goes for conversation about such things as using the toilet. Usually these are no-no’s, and they have that meaning attached to them.

### **Grammatical Meaning**

Some meanings attach to words. These are dictionary meanings. And some meanings, called grammatical meanings, attach to the signals of grammar. The form a word takes may have grammatical meaning. In English, *-s* or *-es* added to a noun means “plural” or “more than one.” A *mashita* ending on a Japanese verb means “past tense.” Word order may have grammatical meaning. Take the English sentence “Mary bit John.” In English, the common order for statements is subject-verb-direct object. So *Mary* means “subject,” and *John* means “direct object.” It’s *Mary* who does the biting, *John* who gets bitten. Function words have grammatical meaning. In English, *the* or *a* means that a noun is coming up. *Quién* (who) at the beginning of a Spanish sentence means that the sentence is a question. Spoken signals can have dictionary meaning. Pitch in the words of tone languages is an example. But spoken signals can also have grammatical meaning. In English, for example, stress on *sus-* in *suspect* signals that the word is a noun. Stress on *-spect*, on the other hand, means “verb.” At the end of a clause, a drop in pitch with a fading into silence commonly means “statement.”

### **Essential Importance of Language**

The importance of language is essential to every aspect and interaction in our everyday lives. We use language to inform the people around us of what we feel, what we desire, and question/understand the world around us. We communicate effectively with our words, gestures, and tone of voice in a multitude of situation. Would you talk to a small child with the same words you would in a business meeting. Being able to communicate with each other, form bonds, teamwork, and it’s what separates humans from other animal species. Communication drives our lives and better ourselves. Origins of why there are so many different languages as plagued scholars and linguistics for centuries and will continue to puzzle them far beyond our lifetimes to come. In most cultures have myths that there was a common language spoke among the people with a deity getting angry and confusing the people or separating them from each other/segmenting the people to create their own language. Prime examples of stories like this is the “Tower of Babel”, Hindu with the story of the “Knowledge Tree”, and even Native Americans believing in a “Great Deluge

(Flood)” separating people and speech. The importance of communication can be often overlooked. Even with the ability to communicate with each other. Misunderstandings happen. Remember, communication is a two way street that should be embraced and not ignored. Believe it or not, some people can be arrogant to believe they can’t go to foreign countries without knowing anything of the language or culture of the people in the places they visit. The importance of language is beneficial regardless if you do it for fun or for your career or even just for personal travel. They expect the indigenous people to accommodate them and know their language. The importance of language isn’t much different no matter what your nationality is. Honestly, if you were to study other languages you will find that most of them are actually pretty similar. Mainly the differences are in alphabet, pronunciation, and grammar with the syntax generally staying the same. We should use it to show our understanding of the cultures and lives of our fellow men in other lands. We should go behind the outer shell and see the speaker beneath. Part where the importance of languages really shines in business with companies trying to reach global audiences and markets. More and more business leaders are recognize to compete you have to have knowledge in many foreign languages. Knowledge of their language as well as their culture shows that you respect the ideas that they bring to the table and you understand their needs and wants better than somebody who does not have this background.

Additionally, there is the psychological aspect of direct communication during your business transactions. Your clients will be more likely to trust what you are saying and there will be a more intimate relationship than if you were to conduct all communication through a translator. This could be an important step in building strong and lasting business relationships that help ensure the success of your own business. More and more school are recognizing the importance of language. Some schools begin offering to teach a second language as early as middle school. Many schools and employers are requiring specific language requirements as part of their application process.

Through language we can connect with other people and make sense of our experiences. Imagine what it must be like for your child to develop these skills that we take for granted. As a parent, teacher, or other type of caregiver, you shape a child’s language development to reflect the identity, values, and experiences of your family and community. Therefore, it is up to you to create a warm and comfortable environment in which your child can grow to learn the complexities of language. The communication skills that your child learns early in life will be the foundation for his or her communication abilities for the future. Strong language skills are an asset that will promote a lifetime of effective communication.

## **THE IMPORTANCE OF LANGUAGE IN PROMOTING COMMUNITY INCLUSION**

Over the past fifty years, as mental health systems have changed so to has the ‘language’ used to talk about mental illnesses, people with psychiatric

disabilities, and treatment and rehabilitation options available. Although changes in language have been slow – both in the professional community and among the general public – it is critical that such changes continue. Old patterns – using terms like ‘the mentally ill’ or ‘psychos’ or ‘the chronics’ and referring to ‘the looney bin’ and ‘the shrink’ and ‘the funny farm’ tend to demoralize providers and consumers alike, but have their most profound impact on the way in which consumers feel about themselves and their future. Here we talk about the importance of language in promoting community inclusion, the paramount importance of the drive to use ‘people first’ language in both professional and popular written, verbal, and media exchanges, and how language change occurs.

### **“People First” language**

The growing emphasis on the importance of using ‘people first’ language – referring to people with mental illnesses’ rather than ‘the mentally ill’ or to ‘an individual with depression’ rather than ‘the depressive’ acknowledges, before any other reference, the personhood of an individual. Beyond any label that one can attach to a person, and beyond any reason someone has for attaching that label (selfish or unselfish, prejudiced or unprejudiced) is the person. It is to that person we must learn to relate, not to any imposed label. It is still sadly true that the field of disability, and even more specifically the field of mental disabilities, continue to use common grammars tend to insist that people are their disability. People first approaches suggest a world of alternative possibilities.

### **Language Important in Community Inclusion**

In part, language reflects beliefs. In general language reflects the beliefs of the society in which a person resides. The people who control the use of language, consciously or unconsciously hold power over people deprived of language, even over how others will refer to them. Thus, embedded within language are the rudiments of discrimination, maintaining negatives beliefs and isolating people with differences. In this way, language undermines community inclusion outcomes (isolating people from jobs and homes and all types of community experiences) and undermining the individual’s self-determination.

