PSYCHOLOGICAL THEORIES FOR SCIENCE TEACHING

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PREFACE

"Psychological Theories for Science Teaching" by Dr. Prasanth Mathew. This book dives into how our minds work and how we learn science. Dr. Mathew explores important ideas from psychology that helps us become better science teachers. Get ready to discover how our brains understand and remember scientific concepts. This book is like a roadmap, showing educators how to use psychological theories to make learning science easier and more enjoyable for students. Join us on this journey as we uncover the secrets of effective science teaching through the lens of psychology.

CONTENTS

THEORY OF CLASSICAL CONDITIONING: IVAN P. PAVLOV

Ivan P.Pavlov, a Russian physiologist, advocated the theory of classical conditioning.

Experiment

Pavlov conducted a number of experiments in dogs to study how **stimuli** and **responses** are associated. By a simple surgical operation, the flow of saliva from dog's mouth was transferred to a glass tube. At the sight of food, the dog salivates. Immediately before giving food to the dog, a bell was rung. This experiment was repeated for 7 days. After 7 days, he rang the bell only, but did not give any food to the dog. Still the dog secreted saliva in the same measure as before.
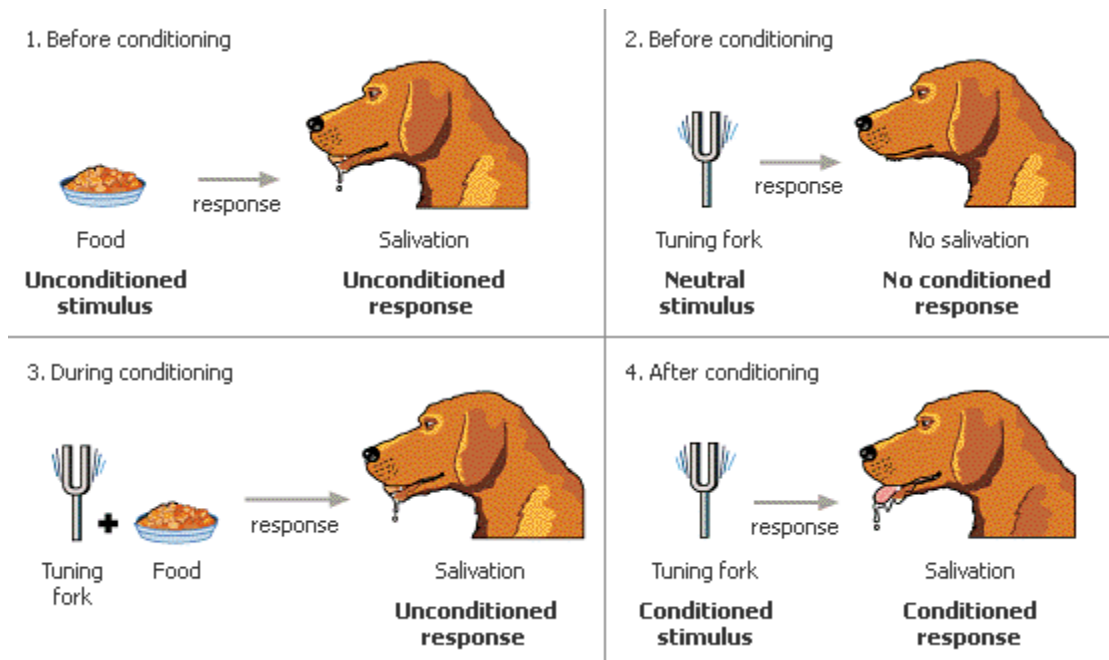
On conditioning trials, a **neutral stimulus** that had been previously been shown to have no effect on salivation – **a bell** has presented.

This was immediately followed by **second stimulus** known to produce a strong effect on salivation – **dried meat powder**. The meat powder was termed <u>**unconditioned stimulus (UCS)**</u> because its ability to produce salivation was *automatic* and did not depend on the dog's having learned the response.

Similarly, the **response of salivation** to the meat powder was termed an <u>**unconditioned response**</u> **(UCR)**; it too did not depend on previous learning.

The bell was termed a <u>**conditioned stimulus (CS)**</u> because it's ability to produce salivation depended on it's being paired with meat powder.

Finally, **salivation in response to bell** was termed a <u>**conditioned response (CR)**</u>

Classical Conditioning

- Classical conditioning is a form of learning in which two stimuli are presented together. And the response originally elicited by one of them comes to be elicited by the other.

- Classical conditioning is a type of learning in which an animal's natural response to one object (or sensory stimulus) transfers to another stimulus

The ingredients necessary to bring about conditioning include

(i) An **unconditioned stimulus (UCS)**, which elicits a natural and automatic response from the organism.

(ii) An **unconditioned response (UCR)** which is a natural and automatic response elicited by the **UCS**

(iii) A **conditioned stimulus (CS)**, which is a **neutral stimulus** in that it does not elicit a natural & automatic response from the organism.

(iv) When these ingredients are mixed in a certain way, a **conditioned response (CR)** occurs.

To produce a **CR**, the **CS** (neutral stimulus) and the **UCS** must be paired a number of times. <u>First, the **CS** is presented and then the **UCS**</u>. The order of presentation is very important. Each time the UCS occurs, a UCR occurs. Eventually, the CS can be presented alone and it will elicit a response similar to the UCR. When this happens, a CR has been demonstrated

Training Procedure: $\qquad$ **CS + UCS $\rightarrow$ UCR**

Demonstration of conditioning: $\qquad$ **CS $\rightarrow$ CR**

Educational Implications

1. Principles of classical conditioning can be used for developing good habits in children such as cleanliness, respect for elders, punctuality etc.

2. It can be used for deconditioning / breaking of anxiety, fear and phobias in maladjusted children.

3. It can be used to develop positive attitude towards learning, teacher and school subjects.

4. Use of audio-visual aids in classroom teaching – learning process involve classical conditioning.

5. The principles of classical conditioning are used to teach alphabets and fundamental principles of arithmetic by using some concrete materials.

6. The theory emphasis the importance of reinforcement in learning. Children's behaviour is conditioned with reinforcement.

7. A teacher with its defective methods of teaching / improper behaviour may condition a child to develop distaste & hatred towards him, the subject he teaches and even the school environment. On the contrary affectionate & sympathetic treatment given to the child by teacher at school may produce a desirable impact on him through the process of conditioning.

PIAGET`S THEORY OF COGNITIVE DEVELOPMENT

During the past half-century, the Swiss psychologist Jean Piaget devised a model describing <u>how humans go about making sense of their world</u> by gathering and organizing information.(Piaget,1954,1963,1970)

Influences on Development

According to Piaget, <u>our thinking processes change</u> radically, though slowly, from birth to maturity as we constantly strive to make sense of the world.
Piaget identified four factors – **biological maturation, activity, social experiences**, and **equilibration** – that interact to influence changes in thinking.

One of the most important influences on the way we make sense of the world is **maturation**, the unfolding of the biological changes that are genetically programmed. Parents and teachers have little impact on this aspect of cognitive development; except to be sure that children get the nourishment and care they need to be healthy.

Activity is another influence. With physical maturation comes the increasing ability to act on the environment and learn from it. When a young child's coordination is reasonably developed, for example, the child may discover principles about balance by experimenting with a seesaw. So, as we act on the environment – as we explore, test, observe, and eventually organize information – we are likely to alter our thinking processes at the same time.

As we develop, we are also interacting with the people around us. According to Piaget, our cognitive development is influenced by **social transmission**, or learning from others. The amount people can learn from social transmission varies according to their stage of cognitive development.

Maturation, activity, and social transmission all work together to influence cognitive development.

In Piaget`s theory *the actual changes in thinking* take place through the process of **equilibration.**

 Basic Tendencies in Thinking

As a result of his early research in biology, Piaget concluded that all species inherit **two basic tendencies**, or "**invariant functions'**.

The *first* of these tendencies is toward **organization** – combining, arranging, recombining and rearranging of behaviors and thoughts into coherent systems.
The *second* tendency is toward **adaptation** or adjusting to the environment.

 Organization.

People are born with a tendency to organize their thinking processes into *psychological structures.*   These psychological structures are our systems for understanding and interacting with the world.   Simple structures are continually combined and coordinated to become more sophisticated and thus more effective.

- **Organization: Ongoing process of arranging information and experience into mental systems or categories.**

For example, very young infants, can either look at an object or grasp it when it comes in contact with their hands. They cannot coordinate looking and grasping at the same time. As they develop, however, infants organize these two separate behavioral structures into a coordinated higher-level structure of looking at, reaching for, and grasping the object. They can, of course, still use each structure separately.

Piaget gave a special name to these *structures*: **schemes**. In his theory, *schemes are the basic building blocks of thinking. They are organized systems of actions or thought that allow us to mentally represent or "think about" the objects and events in our world.* Schemes may be very small and specific, for example, the sucking through-a-straw scheme or the

recognizing-a-rose scheme. Or they may be larger and more general – the drinking scheme or the categorizing-plants scheme. As a person's thinking processes become more organized and new schemes develop, behavior also becomes more sophisticated and better suited to the environment.

Adaptation.

In addition to the tendency to organize their psychological structures, people also inherit the *tendency to adapt to their environment*.

- **Adaptation: Adjustment to the environment**

Two basic processes are involved in adaptation: **assimilation** and **accommodation.**

Assimilation takes place when people use their existing schemes to make sense of events in their world.   Assimilation involves trying to understand something new by fitting it into what we already know.

- **Assimilation: Fitting new information into existing schemes.**
- **Assimilation: Responding to the physical environment in accordance with existing cognitive structures. Assimilation refers to a kind of matching between the cognitive structures and the physical environment. Assimilation can be roughly equated with *recognition or knowing*.**

At times, we may have to distort that new information to make it fit. For example, the first time many children see a *buffalo*,(dog) they call it a "*cow*"(cat). They try match the new experience with an existing scheme for identifying animals.

