

Learning, Teaching and Assessment

Cognitive Learning Theory

1.0 Cognitive development.

1.1 Piaget's theory of cognition development

1.2 Four stages of cognitive development.

1.3 Educational implication.

Learning Outcomes

After the completion of the unit students will be able to:

1. Acquire Knowledge of the process of cognitive development
2. Understand the factors influencing thinking
3. Understanding about the four stages of cognitive development
4. Apply the implication about Piaget's Cognitive Learning theory

Cognitive development: The development of the mental abilities and capacities which helps an individual to adjust his behavior to the ever changing environmental conditions. Cognitive development is the result of continuous interaction between the organism and the environment.

Jean Piaget is a Swiss psychologist whose contribution in the area of cognitive development is remarkable. Piaget devised a model describing how humans make

sense of the world by gathering and organizing information. Our thinking processes change radically from birth to maturity. Piaget has named Schemes - the basic building blocks of thinking. They are the psychological structures; they are organized system of action or thoughts.

Four factors influence thinking according to individual constructivism theory of Piaget are:

- a) Biological maturation.
- b) Activity
- c) Social experience
- d) Equilibration

According to Piaget, Basic tendencies involved in the thinking process are:

a) Organization: - ongoing process of arranging information

- i) Combining
- ii) Arranging
- iii) Recombining
- iv) Rearranging

b) Adaptation - adjustment to the environment.

Schemes - the basic building blocks of thinking.

Schema- they are the psychological structures, they are organized system of action or thoughts.

Adaptation involves two basic processes.

i) Assimilation - fitting new information into existing schema.

Trying to understand something new into what we already know.

ii) Accommodation - altering existing schemas or creating new ones in response to new information.

c) **Equilibration:** the process of restoration of harmony between the world and the individual's view of the world.

d) **Operation:** a mental activity that transforms or manipulates. E.g.: adding, multiplying etc.

Four stages of cognitive development

Piaget identified four stages of cognitive development

Stage	Approximate age	Characteristics
sensory motor	0-2 years	-begins to make use of imitation, memory and thought -begins to recognize that objects do not cease to exist when they are hidden -moves from reflex actions to goal directed activity
Pre-operational	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 difficulty seeing another persons' point of view
Concrete operational	7-11 years	-able to solve concrete problems in logical fashion -understanding laws of conversation and is able to classify and seriate. -understands reversibility
Formal operational	11-adulthood	-able to solve abstract problems in logical fashion. -becomes more scientific in thinking -develops concerns about social issues, identity

Infancy: the sensor motor stage.

- The earliest period is called the sensor motor stage. The child's thinking involves seeing, learning, moving, touching, tasting etc.
- Develops object permanance
- Beginning of logical goal- directed actions.

Early childhood - early elementary: the pre-operational stage

- Child has not mastered mental operation but moving towards mastery.
- Ability to use symbols, words, gestures, signs, images etc. i.e., semiotic function develop
- Children have difficulty with reversible thinking (thinking backward)
- Difficulty with conversation (the principle that some characteristics of an object remain the same (despite changes in appearance)

- Children face difficulty in considering more than one aspect at a time ie, decentring.
- Pre-operational children are egocentric.
- They indulge in collective monologue.
- Animism-belief that inanimate things are alive.

Pre-operational stages is sub divided into

1.Pre-conceptual stage (2-4)

- development of the ability to use symbols to represent objects.

ii. Intuitive stage (4-7)

Characteristic features of this stage are:

- Use of concepts formed from past and present experiences to form simple relations intuitively. Most important cognitive development.
- Concept: a concept is a way of organizing information into meaningful generalization
- Transductive reasoning- absence of one will be absence of other

Concrete operational stage (7-11)

Characteristic features of this stage are:

- Stage of hands own thinking.
- Recognition of the logical stability of the physical world.
- Ability for logical thinking
- Child can mentally manipulate complex association and integration
- Ability of reversibility which promotes logical thinking.
- Operations like classification and seriation

- Abstract thinking is not possible.
- The term concrete operational means the child can reason only about tangible objects are present
- Child is able to perform operations like
 - i. Identity: if nothing is added or taken away the material remains the same.
 - ii. Compensation apparent change in one direction for a change in other direction can be compensated for a change in other direction.
 - iii. Reversibility - reverse of sequence of events
 - iv. Decentration-focusing on more than one dimension (height and length)
 - v. Reciprocity- the recognition that one dimension such as width make up for another i.e., shortness.