### **Language Change Occur**

At times, language change does arise, contesting commonly held beliefs. This language may or may not successfully challenge those beliefs, but often provides the impetus to change. Currently, language in the mental health field is in flux. There are several specific reasons for this: 1) people in the mental health professions are reacting to past prejudices; 2) consumers who have experienced the historical language of mental health are publicly self-identifying, and responding to the effects the language of the mental health system has had on them; 3) a partnership is developing between people in the mental health professions and people who have directly experienced mental health services, leading to discussions of self-determination, and of setting mutual goals of how

to accomplish language change; and 4) mental health systems are themselves in flux, moving from immense, institution-sized facilities to small, community based programmes, requiring still more new language. The issues surrounding the ongoing changes in language are complex:

- *Isolation breeds fear*: A group without the ability to self-define is left to the prejudicial definition of a society. About that which we do not know we often develop negative stereotypes. America's policy of segregating people with mental disorders into large, isolated mental institutions has led to a folk culture of what it is like to live with a mental disorder. Folk beliefs have a basis in reality, but are often exaggerated beyond specific context. Like all illnesses, mental illnesses exist in vastly varying degree, but as presented in folk culture one encounters only an extreme. Stereotypes are expressed on a daily basis in the media, in the form of drama, in novels, poetry, as well as in professional literature, for folk culture affects all.
- *Complexity breeds confusion*. The reality of mental illnesses and the infinite variety in the types and degrees of mental disorders is only recently coming into public view, as new generations are presenting mental illnesses in the same manner as physical illnesses, addressing all the inherent variety. At the same time, however, pharmaceutical companies, marketing directly to the consumers of their products, are educating the public. Advocacies representing single-named illnesses, for example bi-polar disorder, are acquainting the public with the specific needs of a specific disorder, and through the power of naming are encouraging acceptance.

# 8

## Theories of Motivation

Ever wonder why some people seem to be very successful, highly motivated individuals? Where does the energy, the drive, or the direction come from? Motivation is an area of psychology that has gotten a great deal of attention, especially in the recent years. The reason is because we all want to be successful, we all want direction and drive, and we all want to be seen as motivated. There are several distinct theories of motivation we will discuss in this section. Some include basic biological forces, while others seem to transcend concrete explanation. Let's talk about the five major theories of motivation.

### **Instinct Theory**

Instinct theory is derived from our biological make-up. We've all seen spider's webs and perhaps even witnessed a spider in the tedious job of creating its home and trap. We've all seen birds in their nests, feeding their young or painstakingly placing the twigs in place to form their new home. How do spiders know how to spin webs? How do birds now how to build nests?

The answer is biology. All creatures are born with specific innate knowledge about how to survive. Animals are born with the capacity and often times knowledge of how to survive by spinning webs, building nests, avoiding danger, and reproducing. These innate tendencies are preprogrammed at birth, they are in our genes, and even if the spider never saw a web before, never witnessed its creation, it would still know how to create one. Humans have the same types of innate tendencies. Babies are born with a unique ability that allows them to survive; they are born with the ability to cry. Without this, how would others know when to feed the baby, know when he needed changing, or when she

wanted attention and affection? Crying allows a human infant to survive. We are also born with particular reflexes which promote survival. The most important of these include sucking, swallowing, coughing, blinking. Newborns can perform physical movements to avoid pain; they will turn their head if touched on their cheek and search for a nipple (rooting reflex); and they will grasp an object that touches the palm of their hands.

### **Drive Reduction Theory**

According to Clark Hull (1943, 1952), humans have internal biological needs which motivate us to perform a certain way. These needs, or drives, are defined by Hull as internal states of arousal or tension which must be reduced. A prime example would be the internal feelings of hunger or thirst, which motivates us to eat. According to this theory, we are driven to reduce these drives so that we may maintain a sense of internal calmness.

### **Arousal Theory**

Similar to Hull's Drive Reduction Theory, Arousal theory states that we are driven to maintain a certain level of arousal in order to feel comfortable. Arousal refers to a state of emotional, intellectual, and physical activity. It is different from the above theory, however, because it doesn't rely on only a reduction of tension, but a balanced amount. It also does better to explain why people climb mountains, go to school, or watch sad movies.

### **Psychoanalytic Theory**

Remember Sigmund Freud and his five part theory of personality. As part of this theory, he believed that humans have only two basic drives: Eros and Thanatos, or the Life and Death drives. According to Psychoanalytic theory, everything we do, every thought we have, and every emotion we experience has one of two goals: to help us survive or to prevent our destruction. This is similar to instinct theory, however, Freud believed that the vast majority of our knowledge about these drives is buried in the unconscious part of the mind.

Psychoanalytic theory therefore argues that we go to school because it will help assure our survival in terms of improved finances, more money for healthcare, or even an improved ability to find a spouse. We move to better school districts to improve our children's ability to survive and continue our family tree.

We demand safety in our cars, toys, and in our homes. We want criminal locked away, and we want to be protected against poisons, terrorists, and any thing else that could lead to our destruction. According to this theory, everything we do, everything we are can be traced back to the two basic drives

### **Humanistic Theory**

Although discussed last, humanistic theory is perhaps the most well know theory of motivation. According to this theory, humans are driven to achieve

their maximum potential and will always do so unless obstacles are placed in their way. These obstacles include hunger, thirst, financial problems, safety issues, or anything else that takes our focus away from maximum psychological growth.

The best way to describe this theory is to utilize the famous pyramid developed by Abraham Maslow (1970) called the Hierarchy of Needs. Maslow believed that humans have specific needs that must be met and that if lower level needs go unmet, we can not possible strive for higher level needs. The Hierarchy of Needs shows that at the lower level, we must focus on basic issues such as food, sleep, and safety. Without food, without sleep, how could we possible focus on the higher level needs such as respect, education, and recognition?

## MASLOW'S HIERARCHY OF NEEDS

**Maslow's hierarchy of needs** is a theory in psychology, proposed by Abraham Maslow in his 1943 paper *A Theory of Human Motivation*, which he subsequently extended to include his observations of humans' innate curiosity.

Maslow studied what he called exemplary people such as Albert Einstein, Jane Addams, Eleanor Roosevelt, and Frederick Douglass rather than mentally ill or neurotic people, writing that "the study of crippled, stunted, immature, and unhealthy specimens can yield only a cripple psychology and a cripple philosophy."

Maslow also studied the healthiest one percent of the college student population. In his book, *The Farther Reaches of Human Nature*, Maslow writes, "By ordinary standards of this kind of laboratory research... this simply was not research at all. My generalizations grew out of my selection of certain kinds of people. Obviously, other judges are needed."