Accommodation occurs when a person must change existing schemes to respond to a new situation. If data cannot be made to fit any existing schemes, then more appropriate structures must be developed.   We *adjust our thinking* to fit the new information, instead of adjusting the information to fit our thinking.

- **Accommodation: Altering existing schemes or creating new ones in response to new information.**
- **Accommodation: The modification of *cognitive structure* as the result of an experience could not be assimilated into existing cognitive structures. Accommodation can be roughly equated with learning.**

Children demonstrate accommodation when they <u>add the scheme</u> for recognizing *buffalo* to their other systems for identifying animals.

People *adapt* to their increasingly complex environments by using existing schemes whenever these schemes work (assimilation) and by modifying and adding to their schemes when something new is needed (accommodation). In fact, both processes are required most of the time.

Even using an established pattern such as sucking through a straw may require some accommodation if the straw is of a different size or length than the type you is used to. If you have tried drinking juice from box packages, you know that you have to add a new skill to you sucking scheme – don't squeeze the box or you will shoot juice through the straw, straight up into the air and into you lap.

Whenever new experiences are assimilated into an existing scheme, the scheme is enlarged and changed somewhat, so assimilation involves some accommodation.

There are also times when neither assimilation nor accommodation is used. If people encounter something that is too unfamiliar, they may ignore it. Experience is filtered to fit the kind of thinking a person is doing at a given time. For example, if you overhear a conversation in a foreign language, you probably will not try to make sense of the exchange unless you have some knowledge of the language.

Equilibration.

According to Piaget, *organizing, assimilating, and accommodating* can be viewed as a kind of complex balancing act. <u>*In his theory, the actual **changes in thinking** take place through the process of **equilibration** – the act of searching for a balance.*</u>

- **Equilibration: Search for mental balance between cognitive schemes and information from the environment.**

Briefly, _the process of equilibration_ _works like this_: If we apply a particular scheme to an event or situation and the scheme works, then equilibrium exists. If the scheme does not produce a satisfying result, then **_disequilibrium_** exists, and we become uncomfortable. This <u>motivates us</u> to keep searching for a solution through assimilation and accommodation, and thus our thinking changes and moves ahead.

(_Disequilibrium_ :In Piaget`s theory, "the out-of-balance" state that occurs when a person realizes that his or her current ways of thinking are not working to solve a problem or understand a situation.)

Four Stages of Cognitive Development

Piaget's _four_ stages of cognitive development are :
1. **Sensorimotor,**   0-2 **years (approximate)**
2. **Preoperational,**   2-7 **years**
3. **Concrete operational,**   7-11 **years**
4. **Formal operational**.   11-**adult**

Piaget believed that all people pass through the same four stages in exactly the same order. These stages are generally associated with specific ages, but these are only general guidelines, not labels for all children of a certain age. Often, people can use one level of thinking to solve one kind of problem and a different level to solve another. Piaget noted that individuals may go through long periods of transition between stages and that a person may show characteristics of one stage in one situation, but characteristics of a higher or lower stage in other situations. Therefore, knowing a student's age is never a guarantee that you know how the child will think.

Infancy: The Sensorimotor Stage.

The earliest period is called the sensorimotor stage, because the child's thinking involves seeing, hearing, moving, touching, tasting and so on.

- During this period, the infant **develops object permanence**, _the understanding that objects exist in the environment whether the baby perceives them or not._

     As most parents discover, before infants develop object permanence, it is relatively easy to take something away from them. The trick is to distract them and remove the object while they are not looking – "out of sight, out of mind". The older infant who searches for the ball that has rolled out of sight is indicating an understanding that objects still exist even when they are not in view. Recent research, however, suggests that infants as young as 3 to 4 months may know that the object still exists, but they do not have the memory skills to "hold on" to the location of the object or the motor skills to coordinate a search.

- A _second_ major accomplishment in the sensorimotor period **is the beginning of logical, goal-directed actions.**

     Think of the familiar container toy for babies. It is usually plastic, has a lid, and contains several colorful items that can be dumped out and replaced. A 6 – month – old baby is likely to become frustrated trying to get to the toys inside. An older child who has mastered the basics of the sensorimotor stage will probably be able to deal with the toy in an _orderly fashion_ by building a "container toy" scheme: (1) get the lid off, (2) turn the container upside down, (3) shake if the items jam, (4) watch the items fall. Separate lower-level schemes have been organized into a higher-level scheme to achieve a goal.

- The child is soon able to reverse this action by refilling the container. **Learning to reverse actions** is a basic accomplishment of the sensorimotor stage.

     As we will soon see, however, learning to reverse thinking – that is, learning to imagine the reverse of a sequence of actions– takes much longer.

   Early childhood to the early elementary years: The Preoperational Stage :

- By the end of the sensorimotor stage, **the child can use many action schemes.** As long as these schemes remain tied to physical actions, however, they are of no use in recalling the pasts keeping track of information, or planning. For this, children need what Piaget called operation, or actions that are carried out and reversed mentally

rather than physically. The stage after sensorimotor is called preoperational, because the child has not yet mastered these mental operations but is moving toward mastery.

- According to Piaget, the first type; of thinking that is separate from action involves *making action schemes symbolic.* **The ability to form and use symbols - words, gestures, signs, images, and so on** – is thus a major accomplishment of the preoperational period and moves children closer to mastering the mental operations of the next stage. This ability to work with symbols, such as using the word "bicycle" or a picture of a bicycle to represent a real bicycle that is not actually present, is called the **semiotic function.**

- The child's earliest use of symbols is in pretending or miming. Children who are not yet able to talk will **often use action symbols** – pretending to drink from an empty cup or touching a comb to their hair, showing that they know what each object is for. This behavior also shows that *their schemes are becoming more general and less tied to specific actions.* The eating schemes, for example, may be used in playing house.

- During the; preoperational stage, we also see **the rapid development of that very important symbol system, language.** Between the ages of 2 and 4, most children enlarge their vocabulary from about 200 to 2,000 words.

- As the child moves through the preoperational stage, the developing ability to think about objects in symbolic form remains somewhat **limited to thinking is one direction only, or using one-way logic.**

➢ It is **very difficult for the child to "think back-wards"**, or imagine how to reverse the steps in a task. *Reversible thinking* is involved in may tasks that are *difficult for the preoperational child,* such as the conservation of matter.*Conservation* is the principle that the amount or number of something remains the same even if the arrangement or appearance is changed, as long as nothing is added and nothing is taken away. You know that if you tear a piece of paper into several pieces, you will still have the same amount of paper. To prove this, you know that you can reverse the process by taping the pieces back together.

➢ A classic example of **difficulty with conservation** is found in the preoperational child's response to the following Piagetian task.

Leah, a 5-year-old, is shown two identical glasses, both short and wide in shape. Both have exactly the same amount of colored water in them.
Interviewer : Does one glass have more water, or are they the same ?
Leah : Same
The experimenter then pours the water from one of the glasses into a taller, narrower glass.
Interviewer : Now , does one glass have more water, or are they the same ?
Leah : The tall one has more
Interviewer :How do you know ?
Leah : It goes up more here (Points to higher level on taller glass).

Notice, by the way, that Leah shows a basic understanding of identity (it's the same water) but not an understanding that the amounts are identical .

Piaget's explanation for Leah's answer is that she is focusing, or centering, attention on the dimension of height. *She has difficulty considering more than one aspect of the situation at a time, or* **decentering.** The preoperational child cannot understand the increased diameter compensates for decreased height, because this would require taking into account two dimensions at one. Thus, children at the preoperational stage have trouble freeing themselves from their own perceptions of how the world appears.

- This brings us to another important characteristic of the preoperational stage. **Preoperational children, according to Piaget, are egocentric;** *they tend to see the world and the experiences of others from their own viewpoint.* Egocentric, as Piaget intended it, does not mean selfish, it simply means children often assume that everyone else shares their feelings, reactions, and perspectives. For example if a little boy at this stage is afraid of dogs, he may assume that all children share this fear. Very young children center on their own perceptions and on the way the situation appears to them. This is one reason it is difficult for these children to understand that you right hand is not on the same side as theirs when you are facing them.

Egocentrism is also evident in the child's language. You may have seen young children happily talking about what they are doing even though no one is listening. This can happen when the child is alone or, even more often, in a group of children - each child talks enthusiastically, without any real interaction or conversation. Piaget called this the **collective monologue.**

Later Elementary to the Middle School Years: The Concrete- Operational Stage.

Piaget coined the term concrete operations to describe this stage of "hands-on" thinking. The basic characteristics of the stage are

o   The recognition of the logical stability of the physical world, (identity)

o   The realization that elements can be changed or transformed and still conserve many   of their original characteristics (compensation) and

o   The understanding that these changes can be reversed (reversibility).

- According to Piaget, a student's **ability to solve conservation problems** depends on an understanding of three basic aspects of reasoning: *identity, compensation*, and *reversibility*. With a complete mastery of *identity,* the student knows that if nothing is added or taken away, the material remains the same. With an understanding of *compensation,* the student knows that an apparent change in one direction can be compensated for by a change in another direction. That is, if the liquid rises higher in the glass, the glass must be narrower. And with an understanding of *reversibility*, the student can mentally cancel out the change that has been made.

- Another important operation **mastered** at this stage is **classification**. Classification depends on a student's abilities to focus on a single characteristic of objects in a set and group the objects according to that characteristic.

  Given 12 objects of assorted colors and shapes, the concrete-operational student can invariably pick out the ones that are round. More advanced classification at this stage involves recognizing that one class fits into another. A city can be in a particular state or province and also in a particular country.