Junior and senior: formal operations (11 years above)

Students at this stage are capable of following cognitive functions:

- Thought process becomes quite systematic and reasonably well integrated.
- No longer requires concrete objects to think.
- Reasoning and logical abilities develop i.e, hypothetic thing abilities are developed
 - i. Deductive thinking
 - ii. Inductive thinking
 - iii. Reflective thinking
 - iv. Interpropositional logic
- Mental manipulation- number of variables

- Imagination develops
- Develops experimental spirit.
- Greater abstraction and Meta cognition
- Debate-for and against a proportion.
- Ability to judge truth of logical relationships- inter propositional logic.
- Child will initiate his own learning experience spontaneously.

Educational implications of Piaget's theory of cognitive development.

Pre-operational stage.

- a) Use concrete props and visual aids whenever possible.
- b) Make instructions relatively short, using actions as well as words.
- c) Don't expect the students to be consistent in their ability to see the world from someone else' point of view.
- d) Be sensitive to the possibility that students may have different meaning for the same word.
- e) Give children hands own experience.
- f) Provide wide range of experience in order to build foundation for concept leaning

Concrete operational child

- a) Use concrete props and visual aids especially when dealing with sophisticated material
- b) Continue to give students a chance to manipulate and test objects.

- c) Make sure presentations and readings are brief and well organized.
- d) Use familiar examples to explain more ideas.
- e) Give opportunities to classify and group objects and ideas.
- f) Give opportunities to classify and group objects and ideas on increasing complex levels.
- g) Present problems that require logical, analytical thinking

Formal operational stage

- a) Continue to use concrete-operational teaching strategies and materials.
- b) Give students the opportunity to explore many hypothetical questions
 - i) Make students write position papers, and then exchange these papers with the opposing side and debate topical social issues.
 - ii) Ask students to write about their personal vision of a utopia.
- c) Give students opportunities to solve problems and reason scientifically
 - i) Set up group discussion in which students design experiments to answer questions
 - ii) Ask students to justify different position on topics like animal rights, with logical arguments.
- d) Whenever possible, teach broad concepts, not just facts, using materials and ideas relevant to the students' lives.
 - i) When discussing civil war consider other issues that have divided the US since then.
 - ii) Use lyrics from popular songs to teach poetic device, to reflect on social problems, stimulate discussion on the place of popular music in our culture.

- e) Teach creating event where cognitive structures emerge and change.
- Goal of education should be to help children learn how to learn
 - Education should not furnish the minds of students.
 - Match teaching methods to the children's thinking
 - Problem of match - students must be neither bored by work - too simple nor left behind by teaching they cannot understand
 - Disequilibrium must be kept "just right to encourage
 - Highlighted importance of drives and motivation.
 - Optimum condition for
 - Physical and social experience is indispensable
 - Individuals construct their own understanding is learning is constructive process.

Students should actively engage in the learning process.

- To know an object is to act on it
- Good teacher pupil interaction.
- Do not accelerate the process, when child is psychologically ready, let him learn.

Check your Progress

1. What is cognitive development?
2. What is assimilation and accommodation?
3. Discuss the stages of cognitive development proposed by Piaget with educational implication.

Psycho-social Theory- Eric Erikson

Learning Outcomes

After completion of the unit students will be to:

1. Acquire Knowledge of the process of psycho -social development
2. Understand the factors influencing psycho -social development
3. Understanding about the stages of psycho-social development
4. Apply the implication about Erikson`s psycho -social Learning theory

Erikson's Theory of psychological development

Eric Erikson influenced by Sigmund Freud studied psychoanalysis and offered a basic framework for understanding the needs of young people in relation to the society in which they grow, learn and later contribute.