### Representations

Maslow's hierarchy of needs is predetermined in order of importance. It is often depicted as a pyramid consisting of five levels: the first lower level is being associated with physiological needs, while the top levels are termed growth needs associated with psychological needs. Deficiency needs must be met first. Once these are met, seeking to satisfy growth needs drives personal growth.

The higher needs in this hierarchy only come into focus when the lower needs in the pyramid are met. Once an individual has moved upwards to the next level, needs in the lower level will no longer be prioritized. If a lower set of needs is no longer being met, the individual will temporarily re-prioritize those needs by focusing attention on the unfulfilled needs, but will not permanently regress to the lower level. For instance, a businessman at the esteem level who is diagnosed with cancer will spend a great deal of time concentrating on his health (physiological needs), but will continue to value his work performance (esteem needs) and will likely return to work during periods of remission.

## MOTIVATION IN CLASSROOM CONTEXT

### Power in the Classroom

Prior to presenting some of these motivational strategies, it would be of relevance to say a few things about the teacher/learner relationship. Whichever way we look at it, this relationship is riddled with power and status. For many, power plays a large part in the relationship. The rights and duties of teachers and learners are related to power.

For example, many teachers might assert that they have the right to punish those learners who misbehave. In any social encounter involving two or more people, there are certain power relationships ‘which are almost always asymmetrical’ (Wright, 1987: 17). Social psychologists distinguish between three different types of power—*coercive*, *reward-based*, and *referent* (ibid.). The basis of coercive power is punishment. Some individuals or institutions have the authority to punish others. The basis of the second type of power is reward. Some individuals or institutions have the power to reward what they deem appropriate behaviour. For example, business organisations reward employees with a salary, a bonus, *etc.* The basis of the third type of power is motivation. In this case, individuals or institutions appeal to the commitment and interest of others. In view of this three-fold paradigm, it is of importance to concern ourselves with the fostering of learner motivation, as it is considered to be the most effective and proactive, so to speak, power relationship.

### Group Processes and Motivation

A discussion of motivation and motivational strategies would not be complete without a consideration of group processes, inasmuch as there is usually a group of people that we as teachers are called on to motivate. Tuckman (1969, quoted in Argyle, 1969) established that a group went through four stages from its formation, which has important implications for the study of the classroom and the use of group activities during teaching.

- Stage 1 *Forming*: At first, there is some anxiety among the members of the group, as they are dependent on the leader (that is, the teacher) and they have to find out what behaviour is acceptable.
- Stage 2 *Storming*: There is conflict between sub-groups and rebellion against the leader. Members of the group resist their leader and the role relations attending the function of the group are questioned.
- Stage 3 *Norming*: The group begins to develop a sort of cohesion. Members of the group begin to support each other. At this stage, there is co-operation and open exchange of views and feelings about their roles and each other.
- Stage 4 *Performing*: Most problems are resolved and there is a great deal of interpersonal activity. Everyone is devoted to completing the tasks they have been assigned.

Experience shows that almost every group goes through these four (or even more) stages until it reaches equilibrium and, thus, taps into its potential. In reality,

this process may go on forever, since student lethargy and underachievement norms in the classroom are considered to be basic hindrances to effective teaching and learning (Daniels, 1994). Against this background, we will try to design a framework for motivational strategies.

## COMPETITION AND CO-OPERATION

When it comes to interaction and group dynamics, there are two particular factors that can hinder or facilitate group achievement: competition of Co-operation (Deutsch, 2003). Within a group or team setting, the two factors of Co-operation and competition can either propel the team to success or consign the group's effort to failure depending on which factor is dominant. Co-operation is "work[ing] or act[ing] together or jointly for a common purpose or benefit (cooperate). Competition, on the other hand, takes place when people "strive to gain or win something by defeating or establishing superiority over others who are trying to do the same thing" (Oxford American Dictionaries).

Deutsch suggests six "cooperative relations" in which he describes six positive characteristics that make Co-operation within a group more likely. These six factors include: 1. Effective communication. 2. Friendliness, helpfulness, and less obstructiveness. 3. Coordination of effort, divisions of labour, orientation of task achievements, orderliness in discussion, and high productivity. 4. Feelings of agreement with the ideas of others and a sense of basic similarity in beliefs in one's own ideas and in the value that other members attach to those ideas. 5. The willingness to enhance the other's power (as others capabilities are strengthened, you are strengthened). 6. Defining conflicting interests as a mutual problem to be solved by collaborative effort (Deustch).

In his six points, Deustch articulates the ideal features one would expect to find in an environment of a cooperative organization. And just as these factors contribute towards the cooperativeness of a group, one would find the opposite characteristics prevalent in a group where internal or in-group competition prevails. Poor communication, obstructiveness and lack of helpfulness (Deustch, 2003), and group disorder, disagreement and the critical rejection of ideas (Deustch), and striving to "enhance one's own power" (Deutsch,2003) sum up the "conflicting relations."

An example of Co-operation versus competition can be found in a study called The Prisoner's Dilemma (Dixit and Nalebuff).

In this tradeoff, two criminals (we'll call them 1 and 2) are arrested on the "suspicion of having committed armed robbery and sure enough they are found to be carrying concealed weapons" (Dixit and Nalebuff). The police are able to talk to the suspects separately and both are given an opportunity to confess or "rat out" the other person. In this situation, there are four plausible and equally likely outcomes. In the first, both parties could cooperate with each other and refuse to confess or turn his or her partner in. The outcome of this condition is most beneficial for both individuals in that they are most like to receive a light sentence as a result of being armed, but not a long sentence for the actual crime.

In the second and third situations, one of the individuals “rats out” the other and therefore he receives a light sentence while his partner receives a longer sentence for the crime. In this state of affairs, there is a sort of competition where there are conflicting interests amongst the two individuals. In the final circumstance both individuals rat each other out, are convicted and found guilty, and both serve equally long sentences in prison.