  Classification is also related to reversibility. The ability to reverse a process mentally now allows the concrete-operational student to see that there is more than one way to classify a group of objects. The student understands, for example, that buttons can be classified by color, and then reclassified by size or by the number of holes.

- **Seriation** *is the process of making an orderly arrangement from large to small or vice versa.* This understanding of sequential relationships permits a student to construct a logical series in which A < B < C (A is less than b is less than C) and so on. Unlike the

preoperational child, the concrete-operational child can grasp the notion that B can be larger than A but smaller than C.

With the abilities to handle operations such as *conservation, classification, and seriation,* the student at the concrete-operational stage has **finally developed a complete and very logical system of thinking**. This system of thinking, however, **is still tied to physical reality.** The logic is based on concrete situations that can be organized, classified, or manipulated. Thus, children at this stage can imagine several different arrangements for the furniture in their rooms before they act. They do not have to solve the problem strictly through trial and error by actually making the arrangements. However, <u>the concrete-operational child is not yet able to reason about hypothetical, abstract problems that involve the coordination of many factors at once.</u> This kind of coordination is part of Piaget's next and final stage of cognitive development.

Junior and Senior High: Formal operations.

Some students remain at the concrete-operational stage throughout their school years, even throughout life. However, new experiences, usually those that take place in school, eventually present most students with problems that they cannot solve using concrete operations. What happens *when a number of variables interact*, as in a laboratory experiment? Then a mental system for controlling sets of variables and working through a set of possibilities is needed. These are the abilities Piaget called *formal operations*.

- **At the level of formal operations, all the earlier operations and abilities continue in force ; that is, formal thinking is reversible, internal, and organized in a system of interdependent elements.** The *focus of thinking shift*, however, **from what *is*** to **what *might be***. Situations do not have to be experienced to be imagined.
  Ask a young child how life would be different if people did not sleep, and the child might say, "People do sleep !" In contrast, the adolescent who has mastered formal operations can consider contrary-to-fact questions. In answering, the adolescent **demonstrates**

- the hall-mark of formal operations **– hypothetico – deductive reasoning**. The formal thinker can consider a hypothetical situation (people do not sleep) and reason deductively (from the general assumption to specific implications, such as longer workdays, more money spent on energy and lighting, or new entertainment industries).

- Formal operations **also include inductive reasoning**, or *using specific observations to identify general principles.*

   For example, the economist observes many specific changes in the stock market and attempts to identify general principles about economic cycles.

- Formal – operational thinkers **can form hypotheses, set up mental experiments to test them, and isolate or control variables in order to complete a valid test of the hypotheses.** The organized, scientific thinking of formal operations requires that students systematically generate different possibilities for a given situation.

- **The ability to think hypothetically, consider alternatives, identify all possible combinations, and analyze one's own thinking** has some interesting consequences for adolescents. Since they can think about worlds that do not exist, they often become *interested in science fiction*. Because they can reason from general principles to specific actions, they often *are critical of people whose actions seem to contradict their principles.* Adolescents *can deduce the set of "best" possibilities and imagine ideal worlds (or ideal parents and teachers, for that matter).* This explains why many students at this age *develop interests in utopias, political causes, and social issues*. They want to design better worlds, and their thinking allows them to do so. Adolescents can also *imagine many possible futures for themselves* and may try to decide which is best. Feelings about any of these ideals may be strong.

- Another characteristic of this stage is **adolescent ego-centrism**. Unlike egocentric young children, adolescents do not deny that other people may have different perceptions and beliefs; the adolescents just become very focused on their own ideas. They analyze their own beliefs and attitudes. This can lead to what Elkind (1981) calls the sense of an *imaginary audience* – the feeling that everyone is watching. Thus, adolescents believe that others are analyzing them : "Everyone noticed that I wore this shirt twice this week". "The whole class thought my answer was dumb !".   We can

see that social blunders or imperfections in appearance can be devastating if "everybody is watching".

Piaget himself (1974) suggested that most adults may be able to use formal operational thought in only a few areas where they have the greatest experience or interest. So do not expect every student in your junior high or high school class to be able to think hypothetically about all the problems you present. Students who have not learned to go beyond the information given to them are likely to fall by the way-side. Sometimes students find shortcuts for dealing with problems that are beyond their grasp; they may memorize formulas or lists of steps. These systems may be helpful for passing tests, but real understanding will take place only if students are able to go beyond this superficial use of memorization – only, in other words, if they learn to use formal – operational thinking.

Implications of Piaget`s Theory for Teachers

- **Understanding and Building on Students' Thinking.**
  - ➢ The students in any class will vary greatly in both their level of cognitive development and their academic knowledge.
  - ➢ By studying the student's kind of thinking and the strategies used in solving the problems, the teacher can determine whether students are having trouble because they lack the necessary thinking abilities or because they simply have not learned the basic facts?
  - ➢ Students must be neither bored by work that is too simple nor left behind by teaching they cannot understand. Disequilibrium must be kept "just right "to encourage growth. Setting up situations that lead to errors can help create an appropriate level of dissequilibrium . When students experience some conflict between what they think should happen (a piece of wood should sink because it is big) and what actually happens(it floats!),they may rethink the situation , and new knowledge may develop.
  - ➢ Many materials and lessons can be undersood at several levels and can be "just the right" for a range of cognitive abilities. Classics such as *Alice in Wonderland* ,myths and fairy tales can be enjoyed at both concrete and formal levels. It is also possible for students to be introduced to a topic together , then work individually on follow- up activities matched to their level.

- **Activity and Constructing knowledge**
  - ➢ Piaget`s fundamental insight was that individuals *construct* their own understanding; learning is a constructive process. At every level of cognitive development, you will also want to see that students are actively engaged in the learning process. This active experience, even at the earliest school levels, should not be limited to the

physical manipulation of objects. It should also include mental manipulation of ideas that arise out of class projects or experiments.

➢ All students need to interact with teachers and peers in order to test their thinking, to be challenged, to receive feedback, and to watch how others work out problems. Disequilibrium is often set in motion quite naturally when the teacher or another student suggests a new way of thinking about something. As a general rule, students should act, manipulate, observe, and then talk and / or write (to the teacher and each other) about what they have experienced. Concrete experiences provide the raw materials for thinking. Communicating with others makes students use, test, and sometimes change their thinking abilities.

- **The Value of Play**
  ➢ Babies in the sensorimotor stage learn by exploring, sucking, pounding, shaking,
  ➢ throwing – acting on their environments. Preoperational preschoolers, love pretend play and through pretending form symbols, use language, and interact with others. They are beginning to play simple games with predictable rules. Elementary school-age children also like fantasy, but also are beginning to play more complex games and sports, and thus learn cooperation, fairness, negotiation, winning, and losing as well as developing language. As children grow into adolescents, play continues to be part of their physical and social development.

Some Limitation of Piaget's Theory : Although most psychologists agree with Piaget's insightful descriptions of how children think, many disagree with his explanations of why thinking develops as it does.

The trouble with Stages.
Underestimating Children's Abilities.
Cognitive Development and Information Processing.
Cognitive development and Culture.

Piaget's Stages of cognitive Development		
Stage	Approximate Age	Characteristics
Sensorimotor	0-2 years	Begins to make use of imitation, memory, and thought.
Preoperationsl	2-7 years	Gradually develops use of language and ability to think in symbolic form Able to think operations through logically in one direction Has difficulties seeing another person's point of view.
Concrete operational	7-11 years	Able to solve concrete (hands-on) problems in logical fashion. Understands laws of conservation and is able to classify and seriate. Understands reversibility.
Formal operational	11-adult	Able to solve abstract problems ;in logical fashion. Becomes more scientific in thinking. Develops concerns about social issues, identity.

ERICKSON`S VIEW OF PSYCHOSOCIAL DEVELOPMENT

Erickson saw development as a passage through a series of stages, **each with its particular goals, concerns, accomplishments, and dangers.**
The stages are interdependent; accomplishments at later stages depend on how conflicts are resolved in the earlier years. At each stage, Erickson suggests that the individual faces a **developmental crisis-** *a conflict between a positive alternative and a potentially unhealthy alternative.* The way in which the individual resolves each crisis will have a lasting effect on that person's self image and view of society.

ERICKSON`S EIGHT STAGES OF PSYCHOSOCIAL DEVELOPMENT				
No.	Stages	Approximate age	Important Event	Description
1.	Basic **Trust** versus Basic **Mistrust**	Birth to 12-18 months	Feeding	The infant must form a first loving, trusting relationship with the caregiver or develop a sense of mistrust.
2.	**Autonomy** versus **Shame or doubt**	18 months to3 years	Toilet training	The child's energies are directed toward the development of physical skills, including walking, grasping, controlling the sphincter. The child learns control but may develop shame and doubt if not handled well.
3.	**Initiative** versus **Guilt**	3 to 6 years	Independence	The child continues to become more assertive and to take more initiative but may be too forceful, which can lead to guilt feelings.
4.	**Industry** versus **Inferiority**	6 to 12 years	School	The child must deal with demands to learn new skills or risk a sense of inferiority, failure and incompetence.
5.	**Identity** versus **Role Confusion**	Adolescence	Peer relationships	The teenager must achieve identity in occupation, gender roles, politics and religion.
6.	**Intimacy** versus **Isolation**	Young adult hood	Love relationships	The young adult must develop intimate relationships or suffer feelings of isolation.
7.	**Generativity** versus **Stagnation**	Middle adult hood	Parenting or Mentoring	Each adult must find some way to satisfy and support the next generation.
8	**Ego-integrity** versus **Despair**	Late adulthood	Reflection on and acceptance of one's life	The culmination is a sense of acceptance of oneself and a sense of fulfillment.

The Preschool Years: Trust, Autonomy, and Initiative.