Erikson's psychosocial theory emphasized the emergence of the self, the search for identity, individual's relation with other.

Erikson identified series of stages in the process of development which are interdependent. Accomplishment at later stage depends on how conflicts are resolved in the earlier years.

* individual face developmental crises.

Crisis: a conflict between a positive alternative and a potentially unhealthy alternative.

Eriksons eight stages of psychosocial development.

Sl No	Stages	Appro. Age	Important event	Description of social condition
1	Basic trust v/s basic mistrust	12-18 months	Feeding	The infant must form a loving, trusting relationship with the care giver or they develop a sense of mistrust.
2	Autonomy v/s shame and doubt	18 months - 3 years	Toilet training	The Child's energy is directed towards the development of physical skills (walking, grasping, controlling sphincter) the child learns control but may develop shame and doubt if not handled well.
3	Initiative v/s guilt	3-6 years	independence	The child continues to become more initiative but may be too forceful which can lead to guilt feeling
4	Industry v/s inferiority	6-12 years	School	The child must deal with demands to learn new skills or risk a sense of inferiority, failure and incompetence.
5	Identity v/s role confusion	Adolescence	Peer relationships	The teenager must find identity in occupation, gender, roles, politics and

				religion
6	Intimacy v/s isolation	Young adulthood	Love relationships	The young adult must develop intimate relationships relationship or suffer feelings of isolation.
7	Generativity v/s stagnation	Middle adulthood	Parenting /mentoring	Each adult must find some way to satisfy and support the next generation
8	Ego integrity v/s despair	Late adulthood	Reflection on and acceptance of one self	The culmination is a sense of acceptance of one self and a sense of fulfillment

The preschool years: trust, autonomy and initiative

Erikson identifies trust versus mistrust as the basic conflict of infancy.

- Infant develops a sense of trust if its needs for food and care are met with comforting
- regularity and responsiveness for care givers.
- Autonomy versus shame make the beginning of self control and self confidence.
- Children begin to assume responsibilities,
- Parents must be protective not over protective.
- Reinforce the Child's effort to master basic motor and cognitive skills.

- Initiative adds to autonomy quality of undertaking, planning and attacking a task
- Maintain a zest of activity.
- Adult supervision and guidance.
- If children not allowed doing things on their own, they develop sense of guilt.

Elementary and middle school years: industry verses inferiority.

- Children develop a sense of industry
- Children begin to see relationship between perseverance and pleasure of job completed
- Society, school and neighborhood offer challenges that have to be balanced with those at home
- Child has to cope with academics, group activities etc leads to a growing sense of competence.
- Difficulty with challenges leads to inferiority

Adolescence: identity.

- Central issue for adolescence is the development of an identity.
- Conscious effort is made to answer the question "who I am?"
- The conflict of this stage is identity verses role confusion
- It involves deliberate choices and decisions about work, values and ideology and commitment to people.

- Failure in integration leads to role confusion.
- Identity refers to organization of the individual's drives abilities, beliefs and history in
- a consistent image of self.

Four identity alternatives of adolescents (James Marcia)

1. Identity achievement.

- Explore the realistic options, make choice and commit to pursue them
- Few students achieve this status by the end of high school
- Identity once achieved may not be unchanging.

2. Identity foreclosure.

- Occurs when individuals do not explore or commit.
- No firm direction, not reaching any conclusion
- Adolescents experiencing identity diffusion may be apathetic and withdrawn and with little hope for the future and rebellious.

3. Moratorium.

- Adolescents who are struggling with choices experience this.
- Exploration with the delay in commitment
- They face identity crisis in moratorium
- Identity achievement and moratorium are healthy alternatives.
- Adolescents who cannot get past identity diffusion or foreclosure stage have
- difficulties in adjusting.
- Identity defused adolescents and young adults give up their lives to fate or go along with the crowd, likely to become drug abuses.