## **LEARNER**

Learning is acquiring new knowledge, behaviours, skills, values, preferences or understanding, and may involve synthesizing different types of information. The ability to learn is possessed by humans, animals and some machines. Progress over time tends to follow learning curves. Human learning may occur as part of education or personal development. It may be goal-oriented and may be aided by motivation. The study of how learning occurs is part of neuropsychology, educational psychology, learning theory, and pedagogy. Learning may occur as a result of habituation or classical conditioning, seen in many animal species, or as a result of more complex activities such as play, seen only in relatively intelligent animals and humans. Learning may occur consciously or without conscious awareness. There is evidence for human behavioural learning prenatally, in which habituation has been observed as early as 32 weeks into gestation, indicating that the central nervous system is sufficiently developed and primed for learning and memory to occur very early on in development.

Play has been approached by several theorists as the first form of learning. Children play, experiment with the world, learn the rules, and learn to interact. Vygotsky agrees that play is pivotal for children’s development, since they make meaning of their environment through play.

## **LEARNING PROCESS**

To learn is to acquire knowledge or skill. Learning also may involve a change in attitude or behaviour. Children learn to identify objects at an early age; teenagers may learn to improve study habits; and adults can learn to solve complex problems. Pilots and aviation maintenance technicians (AMTs) need to acquire the higher levels of knowledge and skill, including the ability to exercise judgment and solve problems. The challenge for the aviation instructor is to understand how people learn, and more importantly, to be able to apply that knowledge to the learning environment. This handbook is designed as a basic guide to educational psychology. This chapter addresses that branch of psychology directly concerned with how people learn.

### **Learning Theory**

Learning theory may be described as a body of principles advocated by psychologists and educators to explain how people acquire skills, knowledge,

and attitudes. Various branches of learning theory are used in formal training programmes to improve and accelerate the learning process. Key concepts such as desired learning outcomes, objectives of the training, and depth of training also apply. When properly integrated, learning principles, derived from theories, can be useful to aviation instructors and developers of instructional programmes for both pilots and maintenance technicians. Over the years, many theories have attempted to explain how people learn. Even though psychologists and educators are not in complete agreement, most do agree that learning may be explained by a combination of two basic approaches: behaviourism and the cognitive theories.

### **Behaviourism**

Behaviourists believe that animals, including humans, learn in about the same way. Behaviourism stresses the importance of having a particular form of behaviour reinforced by someone, other than the student, to shape or control what is learned. In aviation training, the instructor provides the reinforcement. Frequent, positive reinforcement and rewards accelerate learning. This theory provides the instructor with ways to manipulate students with stimuli, induce the desired behaviour or response, and reinforce the behaviour with appropriate rewards. In general, the behaviourist theory emphasizes positive reinforcement rather than no reinforcement or punishment. Other features of behaviourism are considerably more complex than this simple explanation. Instructors who need more details should refer to psychology texts for a better understanding of behaviourism. As an instructor, it is important to keep in mind that behaviourism is still widely used today, because controlling learning experiences helps direct students towards specific learning outcomes.

### **Cognitive Theory**

Much of the recent psychological thinking and experimentation in education includes some facets of the cognitive theory. This is true in basic as well as more advanced training programmes. Unlike behaviourism, the cognitive theory focuses on what is going on inside the student's mind. Learning is not just a change in behaviour; it is a change in the way a student thinks, understands, or feels.

There are several branches of cognitive theory. Two of the major theories may broadly be classified as the information processing model and the social interaction model. The first says that the student's brain has internal structures which select and process incoming material, store and retrieve it, use it to produce behaviour, and receive and process feedback on the results.

This involves a number of cognitive processes, including executive functions of recognizing expectancies, planning and monitoring performance, encoding and chunking information, and producing internal and external responses.

The social interaction theories gained prominence in the 1980s. They stress that learning and subsequent changes in behaviour take place as a result of

interaction between the student and the environment. Behaviour is modelled either by people or symbolically. Cultural influences, peer pressure, group dynamics, and film and television are some of the significant factors. Thus, the social environment to which the student is exposed demonstrates or models behaviours, and the student cognitively processes the observed behaviours and consequences. The cognitive processes include attention, retention, motor responses, and motivation. Techniques for learning include direct modelling and verbal instruction. Behaviour, personal factors, and environmental events all work together to produce learning.

Both models of the cognitive theory have common principles. For example, they both acknowledge the importance of reinforcing behaviour and measuring changes. Positive reinforcement is important, particularly with cognitive concepts such as knowledge and understanding. The need to evaluate and measure behaviour remains because it is the only way to get a clue about what the student understands. Evaluation is often limited to the kinds of knowledge or behaviour that can be measured by a paper-and-pencil exam or a performance test. Although psychologists agree that there often are errors in evaluation, some means of measuring student knowledge, performance, and behaviour is necessary.

### **Combined Approach**

Both the behaviouristic and the cognitive approaches are useful learning theories. A reasonable way to plan, manage, and conduct aviation training is to include the best features of each major theory. This provides a way to measure behavioural outcomes and promote cognitive learning. The combined approach is not simple, but neither is learning.

### **Definition of Learning**

The ability to learn is one of the most outstanding human characteristics. Learning occurs continuously throughout a person's lifetime. To define learning, it is necessary to analyse what happens to the individual. For example, an individual's way of perceiving, thinking, feeling, and doing may change as a result of a learning experience. Thus, learning can be defined as a change in behaviour as a result of experience. This can be physical and overt, or it may involve complex intellectual or attitudinal changes which affect behaviour in more subtle ways. In spite of numerous theories and contrasting views, psychologists generally agree on many common characteristics of learning.

### **Characteristics of Learning**

*Learning is Purposeful:* Each student sees a learning situation from a different viewpoint. Each student is a unique individual whose past experiences affect readiness to learn and understanding of the requirements involved. For example, an instructor may give two aviation maintenance students the assignment of learning certain inspection procedures. One student may learn quickly and be

able to competently present the assigned material. The combination of an aviation background and future goals may enable that student to realize the need and value of learning the procedures. A second student's goal may only be to comply with the instructor's assignment, and may result in only minimum preparation. The responses differ because each student acts in accordance with what he or she sees in the situation. Most people have fairly definite ideas about what they want to do and achieve. Their goals sometimes are short term, involving a matter of days or weeks. On the other hand, their goals may be carefully planned for a career or a lifetime. Each student has specific intentions and goals. Some may be shared by other students. Students learn from any activity that tends to further their goals. Their individual needs and attitudes may determine what they learn as much as what the instructor is trying to get them to learn. In the process of learning, the student's goals are of paramount significance. To be effective, aviation instructors need to find ways to relate new learning to the student's goals.