Erickson identifies **trust** versus **mistrust** as the basic conflict of infancy. According to Erickson, the infant will develop a sense of trust if its needs for food and care are met with comforting regularity and responsiveness from the caregivers. If these needs are not met, they fail to develop feelings of trust in others and remain forever suspicious and wary.

Erickson's second stage, **autonomy** versus **shame and doubt**, marks the beginning of self-control and self-confidence. Young children begin to assume important responsibilities for self care such as feeding, toileting and dressing. During this period parents must tread a fine line; they must be protective—but not over protective. If parents don't maintain a reassuring, confident attitude and don't reinforce the child's efforts to master basic motor and cognitive skills, children may begin to feel <u>shame</u>; they may lead to <u>doubt</u> their abilities to manage the world on their own terms. Erickson believes that children who experience too much doubt at this stage will lack confidence in their own abilities throughout life.

For Erickson, the next stage of" **initiative** adds to autonomy the quality of undertaking, planning, and attacking a task for the sake of being active and on the move." The challenge of this period is to maintain a zest for activity and at the same time understand that not every impulse can be acted on. Again, adults must tread a fine line, this time in providing supervision without interference. If children are not allowed to do things on their own, a sense of **guilt** may develop; they may come to believe that what they want to do is always "wrong."

Encouraging initiative in preschool children
- Encourage children to make and act on choices.
- Make sure that each child has a chance to experience success.
- Encourage make –believe with a wide variety of roles.
- Be tolerant of accidents and mistakes, especially when children are attempting to do something on their own.

Elementary and Middle School Years: Industry versus Inferiority

In the early school years, students are developing a sense of **industry.** They are beginning to see the relationship between perseverance and the pleasure of a job completed. The school and the neighbor hood offer a new set of challenges that must be balanced with those at home. Interaction with peers becomes increasingly important as well. The child's ability to move between these worlds and to cope with academics, group activities, and friends will lead to a growing sense of competence. Difficulty with these challenges can result in the feelings of **inferiority.**

Encouraging Industry
- Make sure that students have opportunities to set and work toward realistic goals.

- Give students a chance to show their independence and responsibility.
- Provide support to students who seem discouraged.

Adolescence: The Search for Identity.

The individual has been developing a sense of self since infancy. But adolescence marks the first time that a conscious effort is made to answer the now pressing question, "Who am I?" The conflict defining this stage is *identity* versus *role confusion* Identity refers to the organization of the individual's drives. Abilities, beliefs, and history in to a consistent image of self. It involves deliberate choices and decisions, particularly about work, values ideology and commitments to people and ideas. If adolescents fail to integrate all these aspects and choices, or they feel unable to choose at all, role confusion threatens.

Supporting Identity formation
- Give students many models for career choices and other adult roles.
- Help students find resources for working out personal problems.
- Be tolerant of teenage fads as long as they don't offend others or interfere with learning.
- Give students realistic feedback about themselves.

Beyond the School Years

The crises of Erickson's stage of adult hood all involve the quality of human relations. The first of these stages is *intimacy* versus *isolation.* Individuals must develop the ability to form deep, intimate relationships with others. This does not mean mere sexual intimacy; rather, it involves the ability to form deep emotional attachments to others. People who fail to resolve it successfully will live their lives in isolation, unable to form truly intimate, lasting relationships.

The next stage is *generativity* versus *stagnation*. Generativity extends the ability to care for another person and involves caring and guidance for the next generations and for future generations. While generativity frequently refers to having and nurturing children, it has a broader meaning. People who don't become parents can express generativity by providing help and guidance to young people-student, younger coworkers, nieces and so on.

The last of Erickson's stages is *integrity* versus *despair*, coming to terms with death. Achieving integrity means consolidating your sense of self and fully accepting its unique and now unalterable history. Those unable to attain a feeling of fulfillment sink into despair.

KOHLBERG`S STAGES OF MORAL DEVELOPMENT

Moral development: The changes in **the ability to reason about morality** that occur as a child grows up.

Lawrence Kohl berg (1963,1975,1981) contended that children pass through distinct stages of **moral development**; that is, **the way they reason about morality changes** as they mature.

He proposed a detailed <u>sequence of stages of moral reasoning</u> (the thinking process involved in judgments about questions of right and wrong).
He divided moral development into <u>three levels</u>:
1. **Pre conventional** - where judgment is based solely on *a person's needs and perceptions;*
2. **Conventional** - where the *expectations of society and law* are taken into account;
3. **Post conventional** - where judgments are **based on abstract, more personal principles** that are not necessarily defined by society's laws.

Kohl berg has evaluated the moral reasoning of both children and adults by presenting them with **moral dilemmas** (situations in which no choice is clearly and indisputably right) or hypothetical situations in which people must make difficult decisions and give their reasons.

Example of moral dilemma:
A man's wife is dying. There is one drug that could save her, but it is very expensive, and the druggist who invented it will not sell it at a price low enough for the man to buy it. Finally, the man becomes disparate and considers stealing the drug for his wife. What should he do, and why?

At level 1 (pre conventional),
The child's answer to the drug dilemma above might be "*It is wrong to steal because you might get caught.*" This answer reflects the child's basic egocentrism (egocentric=assuming that others experience the world the way you do.). The reasoning might be; "What would happen to me if I stole something? I might get caught and punished."

At level 2 (conventional),
The subject is able to <u>look beyond the immediate personal consequences</u> and consider the views, and especially the approval, of others. Laws, religious or civil, are very important and are regarded as absolute and unalterable. One answer stressing adherence to rules, "*It is wrong to steal because it is against the law,*"
Another answer, placing high value on loyalty to family and loved ones but still respecting the law, is, "*It's right to steal because the man means well-he's trying to help his wife. But he will still have to pay the druggist when he can or accept the penalty for breaking the law.*"

At level 3 (post conventional),
An answer might be," *It is not wrong to steal because human life must be preserved. The worth of a human life is greater than the worth of property.*" This response considers the underlying values that might be involved in the decision. Abstract concepts are no longer rigid, and, as the name of this level implies, principles can be separated from conventional values. A person reasoning on this level understands that what is considered right by the majority may

not be considered right by an individual in a particular situation. Rational, personal choice is stressed.

The three levels are subdivided into stages

KOHLBERG`S THEORY OF MORAL REASONING

LEVEL I: Pre Conventional Moral Reasoning
Judgment is based on personal needs and other's rules

Stage 1 *Punishment –Obedience Orientation*
Rules are obeyed to avoid punishment. A good or bad action is determined by its physical consequences.
Stage 2 *Personal Reward Orientation*
Personal needs determine right or wrong. Favors are   returned along the lines of "You scratch my back, I`ll scratch your`s

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LEVEL   II: Conventional Moral Reasoning
Judgment is based on other's approval' family expectations, traditional values, the laws of society, and loyalty to country.

Stage 1 *Good Boy- Nice Girl orientation*
Good means "nice". It is determined by what pleases, aids, and is approved by others.
Stage 2 *Law and Order orientation*
Laws are absolute. Authority must be respected and the   social order maintained.

LEVEL III: Post conventional Moral Reasoning (Principled or Self Accepted Principles)
Judgments are based on abstract, more personal principles that are not necessarily defined by society's laws

Stage 1 *Social Contract Orientation*
Good is determined by socially agreed- upon standards of individual rights. This is a morality similar to that of the country's constitution.
Stage 2 *Universal Ethical Principle Orientation*.
Good and right are matters of individual conscience and involve abstract concepts of justice, human dignity, and equality.

Moral reasoning is related to both cognitive and emotional development. Like cognitive development, reasoning about morality develops gradually.
More advanced forms of reasoning do appear with age, but aspects of earlier kinds of reasoning are present in all ages, and different levels of reasoning are called into use at different times and in different situations.

Although a preschooler's responses to moral dilemmas would probably be consistently preconventional, a school child's response would probably have a mixture of both preconventional and conventional responses. Like all of human development, moral development is not a perfectly regular, even process.

DISCOVERY LEARNING BY J.S. BRUNER.

Bruner propounded a cognitive model of learning. Bruner was not satisfied with the Piaget's view of <u>descriptive</u> understanding & learning; he expected that a theory of learning should be <u>prescriptive.</u> He was of the opinion that the theory of instruction should explain not only how learning takes place, but also suggest strategies for improving learning.

Any subject can be taught effectively in some intellectual honest form to any child at any stage of development.

Bruner's work emphasized

(i) **The importance of understanding the structure of a subject being studied.**

(ii) **The need for active learning as the basis for true understanding.**

(iii) **The value of inductive reasoning in learning.**

Structure and Discovery

<u>**Subject structure**</u>

Subject structure refers to the fundamental ideas, relationships or pattern of the field-the essential information. Because structure does not include specific facts or details about the subject, the essential structure of an idea can be represented simple as a diagram, a set of principles, or formula.

According to Bruner, *learning will be more meaningful, useful & more memorable for students if they focus on understanding the structure of subject being studied.* For example, if we learned the concepts,- *figure, plane, simple, closed, quadrilateral, isosceles, scalene, equilateral & right*, we would be on our way to understanding one aspect of geometry. If we can place the terms into a **coding system**, we will have a better understanding of the basic structure of this part of geometry.

A **coding system** *is a hierarchy of related concepts or ideas.* At the top of the coding system is the most general concept. In this case, plane, simple, closed ``figure. More specific concepts are arranged under the general concept.

Eg. A Coding System For Triangles.