- Foreclosed adolescents become rigid, intolerant dogmatic and defensive

4. Young adulthood beyond school years. (can give fully myself to other)

- The crises of stages of childhood involve the quality of human relations

Intimacy versus isolation

- Willingness to relate to another person on a deep level is intimacy.
- To have a relationship based on more than mutual need
- If not achieved the sense of identity, they tend to fear being overwhelmed or swallowed up by another person and may retreat to isolation

Generativity versus stagnation. (What can I offer to succeeding generation?)

- Generativity extends the ability to care for another person and involves in caring and guidance for the next generation.
- It refers to having the nurturing children
- Productivity and creativity are essential features.

Integrity versus despair (have I found contentment and satisfaction through my life and work)

- Integrity is achieved when you consolidate your sense of self and fully accepting that it is unique and unalterable.
- Those who are unable to attain - a feeling of fulfillment sink into despair.

Some terminologies.

1. **Psychosocial:** - describing the relation of the individuals' emotional needs to the social environment.

2. **Developmental crises:** - a specific conflict whose resolution prepares the way for the next stage.
3. **Initiative:** - willingness to begin new activities and explore in new directions
4. **Industry:** - eagerness to engage in productive work
5. **Identity achievement:** - strong sense of commitment to life choices after free consideration of alternatives.
6. **Identity foreclosure:** - acceptance of parental life choices without consideration of options
7. **Identity diffusion:** - uncenteredness confusion about who you are and what you want.
8. **Moratorium:** - identity crises, suspension of choices because of struggle.
9. **Generativity:** - sense of concern for future generation.
10. **Integrity:** - sense of self acceptance and fulfillment.

Educational implications

Encourage initiative in preschool.

- a) Encourage children to make and act on choices.
 - i. Selection of activity or game - free choice.
 - ii. Avoid interruption when they are doing something.
 - iii. Follow their suggestions or incorporate their ideas in activity.
 - iv. Offer positive choices.
- b) Make sure that each child has a chance to experience success.

- i. When introducing new games teach in small steps.
 - ii. Avoid competitive games.
- c) Encourage make believe with a wide variety of roles.
- i. Encourage to act out stories with costumes.
 - ii. Monitor children's play that no one monopolize.
- d) Be tolerant of accidents and mistakes when children are doing something on their own
- i. Use convenient vessel
 - ii. If mistakes are made, show students how to clean up.

Encourage industry in children.

- a) Make sure that students have opportunities to set and work towards realistic goals.
- i. Begin with short assignment, and then move to long.
 - ii. Monitor student's progress with check point.
 - iii. Help them to set reasonable goals and keep a journal of progress (students)
- b) Give students a chance to show their independence and responsibility
- i. Tolerate honest mistakes.
 - ii. Delegate a student's tasks such as watering plants (class) collecting and distributing materials monitoring computer lab grading homework etc.
- c) Provide support to students who seems discouraged
- i. Use individual charts and contract that shows student's progress.
 - ii. Keep samples of earlier work so students can see and improve

iii. Give award for most improved, most helpful, most hardworking.

Support identity in adolescents.

a) Give students many models for career choices and other adult roles.

i. Point out models from literature and history.

Have a list of birthdays of eminent women, men, leaders or people who made contribution in the area of your study, discuss their accomplishment.

ii. Invite guest speakers to describe how and why they chose their profession.

All work and workers are to be represented.

b) Help students to find resources for working out personal problems.

II. Encourage them to talk to school councilors.

III. Discuss potential outside services.

c) Be tolerant of teenage fads as long as they don't offend others or interfere with learning

i) Do not impose strict dress code or hair code.

d) Give students realistic feedback about themselves

i. Make them understand the consequence of their misbehavior or poor performance.

ii. Give students model answers or show them other students completed projects for comparing with their work,

iii. Keep the roles separate from the person as the students are trying on roles.

iv. Criticize wrong behavior without criticizing the student.

- v. Foster identity formation by providing experience like community service, real-world work, internship etc.

Check your progress

1. What are the factors influencing psycho -social development?
2. What are the four identity alternatives of adolescents given by James Marcia?
3. Who proposed the eight stages of psycho-social development? Name them.
4. Explain the meaning of the terminologies: Industry, Moratorium, Identity diffusion.