### **Learning is a Result of Experience**

Since learning is an individual process, the instructor cannot do it for the student. The student can learn only from personal experiences; therefore, learning and knowledge cannot exist apart from a person. A person's knowledge is a result of experience, and no two people have had identical experiences. Even when observing the same event, two people react differently; they learn different things from it, according to the manner in which the situation affects their individual needs. Previous experience conditions a person to respond to some things and to ignore others.

All learning is by experience, but learning takes place in different forms and in varying degrees of richness and depth. For instance, some experiences involve the whole person while others may be based only on hearing and memory. Aviation instructors are faced with the problem of providing learning experiences that are meaningful, varied, and appropriate. As an example, students can learn to say a list of words through repeated drill, or they can learn to recite certain principles of flight by rote. However, they can make them meaningful only if they understand them well enough to apply them correctly to real situations. If an experience challenges the students, requires involvement with feelings, thoughts, memory of past experiences, and physical activity, it is more effective than a learning experience in which all the students have to do is commit something to memory.

It seems clear enough that the learning of a physical skill requires actual experience in performing that skill. Student pilots learn to fly aircraft only if their experiences include flying them; student aviation maintenance technicians learn to overhaul power plants only by actually performing that task. Mental habits are also learned through practice. If students are to use sound judgment and develop decision-making skills, they need learning experiences that involve knowledge of general principles and require the use of judgment in solving realistic problems.

## **Learning is Multifaceted**

If instructors see their objective as being only to train their students' memory and muscles, they are underestimating the potential of the teaching situation. Students may learn much more than expected if they fully exercise their minds and feelings. The fact that these items were not included in the instructor's plan does not prevent them from influencing the learning situation.

Psychologists sometimes classify learning by types, such as verbal, conceptual, perceptual, motor, problem solving, and emotional. Other classifications refer to intellectual skills, cognitive strategies, and attitudinal changes, along with descriptive terms like surface or deep learning. However useful these divisions may be, they are somewhat artificial. For example, a class learning to apply the scientific method of problem solving may learn the method by trying to solve real problems. But in doing so, the class also engages in verbal learning and sensory perception at the same time. Each student approaches the task with preconceived ideas and feelings, and for many students, these ideas change as a result of experience. Therefore, the learning process may include verbal elements, conceptual elements, perceptual elements, emotional elements, and problem solving elements all taking place at once. This aspect of learning will become more evident later in this handbook when lesson planning is discussed. Learning is multifaceted in still another way. While learning the subject at hand, students may be learning other things as well. They may be developing attitudes about aviation-good or bad-depending on what they experience.

Under a skilful instructor, they may learn self-reliance. The list is seemingly endless. This type of learning is sometimes referred to as incidental, but it may have a great impact on the total development of the student.

## **Learning is an Active Process**

Students do not soak up knowledge like a sponge absorbs water. The instructor cannot assume that students remember something just because they were in the classroom, shop, or airplane when the instructor presented the material. Neither can the instructor assume that the students can apply what they know because they can quote the correct answer verbatim. For students to learn, they need to react and respond, perhaps outwardly, perhaps only inwardly, emotionally, or intellectually. But if learning is a process of changing behaviour, clearly that process must be an active one.

## **Learning Styles**

Although characteristics of learning and learning styles are related, there are distinctions between the two. Learning style is a concept that can play an important role in improving instruction and student success. It is concerned with student preferences and orientation at several levels. For example, a student's information processing technique, personality, social interaction

tendencies and the instructional methods used are all significant factors which apply to how individual students learn. In addition, today's culturally diverse society, including international students, must be considered.

The key point is that all students are different, and training programmes should be sensitive to the differences. Some students are fast learners and others have difficulties; and, as already mentioned, motivation, experience, and previous training affect learning style. Any number of adjectives may be used to describe learning styles. Some common examples include:

- Right/left brain
- Holistic/serialist
- Dependent/independent
- Reflective/impulsive.

Theories abound concerning right-or left-brain dominance. In general, those with right-brain dominance are characterized as being spatially oriented, creative, intuitive, and emotional. Those with left-brain dominance are more verbal, analytical, and objective. However, the separate hemispheres of the brain do not function independently. For example, the right hemisphere may recognize a face, while the left associates a name to go with the face. The term dominance is probably misleading when applied to brain hemispheres; specialization would be a more appropriate word.

Learning style differences certainly depend on how students process information. Some rely heavily on visual references while others depend more on auditory presentations. For example, visual students learn readily through reading and graphic displays, and auditory students have more success if they hear the subject matter described. Another difference is that some learn more easily when an idea is presented in a mathematical equation, while others may prefer a verbal explanation of the same idea. In addition, where hands-on activities are involved, students also learn by feel. This is sometimes called kinesthetic learning. Information processing theories contain several other useful classifications. As an example, in the holistic/serialist theory, the holist strategy is a top-down concept where students have a big picture, global perspective. These students seek overall comprehension, especially through the use of analogies. In contrast, the serialist student focuses more narrowly and needs well-defined, sequential steps where the overall picture is developed slowly, thoroughly, and logically. This is a bottom-up strategy.

Two additional information processing classifications describe deep-elaborative and the shallow-reiterative learners. Testing practices which demand comprehension, rather than a regurgitation of facts, obviously encourage students to adopt a deep-elaborative learning style. Detailed information on testing procedures, as well as curriculum design and instructor techniques, is included later in this handbook.

As indicated, personality also affects how students learn. Dependent students require a lot of guidance, direction, and external stimulation. These students tend to focus on the instructor. The more independent students require only a

minimum amount of guidance and external stimulation. They are not overly concerned with how the lesson is presented. Students with a reflective-type personality may be described as tentative. They tend to be uncertain in problem-solving exercises. The opposite applies to impulsive students. Typically, they dive right in with enthusiasm and are prone to make quick, and sometimes faulty, decisions. The social interaction concept contains further classifications of student learning styles. Like most of the other information on learning styles, these classifications are derived from research on tendencies of undergraduate students.

Some generalizations about these classifications indicate that compliant students are typically task oriented, and anxious-dependent students usually score lower than others on standardized tests.