<u>Plane, Closed Figure, Simple.</u>

↓	↓	↓
Quadrilateral	Triangle	Others

↓	↓
Scalene	Isosceles

↓	↓	↓
Right	Equilateral	Others
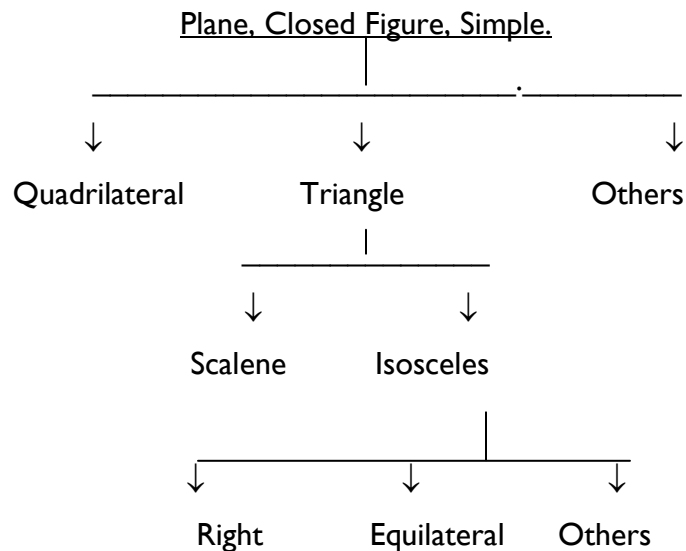
<u>Active Learning</u>

In order to grasp the structure of information, Bruner believes students must be active. They must identity key principles for themselves rather than simply accepting teacher's explanation. He believes that teacher must provide problem situations stimulating students to question explore and experiment. This process has been called *discovery learning*. In **discovery learning** the teacher presents examples and students work with the examples until they discover the inter-relationships – *the subject structure.*

<u>Inductive Reasoning</u>

Bruner believes that classroom learning should take place through inductive reasoning i.e. by using specific examples to formulate a general principle. For instance, if students are presented with enough examples of triangles and non-triangles, they will

eventually discover what the basic properties of any triangle must be. Encouraging underlying thinking in this way is sometimes called **eg-rule method.**

An inductive approach requires **intuitive thinking**, on the part of students. Bruner suggested that teachers could nurture this intuitive thinking by encouraging Students to make guesses based on incomplete evidence and then to confirm and disprove the guesses systematically.

In Bruner's discovery learning a teacher organizes the class so that the students learn through their own active involvement. A distinction is usually made between discovery learning, in which the students work on their own to a very great extent and **guided discovery** in which teacher provides some direction.

Students are presented with intriguing questions, baffling situations or interesting problems. Why does the flame go out when we cover it with a jar ? Why does this pencil seem to bend when you put it in water? Instead of explaining how to solve the problem teacher provide appropriate method and encourage students to make observation, form hypothesis and test solutions. **Feedback** (knowledge of result) must be given at optimal moment, when students can either use it to revise the approach or take it as encouragement to continue in the direction they have chosen.

Discovery learning appears to have many advantages, but even Bruner believes that it is not appropriate in every situation.

Stages of Cognitive Development – J.S. Bruner

Jerome Bruner identified three stages of cognitive growth like Piaget's stages. Bruner believes that children move from **enactive to iconic and finally to symbolic stage**. In the *enactive* stage (similar to sensory motor stage) the child represents and understand the world through *actions*-to understand something is to manipulate it, taste it, throw it & break it and so on. At the *iconic* stage the child represent ideas in *images* - appearance dominate (pre-operational). At the final level, the child is able to use abstract ideas, *symbols, language and logic* to understand and represent the world. Actions and images can still be used in thinking but they do not dominate.

Discovery learning allows students to move through these three stages as they encounter new information. First the students manipulate and act on materials; then they form images as they note specific features and make observations; and finally they abstract general ideas and principles from these experiences and observations.

Applying Bruner's Ideas in the Classroom.

1. **Present both examples and non-examples of concepts you are teaching***(eg-rule method)*

Examples.

  i. In teaching about mammals, include people, kangaroos, whales as examples and chicken, fish, alligators are non-examples

  ii. Ask student for additional examples and non-examples.

2. **Help students see connections among concepts.** *(coding system)*

Examples

i. .Ask students such as these – What else could you call this apple ? (Fruit).

  What do we do with fruit? (Eat). What do we call things we eat ? (Food)

ii. Use diagrams outlines and summaries to point out connections.

3. **Pose a question and let students try to find the answer** (*discovery learning*).

Example

 i. What is the relation between the area of one tile and the area of the whole floor?

4. **Encourage students to make intuitive guesses**.

Example

i. Instead of giving a word's definition, say,"Let`s guess what it might mean by looking at the words around it."

5. **The idea of Spiral Curriculum**

Reference; Woolfolk,Anitta,E.*Educational Psychology*.6th edn.

VYGOTSKY`S SOCIOCULTURAL PERSPECTIVE

Psychologists today recognized that **child's culture shapes cognitive development** by determining what and how the child will learn about the world.

A major Spokesperson for this **sociocultural theory** (also called *sociohistoric-emphasizes role in development of cooperative dialogues between children and more knowledgeable members of society. Children learn culture of their community –way of thinking and behaving- through these interactions*) was a Russian Psychologist who died more than 50 years ago. Vygotsky`s work began when he was studying learning and development to improve his own teaching. Over his brief lifetime, he wrote about language and thought, the psychology of art, learning and development, and educating students with special needs. His work was banned in Russia for many years because he referred Western psychologists. But in the past 25 years, with the rediscovery of his work, Vygotsky`s ideas about language, culture and cognitive development have become major influences in psychology and education and have provided alternatives to many of Piaget`s theories.

◆ **The Social Sources of Individual Thinking**

Vygotsky assumed that "every function in a child's cultural development appears twice: first, on the **social level** and later on the **individual level**; first between the people **(inter psychological)** and then inside the child **(intra psychological)**. In other words, higher mental processes appear first between people as they are **co-constructed** during the shared activities. Then the processes are internalized by the child and become part of that child's cognitive development.

So for Vygotsky,

• *Social interaction* **was the origin of higher mental processes such as problem solving.**

Consider this example:

> *A six-year-old has lost a toy and asks her father for help. The father asks her where she last saw the toy; the child says, "I can't remember". He asks a series of questions—did you have it in your room? Outside? Next door? To each question, the child answers,"no". When he says "in the car?" she says "I think so" and goes to retrieve the toy.*

Who remembered? The answer is really neither the father nor the daughter, but the two together. The remembering and problem solving was **co-constructed**- between people-in

the interaction. But the child may have internalized strategies to use next time something is lost. At some point the child will be able to **function independently** to solve this kind of problem. So like the strategy for finding the toy, higher functions appear first between the child and a"teacher" before they exist within the individual child.

➢ Both Piaget and Vygotsky emphasized the importance of social interactions in cognitive development, but Piaget saw a different role for interaction. He believed that interaction encouraged development by creating disequilibrium- cognitive conflict- that motivated change. Thus Piaget believed that the most helpful interactions were those between peers because peers are on an equal basis and can challenge each other's thinking (homogeneous).

• Vygotsky, on the other hand, suggested that **children's cognitive development is fostered by the interactions with people who are more capable or advanced in their thinking- people such as parent and teachers.** Of course, students can learn from both adults and peers (more capable- heterogeneous).

◆ **Cultural Tools And Cognitive Development**

• Vygotsky believed that **cultural tools,** including **real tools** (such as printing presses, rulers, abacus-today we would add dictionaries, computers, the Internet) **and symbolic tools** (such as numbers and mathematical systems, Braille and sign language, maps, works of arts, signs and codes and language) **play very important roles in cognitive development.**

> *For example, as long as the culture provides only Roman numerals for representing quantity, certain ways of thinking mathematically—from long division to calculus—are difficult or impossible. But if the number system has a zero, fractions, positive and negative values, and an infinite number of numbers, then much more is possible. The number system is a cultural tool that supports thinking, learning ,and cognitive development.*

• Vygotsky emphasized the tools that the culture provides to support thinking. **He believed that all higher – order mental processes, such as reasoning and problem solving, are mediated by (accomplished through and with the help of) psychological tools, such as language , signs and symbols.**

Adults teach these tools to children during day- to- day activities and the children internalize them. Then the psychological tools can help students advance their development. Thus,

children's knowledge, ideas, attitudes, and values develop through appropriating or "taking for themselves" the ways of acting and thinking provided by their culture and by the more capable members of their group.

In this exchange of signs and symbols and explanations, children begin to develop a "**cultural tool kit**" to make sense of and learn about their world. The kit is filled with physical tools such as pencils or paintbrushes directed toward the external world and the psychological tools such as problem solving or memory strategies for acting mentally. Children do not just receive the tools, however. They transform the tools as they construct their own representations, symbols, patterns, and understandings. In the exchange of signs and symbols such as number systems, *children create their own understandings.* These understandings are gradually changed as the children continue to engage in social activities and try to make sense of their world.

- In Vygotsky`s theory **, language** is the most important **symbol system in the tool kit, and it is the one that helps to fill the kit with other tools**

◆ **The Role of Language and Private Speech**

- **Language is critical for cognitive development.**

It provides a means for *expressing ideas and asking questions*, the categories and concepts for thinking, and the links between the past and the future. When we consider a problem, we generally think in words and partial sentences.

Vygotsky thought that the specific human capacity for language enables children to provide for auxiliary tools in the solution of difficult tasks, to overcome impulsive action, to plan a solution to a problem prior to its execution, and to master their own behaviour.

➢ *Language and cultural diversity.*

In general, <u>cultures develop words for the concepts that are important to them</u>.

Example: English-speaking countries have over 3,000 words for colours. Such words are important their lives for fashion and home design, artistic expression, films and television, and lipstick and eye shadow choices. Other cultures care less about color. For example, the Hanunoo people of Midori Island in the Philippines have fewer than five words for colours, even though they can recognize many colour variations.