Discouraged students often have depressed feelings about the future, and independent students tend to be older, intelligent, secure, and comfortable with the academic environment. Attention seekers have a strong social orientation and are frequently involved in joking, showing off, and bragging. In contrast, silent students usually are characterized by helplessness, vulnerability, and other disconcerting behaviourism.

Other studies identify more categories that are easily recognized. Among these are collaborative, sharing students who enjoy working with others, and competitive students who are grade conscious and feel they must do better than their peers. Participant students normally have a desire to learn and enjoy attending class, and avoidant students do not take part in class activities and have little interest in learning. The existing learning environment also influences learning style. In real life, most students find it necessary to adapt to a traditional style learning environment provided by a school, university, or other educational/training establishment. Thus, the student's learning style may or may not be compatible.

Instructors who can recognize student learning style differences and associated problems will be much more effective than those who do not understand this concept. Also, these instructors will be prepared to develop appropriate lesson plans and provide guidance, counselling, or other advisory services, as required.

## **Principles of Learning**

Over the years, educational psychologists have identified several principles which seem generally applicable to the learning process. They provide additional insight into what makes people learn most effectively.

### **Readiness**

Individuals learn best when they are ready to learn, and they do not learn well if they see no reason for learning. Getting students ready to learn is usually the instructor's responsibility. If students have a strong purpose, a clear objective, and a definite reason for learning something, they make more progress than if they lack motivation.

Readiness implies a degree of single-mindedness and eagerness. When students are ready to learn, they meet the instructor at least halfway, and this simplifies the instructor's job. Under certain circumstances, the instructor can do little, if anything, to inspire in students a readiness to learn. If outside responsibilities, interests, or worries weigh too heavily on their minds, if their schedules are overcrowded, or if their personal problems seem insoluble, students may have little interest in learning.

### **Exercise**

The principle of exercise states that those things most often repeated are best remembered. It is the basis of drill and practice. The human memory is fallible. The mind can rarely retain, evaluate, and apply new concepts or practices after a single exposure. Students do not learn to weld during one shop period or to perform crosswise landings during one instructional flight. They learn by applying what they have been told and shown. Every time practice occurs, learning continues. The instructor must provide opportunities for students to practice and, at the same time, make sure that this process is directed towards a goal.

### **Effect**

The principle of effect is based on the emotional reaction of the student. It states that learning is strengthened when accompanied by a pleasant or satisfying feeling, and that learning is weakened when associated with an unpleasant feeling. Experiences that produce feelings of defeat, frustration, anger, confusion, or futility are unpleasant for the student. If, for example, an instructor attempts to teach landings during the first flight, the student is likely to feel inferior and be frustrated.

Instructors should be cautious. Impressing students with the difficulty of an aircraft maintenance problem, flight manoeuvre or flight crew duty can make the teaching task difficult. Usually it is better to tell students that a problem or manoeuvre, although difficult, is within their capability to understand or perform. Whatever the learning situation, it should contain elements that affect the students positively and give them a feeling of satisfaction.

### **Primacy**

Primacy, the state of being first, often creates a strong, almost unshakable, impression. For the instructor, this means that what is taught must be right the first time.

For the student, it means that learning must be right. Unteaching is more difficult than teaching. If, for example, a maintenance student learns a faulty riveting technique, the instructor will have a difficult task correcting bad habits and reteaching correct ones. Every student should be started right. The first experience should be positive, functional, and lay the foundation for all that is to follow.

**Intensity**

A vivid, dramatic, or exciting learning experience teaches more than a routine or boring experience. A student is likely to gain greater understanding of slow flight and stalls by performing them rather than merely reading about them. The principle of intensity implies that a student will learn more from the real thing than from a substitute. In contrast to flight instruction and shop instruction, the classroom imposes limitations on the amount of realism that can be brought into teaching. The aviation instructor should use imagination in approaching reality as closely as possible. Today, classroom instruction can benefit from a wide variety of instructional aids to improve realism, motivate learning, and challenge students.

**Recency**

The principle of recency states that things most recently learned are best remembered. Conversely, the further a student is removed time-wise from a new fact or understanding, the more difficult it is to remember. It is easy, for example, for a student to recall a torque value used a few minutes earlier, but it is usually impossible to remember an unfamiliar one used a week earlier. Instructors recognize the principle of recency when they carefully plan a summary for a ground school lesson, a shop period, or a postflight critique. The instructor repeats, restates, or reemphasizes important points at the end of a lesson to help the student remember them. The principle of recency often determines the sequence of lectures within a course of instruction.

**How People Learn?**

*Perceptions:* Perceiving involves more than the reception of stimuli from the five senses. Perceptions result when a person gives meaning to sensations. People base their actions on the way they believe things to be. The experienced aviation maintenance technician, for example, perceives an engine malfunction quite differently than does an inexperienced student. Real meaning comes only from within a person, even though the perceptions which evoke these meanings result from external stimuli. The meanings which are derived from perceptions are influenced not only by the individual's experience, but also by many other factors. Knowledge of the factors which affect the perceptual process is very important to the aviation instructor because perceptions are the basis of all learning.

**Factors which Affect Perception**

There are several factors that affect an individual's ability to perceive. Some are internal to each person and some are external.

- Physical organism
- Basic need
- Goals and values

- Self-concept
- Time and opportunity
- Element of threat.

### **Physical Organism**

The physical organism provides individuals with the perceptual apparatus for sensing the world around them. Pilots, for example, must be able to see, hear, feel, and respond adequately while they are in the air. A person whose perceptual apparatus distorts reality is denied the right to fly at the time of the first medical examination.

### **Basic Need**

A person's basic need is to maintain and enhance the organized self. The self is a person's past, present, and future combined; it is both physical and psychological. A person's most fundamental, pressing need is to preserve and perpetuate the self. All perceptions are affected by this need.

Just as the food one eats and the air one breathes become part of the physical self, so do the sights one sees and the sounds one hears become part of the psychological self. Psychologically, we are what we perceive. A person has physical barriers which keep out those things that would be damaging to the physical being, such as blinking at an arc weld or flinching from a hot iron. Likewise, a person has perceptual barriers that block those sights, sounds, and feelings which pose a psychological threat. Helping people learn requires finding ways to aid them in developing better perceptions in spite of their defence mechanisms. Since a person's basic need is to maintain and enhance the self, the instructor must recognize that anything that is asked of the student which may be interpreted by the student as imperilling the self will be resisted or denied. To teach effectively, it is necessary to work with this life force.

### **Goals and Values**

Perceptions depend on one's goals and values. Every experience and sensation which is funnelled into one's central nervous system is coloured by the individual's own beliefs and value structures. Spectators at a ball game may see an infraction or foul differently depending on which team they support. The precise kinds of commitments and philosophical outlooks which the student holds are important for the instructor to know, since this knowledge will assist in predicting how the student will interpret experiences and instructions. Goals are also a product of one's value structure. Those things which are more highly valued and cherished are pursued; those which are accorded less value and importance are not sought after.

### **Self-Concept**

Self-concept is a powerful determinant in learning. A student's self-image, described in such terms as confident and insecure, has a great influence on the

total perceptual process. If a student's experiences tend to support a favourable self-image, the student tends to remain receptive to subsequent experiences. If a student has negative experiences which tend to contradict self-concept, there is a tendency to reject additional training. A negative self-concept inhibits the perceptual processes by introducing psychological barriers which tend to keep the student from perceiving. They may also inhibit the ability to properly implement that which is perceived. That is, self-concept affects the ability to actually perform or do things unfavourable. Students who view themselves positively, on the other hand, are less defensive and more receptive to new experiences, instructions, and demonstrations.

### **Time and Opportunity**

It takes time and opportunity to perceive. Learning some things depends on other perceptions which have preceded these learnings, and on the availability of time to sense and relate these new things to the earlier perceptions. Thus, sequence and time are necessary.

A student could probably stall an airplane on the first attempt, regardless of previous experience. Stalls cannot really be learned, however, unless some experience in normal flight has been acquired. Even with such experience, time and practice are needed to relate the new sensations and experiences associated with stalls in order to develop a perception of the stall. In general, lengthening an experience and increasing its frequency are the most obvious ways to speed up learning, although this is not always effective. Many factors, in addition to the length and frequency of training periods, affect the rate of learning. The effectiveness of the use of a properly planned training syllabus is proportional to the consideration it gives to the time and opportunity factor in perception.

### **Element of Threat**

The element of threat does not promote effective learning. In fact, fear adversely affects perception by narrowing the perceptual field. Confronted with threat, students tend to limit their attention to the threatening object or condition. The field of vision is reduced, for example, when an individual is frightened and all the perceptual faculties are focused on the thing that has generated fear.

Flight instruction provides many clear examples of this. During the initial practice of steep turns, a student pilot may focus attention on the altimeter and completely disregard outside visual references. Anything an instructor does that is interpreted as threatening makes the student less able to accept the experience the instructor is trying to provide. It adversely affects all the student's physical, emotional, and mental faculties.

Learning is a psychological process, not necessarily a logical one. Trying to frighten a student through threats of unsatisfactory reports or reprisals may seem logical, but is not effective psychologically. The effective instructor can organize teaching to fit the psychological needs of the student. If a situation seems overwhelming, the student feels unable to handle all of the factors

involved, and a threat exists. So long as the student feels capable of coping with a situation, each new experience is viewed as a challenge. A good instructor realizes that behaviour is directly influenced by the way a student perceives, and perception is affected by all of these factors. Therefore, it is important for the instructor to facilitate the learning process by avoiding any actions which may inhibit or prevent the attainment of teaching goals. Teaching is consistently effective only when those factors which influence perceptions are recognized and taken into account.

### **Insight**

Insight involves the grouping of perceptions into meaningful wholes. Creating insight is one of the instructor's major responsibilities. To ensure that this does occur, it is essential to keep each student constantly receptive to new experiences and to help the student realize the way each piece relates to all other pieces of the total pattern of the task to be learned.

As an example, during straight-and-level flight in an airplane with a fixed-pitch propeller, the RPM will increase when the throttle is opened and decrease when it is closed. On the other hand, RPM changes can also result from changes in airplane pitch attitude without changes in power setting. Obviously, engine speed, power setting, airspeed, and airplane attitude are all related. True learning requires an understanding of how each of these factors may affect all of the others and, at the same time, knowledge of how a change in any one of them may affect all of the others. This mental relating and grouping of associated perceptions is called insight.

Insight will almost always occur eventually, whether or not instruction is provided. For this reason, it is possible for a person to become an electrician by trial and error, just as one may become a lawyer by reading law. Instruction, however, speeds this learning process by teaching the relationship of perceptions as they occur, thus promoting the development of the student's insight.

As perceptions increase in number and are assembled by the student into larger blocks of learning, they develop insight. As a result, learning becomes more meaningful and more permanent. Forgetting is less of a problem when there are more anchor points for tying insights together. It is a major responsibility of the instructor to organize demonstrations and explanations, and to direct practice, so that the student has better opportunities to understand the interrelationship of the many kinds of experiences that have been perceived. Pointing out the relationships as they occur, providing a secure and nonthreatening environment in which to learn, and helping the student acquire and maintain a favourable self-concept are key steps in fostering the development of insight.

### **Motivation**

Motivation is probably the dominant force which governs the student's progress and ability to learn. Motivation may be negative or positive, tangible

or intangible, subtle and difficult to identify, or it may be obvious. Negative motivation may engender fear, and be perceived by the student as a threat. While negative motivation may be useful in certain situations, characteristically it is not as effective in promoting efficient learning as positive motivation.

Positive motivation is provided by the promise or achievement of rewards. These rewards may be personal or social; they may involve financial gain, satisfaction of the self-concept, or public recognition. Motivation which can be used to advantage by the instructor includes the desire for personal gain, the desire for personal comfort or security, the desire for group approval, and the achievement of a favourable self-image. The desire for personal gain, either the acquisition of possessions or status, is a basic motivational factor for all human endeavour. An individual may be motivated to dig a ditch or to design a supersonic airplane solely by the desire for financial gain.

Students are like typical employees in wanting a tangible return for their efforts. For motivation to be effective, students must believe that their efforts will be suitably rewarded. These rewards must be constantly apparent to the student during instruction, whether they are to be financial, self-esteem, or public recognition.