Cultures that care about feelings have many word tools to talk about emotion .Think of the variety of words in English for anger (rage, resentment, disgust, pique, wrath, fury, exasperation, ire, hostility, animosity)

Language changes overtime to indicate changing cultural needs and values.

To hear hundreds of new 21st century tool words, listen to technicians talk about computers.

- Vygotsky believed that **language in the form of private speech** (talking to oneself) **guides cognitive development.**

- **Vygotsky suggested that these mutterings play an important role in cognitive development by moving children toward *self-regulation, the ability to plan, monitor, and guide one`s own thinking and problem solving.***

Vygotsky believed that *self-regulation* developed in a series of stages.

First the child`s behaviour is guided by others, usually parents, using the language and other signs such as gestures. *Next* the child learns to regulate the behaviour of others using the same language tools along with learning to use external speech to regulate others; the child begins to use private speech to regulate her own behaviour. *Finally* the child learns to regulate her own behaviour by using silent inner speech. This series of steps is another example of how higher mental functions appear first between people as they communicate and regulate each other`s behaviour, and then emerge again within the individual as cognitive processes.

So children using private speech are communicating--they are communicating with themselves **to guide their behaviour & thinking.** In any pre-school room, we might hear 4-or-5- year-olds saying, " No, it won't fit, Try it here. Turn. Turn, May be this one!" while they do puzzles. As these children mature, their self-directed speech goes underground, changing from **spoken** to **whispered speech** and then to **silent lip movements.** Finally, the children just **think** the guiding words. The use of private speech peaks at around 5 to 7 years of age and has generally disappeared by 9 years of age. Brighter children seem to make this transition earlier.

- **Vygotsky identified this transition from audible private speech to silent inner speech as fundamental process of cognitive development.**

Through this process, the child is using language to accomplish important cognitive activities such as directing attention, solving problem, planning, forming concepts and gaining self-control. Children tend to use more private speech when they are confused, having

difficulties or making mistakes. Inner speech not only help us *solve problem* but also help us to *regulate our behaviour*.

➤ **Self-talk and Learning**

Because private speech helps students to regulate their thinking, it makes sense to allow, even encourage, students to use private speech in school. Insisting on total silence when young students are working on difficult problems may make the work even harder for them. You my notice when muttering increases- this could be sign that students need help.

One approach called **cognitive self-instruction**, (*a*pproach in which student talk to them through a large task) *teaches students to use self-talk to guide learning.* For example, students learn to give themselves reminders to go slowly and carefully.

◆ **The Role of Learning and Development**
• **Vygotsky believed that learning was an active process that doesn't have to wait for readiness**.

In fact, "properly organized learning results in mental development and sets in motion a variety of developmental processes that would be impossible apart from learning".

Vygotsky saw learning as a tool in development – learning pulls development up to higher levels and social interaction is a tool in learning.

Piaget defined development as the active construction of knowledge and *learning* as a passive formation of associations. He was interested in knowledge construction and believed that *cognitive development has to come before learning* – the child has to be cognitively "ready" to learn. He said that "learning is subordinated to development and not vice versa.

Vygotsky`s belief that learning pulls development to higher levels means that *other people play a significant role in cognitive development.*

◆ **The Role of Adults and Peers**
• **Vygotsky believed that cognitive development occurs through child's conversations and interactions with more capable members of culture - adults or more able peers.**

These people serve as guides & teachers, providing information & support necessary for the child to grow intellectually. The adult listens carefully to the child and provides just the

right help to advance the child's understanding. Thus the child is not alone in the world "discovering" the cognitive operations of conservation and classification. This discovery is **assisted or mediated** by family members, teachers and peers. Most of this guidance is communicated **through language**, at least in Western cultures. In some cultures, observing skilled performance, not talking about it, guides the child's learning. Jerome Brunner called this adult assistance '**scaffolding**'. The term aptly suggest that children use this **help for support** while they build a firm understanding that will eventually allow them to solve problems on their own.

IMPLICATIONS OF VYGOTSKY`S THEORY FOR TEACHERS

There are at least **three ways** that cultural tools can be passed from one individual to another:

> *Imitative learning* - where one tries to imitate the other.
>
> *Instructed learning*-where learners internalize the instructions of the teacher and use these instructions to self –regulate.
>
> *Collaborative learning*-where a group of peers strives to understand each other and learning occurs in the process.

Vygotsky was most concerned with instructed learning through direct teaching or through *structuring experiences* that support another's learning, but his theory supports the other forms of cultural learning as well. Thus Vygotsky`s ideas are relevant for educators who **teach directly** and **also create learning environments.** One major aspect of teaching in either situation is **assisted learning.**

Assisted Learning

Vygotsky`s theory suggests that teachers need to do more than just arrange the environment so that students can discover on their own. Children cannot and shouldn't be expected to reinvent or rediscover knowledge already available in their cultures. Rather, *they should be guided and assisted in their learning*- so Vygotsky saw teachers, parents, and other adults as central to the child's learning and development.

Assisted Learning, or guided participation in the classroom, requires *scaffolding*(*changing the level of support)*-giving information, prompts, reminders, and encouragement at the right

time and in the right amounts, and then gradually allowing the students to do more and more *on their own.*

Teachers can assist learning by adapting materials or problems to students' **current levels; [Current Ability Level (CAL)–Potential Ability Level (PAL)]** demonstrating skills or thought processes; walking students through the steps of a complicated problem; doing part of the problem (for example, in algebra, the students set up the equation and the teacher does the calculations or vice versa); giving detailed feedback and allowing revisions; or asking questions that refocus student`s attention. **Cognitive self instruction** and **instructional conversations** are examples of assisted learning.

How can you know what kind of help to give and when to give it?

The Zone of Proximal Development (ZPD)

According to Vygotsky, at any given point in development there are certain problems that a child is on the verge of being able to solve. The child just needs some structure, clues, remainders, and help with remembering details or steps, encouragement to keep trying and so on. Some problems are of course beyond the child's capabilities, even if every step is explained clearly.

The Zone of Proximal Development is the area where the child cannot solve a problem alone, but can be successful under adult guidance or in collaboration with a more advanced peer. This is the area where instruction can succeed, because real learning is possible.

Private Speech and the Zone

We can see how Vygotsky's belief about the role of private speech in cognitive development fit with the notion of ZPD. Often, an adult helps the child to solve a problem or accomplish a task using verbal prompts and structuring. This scaffolding may be gradually reduced, as the **child takes over the guidance,** perhaps first giving the prompts as private speech and finally as inner speech.

Teaching and the Zone

 An implication of ZPD is that *students should be put in situations where they have to reach to understand, but where support from other students or from the teacher* is also available.

Sometimes the best teacher is another student who has just figured out the problem. Because,this student is probably operating in the learner's ZPD.

Vygotsky's theory suggests that teachers need to do more than just arrange the environment so that students can discover on their own. The students should be guided by *explanations, demonstrations and work with other students* – opportunities for co-operative learning. Having a student work with someone who is just a bit better at the activity would also be a good idea. (**Inter subjectivity** – processes whereby two participants begin a task with different understandings arrive at a shared understanding.). In addition students should be encouraged to use language to organize their thinking and to talk about what they are trying to accomplish. **Dialogue and discussion** are important avenues to learning.

APPLYING VYGOTSKY`S IDEAS IN TEACHING

- **Tailor Scaffolding to the needs of students.**

Examples

1. When students are beginning new tasks or topics, provide models, prompts, sentence starters, coaching,and feed back.As the students grow in competence,give less support and more opportunities for independent work.

2. Give students choices about the level of difficulty or degree of independence in projects; encourage them to challenge themselves but to seek help when they are really stuck.

- **Make sure students have access to powerful tools that support thinking.**

Examples

1. Teach students to use learning and organizational strategies, research tools, language tools(dictionaries or computersearches),spread sheets, and word processing programs.

2. Model the use of tools; show students how you see an appointment book or electronic notebook to make plans and manage time,for example.

- **Capitalize on dialogue and group learning**

Examples

1. Experiment with peer tutoring; teach how to ask good questions and give helpful explanations.

2. Experiment with cooperative learning strategies.

VYGOTSKY`S SOCIOCULTURAL PERSPECTIVE (in brief)

- Child's culture shapes cognitive development

- Our specific mental structures and processes can be traced to our interactions with others

- These social interactions actually create our cognitive structures and thinking processes.

- Higher mental process appear first between people as they are **co-constructed** during the shared activities. Then the processes are internalized by the child and become part of that child's cognitive development.

- Social interaction was the origin of higher mental processes such as problem solving.

- Vygotsky believed that cultural tools, including *real tools* (such as printing presses, rulers, abacus-today we would add dictionaries, computers, the Internet)and *symbolic tools* (such as numbers and mathematical systems, Braille and sign language, maps, works of arts,signs and codes and language) play very important roles in cognitive development.

- He believed that all higher – order mental processes, such as reasoning and problem solving, are mediated by (accomplished through and with the help of) psychological tools, such as language , signs and symbols.

- Language is the most important symbol system in the tool kit, and it is the one that helps to fill the kit with other tools .

- Language is critical for cognitive development.

- Vygotsky believed that language in the form of private speech guides cognitive development.

- Vygotsky suggested that private speech play an important role in cognitive development by moving children toward self-regulation, the ability to plan, monitor,and guide one`s own thinking and problem solving.

- Vygotsky identified the transition from audible private speech to silent inner speech as fundamental process of cognitive development.

- Vygotsky believed that learning was an active process that doesn't have to wait for readiness

Vygotsky believed that cognitive development occurs through child's conversations and interactions with more capable members of culture - adults or more able peers.