Lessons often have objectives which are not obvious at first. Although these lessons will pay dividends during later instruction, the student may not appreciate this fact. It is important for the instructor to make the student aware of those applications which are not immediately apparent. Likewise, the devotion of too much time and effort to drill and practice on operations which do not directly contribute to competent performance should be avoided. The desire for personal comfort and security is a form of motivation which instructors often forget. All students want secure, pleasant conditions and a safe environment. If they recognize that what they are learning may promote these objectives, their attention is easier to attract and hold. Insecure and unpleasant training situations inhibit learning.

Everyone wants to avoid pain and injury. Students normally are eager to learn operations or procedures which help prevent injury or loss of life. This is especially true when the student knows that the ability to make timely decisions, or to act correctly in an emergency, is based on sound principles. The attractive features of the activity to be learned also can be a strong motivational factor. Students are anxious to learn skills which may be used to their advantage. If they understand that each task will be useful in preparing for future activities, they will be more willing to pursue it.

Another strong motivating force is group approval. Every person wants the approval of peers and superiors. Interest can be stimulated and maintained by building on this natural desire. Most students enjoy the feeling of belonging to a group and are interested in accomplishment which will give them prestige among their fellow students. Every person seeks to establish a favourable self-image. In certain instances, this self-image may be submerged in feelings of insecurity or despondency. Fortunately, most people engaged in a task believe

that success is possible under the right combination of circumstances and good fortune. This belief can be a powerful motivating force for students. An instructor can effectively foster this motivation by the introduction of perceptions which are solidly based on previously learned factual information that is easily recognized by the student. Each additional block of learning should help formulate insight which contributes to the ultimate training goals. This promotes student confidence in the overall training programme and, at the same time, helps the student develop a favourable self-image. As this confirmation progresses and confidence increases, advances will be more rapid and motivation will be strengthened.

Positive motivation is essential to true learning. Negative motivation in the form of reproofs or threats should be avoided with all but the most overconfident and impulsive students. Slumps in learning are often due to declining motivation. Motivation does not remain at a uniformly high level. It may be affected by outside influences, such as physical or mental disturbances or inadequate instruction. The instructor should strive to maintain motivation at the highest possible level. In addition, the instructor should be alert to detect and counter any lapses in motivation.

### **Levels of Learning**

Levels of learning may be classified in any number of ways. Four basic levels have traditionally been included in aviation instructor training. The lowest level is the ability to repeat something which one has been taught, without understanding or being able to apply what has been learned. This is referred to as rote learning. Progressively higher levels of learning are understanding what has been taught, achieving the skill for application of what has been learned, and correlation of what has been learned with other things previously learned or subsequently encountered.

For example, a flight instructor may explain to a beginning student the procedure for entering a level, left turn. The procedure may include several steps such as: (1) visually clear the area, (2) add a slight amount of power to maintain airspeed, (3) apply aileron control pressure to the left, (4) add sufficient rudder pressure in the direction of the turn to avoid slipping and skidding, and (5) increase back pressure to maintain altitude. A student who can verbally repeat this instruction has learned the procedure by rote. This will not be very useful to the student if there is never an opportunity to make a turn in flight, or if the student has no knowledge of the function of airplane controls.

With proper instruction on the effect and use of the flight controls, and experience in controlling the airplane during straight-and-level flight, the student can consolidate these old and new perceptions into an insight on how to make a turn. At this point, the student has developed an understanding of the procedure for turning the airplane in flight. This understanding is basic to effective learning, but may not necessarily enable the student to make a correct turn on the first attempt.

When the student understands the procedure for entering a turn, has had turns demonstrated, and has practiced turn entries until consistency has been achieved, the student has developed the skill to apply what has been learned. This is a major level of learning, and one at which the instructor is too often willing to stop. Discontinuing instruction on turn entries at this point and directing subsequent instruction exclusively to other elements of piloting performance is characteristic of piecemeal instruction, which is usually inefficient. It violates the building block concept of instruction by failing to apply what has been learned to future learning tasks. The building block concept will be covered later in more detail.

The correlation level of learning, which should be the objective of aviation instruction, is that level at which the student becomes able to associate an element which has been learned with other segments or blocks of learning. The other segments may be items or skills previously learned, or new learning tasks to be undertaken in the future. The student who has achieved this level of learning in turn entries, for example, has developed the ability to correlate the elements of turn entries with the performance of chandelier and lazy eights.

### **Domains of Learning**

Besides the four basic levels of learning, educational psychologists have developed several additional levels. These classifications consider what is to be learned. Is it knowledge only, a change in attitude, a physical skill, or a combination of knowledge and skill? One of the more useful categorizations of learning objectives includes three domains: cognitive domain (knowledge), affective domain (attitudes, beliefs, and values), and psychomotor domain (physical skills). Each of the domains has a hierarchy of educational objectives.

The listing of the hierarchy of objectives is often called a taxonomy. A taxonomy of educational objectives is a systematic classification scheme for sorting learning outcomes into the three broad categories (cognitive, affective, and psychomotor) and ranking the desired outcomes in a developmental hierarchy from least complex to most complex.

# APPLIED EDUCATIONAL PSYCHOLOGY

Applied Educational Psychology is the practical application of psychological principles and theories to educational settings. It encompasses the study of how individuals learn and develop within educational contexts, as well as the application of this knowledge to improve teaching, learning, and educational outcomes. This field addresses a wide range of topics, including instructional design, classroom management, student motivation, assessment, and intervention strategies for students with diverse learning needs. Applied educational psychologists work collaboratively with educators, administrators, students, and families to identify and address academic, social, emotional, and behavioral challenges that may impact learning. By applying evidence-based practices and interventions grounded in psychological research, applied educational psychologists aim to enhance teaching effectiveness, optimize learning environments, and promote student success. This interdisciplinary approach integrates principles from psychology, education, and related fields to inform educational policies, practices, and programs. Ultimately, applied educational psychology plays a crucial role in fostering positive educational experiences, fostering academic achievement, and promoting the holistic development of learners in diverse educational settings. The book on Applied Educational Psychology offers practical insights and strategies for integrating psychological principles into educational practices to enhance teaching and learning outcomes.



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ISBN-978-93-6284-073-8