HUMANISTIC APPROACHES TO PERSONALITY

Humanism is a theoretical orientation that emphasizes the unique qualities of humans, especially their free will and their potential for personal growth.
Humanistic theorists take an optimistic view of human nature. In contrast to other approaches they believe

1. That human nature includes an innate drive toward personal growth.
2. That individuals have the freedom to chart their courses of action and are not prawn of their environment, and
3. That humans are largely conscious and rational beings who are not dominated by unconscious, irrational needs and conflicts.

Humanistic theorists also maintain that one's subjective view of the world is more important than objective reality. According to this notion, if you think you are homely, this belief will influence your behavior more than the actual realities of how homely you are.

CARL ROGER`S PERSON- CENTERED THEORY

Rogers viewed personality structure in terms of just one construct, **the self or the self-concept.**

A self-concept is a collection of beliefs about one's own nature, unique qualities, and typical behavior.

Our self- concept is our mental picture of our self. It is collection of self-perceptions. Example. I am pretty, I am hard working.

Rogers stressed the **subjective nature** of the self-concept. Your *self- concept* may not be entirely consistent with your *actual experiences* (your self concept may be *inaccurate*).For example, you may believe that you are quite bright academically, but your progress report suggest otherwise.

Rogers used the term **_incongruence_** to **refer to the disparity between one's self- concept and one's actual experience.**

In contrast, if a person's self concept is reasonably *accurate* , it is said to be **congruent** with reality.

Everyone experiences *some* incongruence-some incongruence is probably unavoidable. Different people have varied amounts of incongruence between self-concept and reality
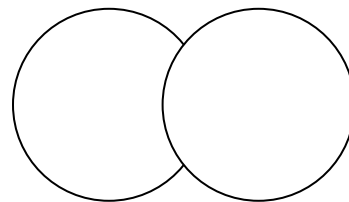
Rogers maintained *that a great deal of incongruence <u>undermines</u> a person's psychological well being.*

Self concept   Actual experience   Self concept   Actual experience
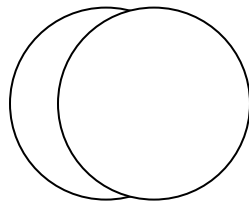
Congruence   **Incongruence**

Self-concept meshes well with actual experience   Self concept doesn't mesh well with actual experience

Carl Rogers explains how child hood experiences promote congruence or incongruence. According to him, everyone has a strong need for affection, love and acceptance from others. Early in life parents provide most of this affection. Rogers maintained that some parents make their affection **conditional.** That is, they make it depend on the child's behaving well and living up to expectations. When parental love seems conditional, children often distort and block out of their self-concept those experiences that make them feel unworthy of love.

At the other end some parent make their affection **unconditional**. Their children has less need to block out unworthy experiences because they have been assured that they are worthy of affection no matter what they do.

Rogers believe that *unconditional love* from parents fosters *congruence* and that *conditional love* fosters *incongruence*

He further theorized that individuals who grew up believing that affection from others (besides their parents) is conditional go on to distort more and more of their

experiences to feel worthy of acceptance from a wider and wider array of people, making the incongruence grow.

People with highly incongruent self-concepts are especially likely to be plagued by recurrent <u>anxiety.</u> To ward off this anxiety, such people often behave <u>defensively</u>. Thus they ignore, deny and twist reality to protect their self-concept.

Rogers also emphasized the importance of **psychological health.** Rogers held that psychological health is rooted in a **congruent self-concept.** Or in other words congruence is rooted in a sense of personal worth, which stems from a childhood saturated with unconditional affection from parents and others.

MASLOW`S THEORY OF SELF ACTUALIZATION

Abraham Maslow`s key contributions on personality were:
◆ His analysis of how motives are organized hierarchically and
◆ His description of healthy personality.

HIERARCHY OF NEEDS

Self-actualization need

Aesthetic Needs

Need to know and understand

Esteem Needs

Belongingness and Love Needs

Safety Needs

Physiological Needs

Maslow proposed that human motives are organized into **a hierarchy of needs. –a systematic arrangement of needs , according to priority, in which basic needs must be met before less basic needs are aroused.**

When a person manages to satisfy a level of needs reasonably well (complete satisfaction is not necessary), this satisfaction activates needs at the next level.

Like Rogers, Maslow argued that humans have an innate drive toward personal growth-that is, evolution toward a higher state of being. Foremost among the needs is the need for self actualization, which is the need to fulfill one's potential; it is the highest need in Maslow`s motivational hierarchy.

Maslow summarized the concept of hierarchy with a simple statement: "**What a man *can* be, He *must* be.**"

➢ According to Maslow, people will be frustrated if they are unable to fully utilize their talent or pursue their true interests. For example, if you have great musical talent but must work as an accountant, or if you have scholarly interest but must work as a sales clerk, your need for actualization will be thwarted.

HEALTHY PERSONALITY

Maslow called people with exceptionally healthy personalities *self-actualizing persons* because of their commitment to continued personal growth. He identified various traits characteristic of self-actualizing people. In brief, Maslow fond that self-actualizes are accurately tuned in to reality and they are at peace with themselves. He found that they are open and spontaneous and that they retain a fresh appreciation of the world around them. Socially, they are sensitive to other's needs and enjoy rewarding interpersonal relations. However, they are not dependent on others for approval, not are they uncomfortable with solitude. They thrive on their work, and they enjoy their sense of humor. Maslow also noted that they enjoy "peak experiences" (profound emotional highs) more often than others. Finally, he found that they strike a nice balance between many polarities in personality, so that they can be childlike and mature, rational and intuitive, conforming and rebellious.

Characteristics of Self - Actualizing People.
◆ Clear, efficient perception of reality and comfortable relations with it.
◆ Spontaneity, simplicity, and naturalness.
◆ Problem centering.
   (Having something outside themselves they "must" do as a mission)

- Detachment and need for privacy.
- Autonomy, independence of culture and environment.
- Continued freshness of appreciation.
- Mystical and peak experiences
- Feelings of kinship and identification with the human race
- Strong friendships, but limited in number.
- Democratic character structure.
- Ethical discrimination between means and ends between good and evil.
- Philosophical, unhostile sense of humor
- Balance between polarities in personality.

FIELD APPROACH TO PERSONALITY- KURT LEWIN

Life Space- Structure

- **A person's Life space is his psychological world** or psychological representation of a person's environment.

- It includes *the person* and his *psychological environment* – that part of his physical and social environment with which he is psychologically engaged at a juncture of a moment, or longer duration, because it is relevant to his purposes at that juncture.

To some degree your life space is determined by you. For others, it's largely determined by your environment and the people you're in association with.

Life space includes:

o   The *person* , his drives, motives, beliefs, tensions, thoughts, feelings and his *physical environment* which consists of perceived objects and events.

o   The places where you physically go, the people and events that occur there, and your feelings about the place and people. One part of this is the places you inhabit every day, or at least regularly. Another part is places you've been to, but go only very occasionally or may never go back to again.

o   Your vicarious life-space includes the world you travel into through reading, movies, TV, what other people say, etc.

o   Then there is also your own personal mental life space--the places you inhabit in your mind, your fantasy world, etc.

o   When you're planning what to do tomorrow, your life-space is not the room you're in now but the place where you expect to be tomorrow.

For example, if you think of your grandmother and you recall her affection for you, though she is not in the physical space, she exists in your psychological space.

- The life space is surrounded by a non-psychological boundary called the **foreign hull.**

It is composed of those aspects of a person's physical-social environment that are observable by the one who is studying the particular person but which, at the juncture under consideration, have no significance for the person being studied.
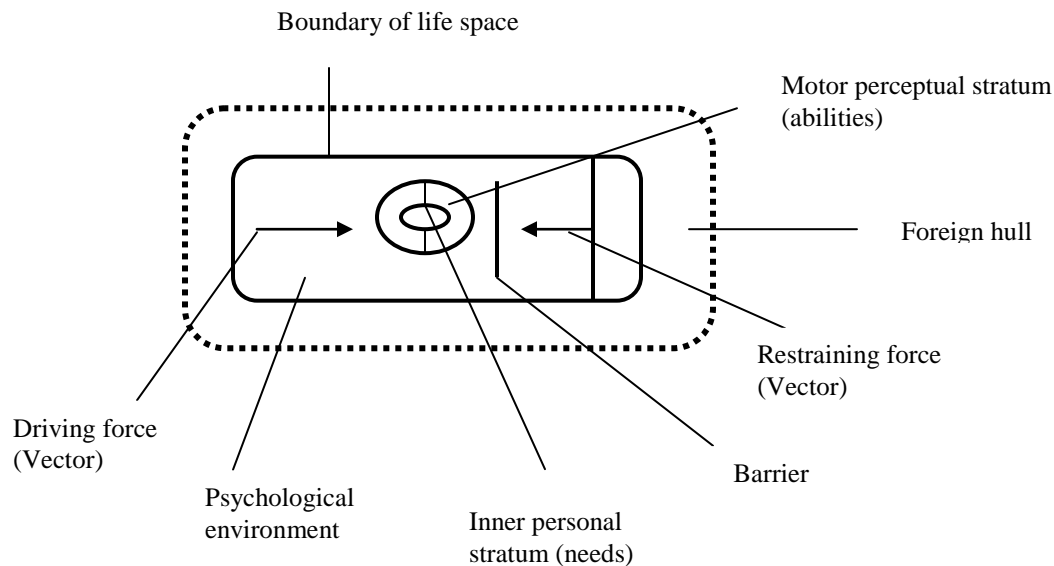
o The boundaries of the respective regions of a life space are characterized by **_permeability._**

o For an aspect of the physical-social world to influence the intelligent behavior of a person, it must be moved from a foreign hull into his life space through his **_interaction with it._** Through a person's _interaction_ with the non psychological environment, parts of a present foreign hull can be transformed into goals, barriers, and other psychological factors of succeeding life spaces. They then are no longer a part of the foreign hull. Factors so transformed become parts of either a psychological person or environment. Thus, what a moment before constituted only a part of the foreign hull may at a succeeding moment is a central part of either the person or his psychological environment.

A PERSON IN LIFE SPACE

**The person** is often represented as a point moving about in his life space.

- Psychologically a **person** is composed of two components –

    Motor perceptual stratum (_abilities_) and

    Inner personal stratum (_needs_).

- In addition to the person, the life space contains the **goals**, **the barriers** that restrict the person's movement towards the goal, and the path he must follow to reach to the goal.

Boundary of life space

Motor perceptual stratum (abilities)

Foreign hull

Restraining force (Vector)

Driving force (Vector)

Barrier

Psychological environment

Inner personal stratum (needs)

Figure: A person in life space

➢ **Dynamics in Life Space**

- A person in the life space is always under the influence of certain *psychological forces* called **vectors.** It is the vector forces that control the movement of the person towards a goal.

- According to Lewin, *learning is a change in cognitive structure, which is a change in the structure of the life space of the individual*. A change in the structure of the life space occurs when the person move from one region of life space to another. This process of moving from one region to another region is known as **locomotion."** According to him, when a particular system in the inner person is activated, the individual's activity moves from one region to another. Thus, a young child who returns from school and has his milk moves into the region of play.

- The movement of the person is decided by the **valence** (attracting or repelling force) of the goal. When a person is attracted by a goal, it is said to have *positive valence.* When the person is repelled by a goal, it is said to have *a negative valence.*

The person tends to move towards a region in the life space that has positive valance and he tends to move away from a region in life space that has negative valance.

- Because the person is influenced by several valences at a time, these give rise to **conflicts.** There are three types of conflicts:
  1. *Approach- approach conflict*: It arises when the person is caught in between two goals both having positive valances.
  2. *Approach – avoidance conflict*: It arises when the person is caught in between a positive and a negative goal.
  3. *Avoidance- avoidance conflict*: It arises when the person is caught in between two goals both having negative valances.

The changes in the cognitive structure (structuring and restructuring of field) are caused by the vector forces operating in the psychological field –needs, aspirations, valances and conflicts.

- According to Lewin, ***learning is a change in cognitive structure, which is a change in the structure of the life space of the individual***.

- A person *changes the cognitive structure of his life space* through **differentiation, generalization, and restructurization .**

Cognitive differentiation-is the process within which regions are subdivided into smaller regions. Differentiation means discerning more and more specific aspects of one's environment and oneself.

Example: what once were "kitties" comes to be "leopards", "tigers"," lions" and "cats".

As a child grows he differentiates
  1. Himself or his person from his environment.
  2. Different aspects of his person and environment from each other.
  3. A psychological past and future from the present, and
  4. Imaginative reality levels from the concrete reality level of his life space.

Differentiation proceeds at different rates at different times, and during crisis periods such as adolescence its speed rapidly fluctuates.

Cognitive Generalization- is a process whereby one formulates a generalized idea or concept through discerning some common characteristics of a number of individual cases and identifies the cases as a class of ideas or objects.

Example: When a child learns that cats, dogs, horses, and birds are animals he is generalizing.

Cognitive Restructurization –of one's life space means one's making more or different sense of oneself and one's world.

According to field theory of learning, a person learns through *differentiating, generalizing and restructuring* both his person and psychological environment so as to acquire new or changed insights, understandings, or meanings concerning them, and thereby achieves changes in motivation, group belongingness, muscular skills, time perspective and ideology. In this way, **he <u>gains greater control of himself and the world.</u>**

- The life space though at birth is largely undifferentiated, gradually gets differentiated into two regions, an inner person an outer environment. This regional differentiation is very fluid in the early stages of life and gradually becomes more and more distinct. For example, a child does not have a very markable distinction between itself and the environment, but gradually this distinction ceases. *The outer environment gets differentiated into various regions like home, playground, school etc. and the inner person gets differentiated into different systems, which is essentially motivational systems –ambitions, and needs and abilities to know about various matters and to carry out activities of different kinds. As new needs and motivations arise and also as experiences accumulate, the differentiation goes on.*

- **<u>For ensuring a normal life there</u> should be a <u>definite distinction between the inner person region and outer environmental region,</u>** failing which self-object relationship cannot be established. On the other hand the boundary between the two gets differentiated. The result is rigidity and even alienation from reality**. Lewin`s view of personality is that it is a gradually emerging system, which gets**

differentiated within the life space and yet maintains permeability between the two.

Inner Person

Child   Adult

Outer Environment
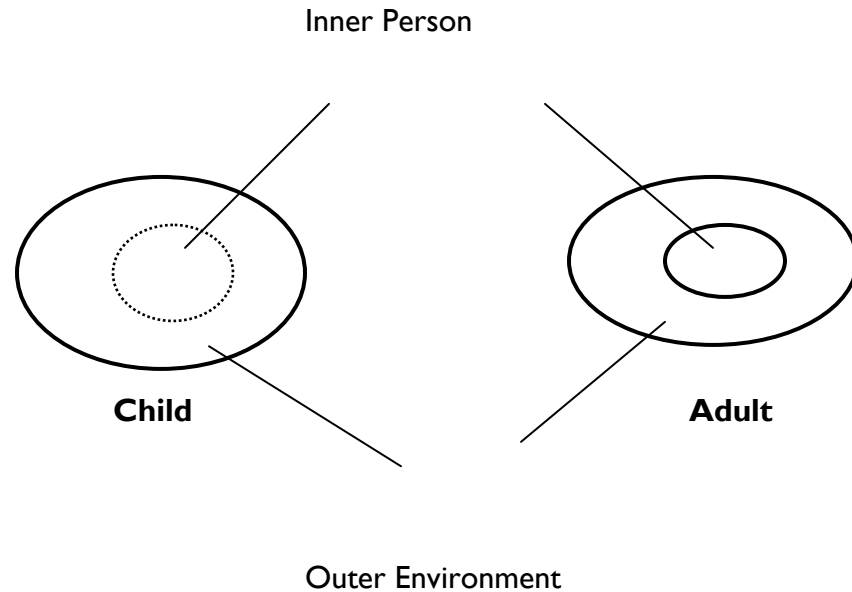
- According to Lewin, **the cognitive structure of a person or the structure of the life space of a person determines his personality.**

➢ **Applying Field Approach to Educational Situation**

- Within a cognitive- field approach to an educational situation, <u>each teacher and each student is considered a discerning person in interaction with his psychological environment.</u>
A teacher's unique function is to implement and promote the development of serviceable insights of students so as to help students become more adequate and **_harmonious personality_**- _that is more intelligent. When one behaves intelligently , one does what one wants to do; if one does not want to do it more than one wants not to do it , one does not do it_

.

- To accomplish this, **a teacher needs a basic _understanding of the structure and dynamics of life spaces._**

To understand the behavior of a student, a teacher must determine the psychological position of the student's person in reference to the goal regions of his life space, that is the topology or the structure of his life space.This entails knowing the student's social position within and outside various groups, his position in relation to various ideas and activities, and the role of physical objects in his life space. ***The relationship of a student's person to the environmental regions of his life space determines his qualities of his immediate surroundings, which sets the possibilities for the student's next step in his psychological life. The dynamics of life space picture what is happening or likely to happen.***

- Furthermore, teacher must assess the degree of permeability of the boundaries of the various regions of the student's life space. ***Such permeability means how susceptible the student is to change.***

- Knowing these facts ***helps a teacher determine what is possible and what is not and what might happen and what might not.*** Then, to understand and accurately predict a student's behaviour, a teacher, in addition to understanding the structure of the student's field- the interpositional relationships between the parts in his life space- must also ascertain the dynamic properties of the person's life space in terms of the valences of his goals and the barriers between himself and his goals.

Consider a particular school situation- "Alice is so absorbed with her teacher and schoolwork that she is oblivious to everything else about her, including the other children." The teacher is central in Alice's life space. Alice's schoolwork also is far within the border of her life space. The other children and everything else in the room that is not part of Alice's schoolwork are in the foreign hull of her life space. "Helen is a social butterfly; she wants the attention of most of the children in the classroom. She does give attention to the teacher from time to time, but right now she is concerned with other things" The other children are in Helen's life space; the teacher is at the margin, sometimes in and sometimes out.

- To gain an understanding of each student and his cognitive world, a teacher has to develop a sort of **disciplined naiveté (innocence)**. In order adequately to see Helen through he must see through Helen. He must see Helen's person and environment as Helen sees them.

- **For a teacher to teach a student in a significant way, it is imperative that there be an intersection of the student's life space with the teacher's and with the other life spaces in the room.** Life spaces intersect when they have some regions in common. To ensure an adequate intersection of life spaces, a *teacher* **must probe the various regions of the life spaces** *of his students.*

- Peripheral regions of a person are quite accessible in ordinary conversation. But it is more difficult to reach more central regions, that is, those that are near and dear to him. **When a teacher gains rapport with a student and thereby gains the confidence, the teacher's influence can extend to the student's central regions.** The teacher now is in a position to speak of the student's needs what a person needs depends primarily upon how he sizes up himself and his physical and social environment.

- Teachers should bear in mind that a self or person is in the making constantly as one develops new insights, or changes old ones, and forms new habits. Furthermore, a far-reaching change in the structure of a self or person can occur through one developing a significant educational insight. And finally, a student acquiring a new educational insight can be as significant and far reaching as falling in love, becoming converted, or realizing a great change in his physical and social environment.

- Teachers who are committed to the application of cognitive-field psychology in their teaching may encourage students to memorize certain items that seem to be worth knowing verbatim, but they will strive to teach as much as possible on the **exploratory-understanding or reflection level**. At times, due to human limitations, they may drop back to an explanatory-understanding level.

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