

**Lesson Plan II:
PIAGET'S THEORY OF COGNITIVE DEVELOPMENT**

Objective

The participant will:

Review and engage in an activity that could be used later with youth:

They will be able to:

1. Define the words theory, and cognition.
2. Become aware of the fact that they develop intellectually.
3. Perform two versions of Piaget's experiments to see if they are cognitive thinkers, or do they act on the formal operational level.

Procedure

Read:

BACKGROUND ON: THE PSYCHOLOGICAL DEVELOPMENT OF THE ADOLESCENT

Adolescent maturation is a personal phase of development where children have to establish their own beliefs, values, and what they want to accomplish out of life. Because adolescents constantly and realistically appraise themselves, they are often characterized as being extremely self-conscious. However, the self-evaluation process leads to the beginning of long-range goal setting, emotional and social independence, and the making of a mature adult.

Three distinct stages can be identified in the psychological development of the adolescent, even though there is a great deal of overlap in the stages, and they may not occur during the age span indicated. During early adolescence (ages 11-13), development usually centers around developing a new self-image due to their physiological changes. Adolescents need to make use of their newly acquired skills of logical thinking and ability to make judgments rationally. When they reach the ages of fourteen and fifteen (the period known as mid-adolescence), adolescents strive to loosen their ties to their parents and their emotions and intellectual capacities increase. The adolescent becomes adventuresome, and experiments with different ideas. This plays an important role in finding one's relations to oneself, groups, and opposite sex. During this time, the adolescent battles over his own set of values versus the set established by parents and other adult figures. **The adolescent also begins to take on more control of educational and vocational pursuits and advantages.** It is during this time that adolescents' self-dependence and a sense of responsibility become apparent, along with their quest to contribute to society and find their place in it.

During late adolescence (ages range from sixteen on), adolescents have a more stable sense of their identity and place in society. At this stage in life they should feel psychologically integrated and should have a fairly consistent view of the outside world. Adolescent should, by this time, have established a balance between their aspirations, fantasies, and reality. In order for them to achieve this balance they should be displaying concern for others through giving and caring, instead of the earlier childhood pattern of self-gratification. At the conclusion of late adolescence they should have had designed or discovered their role in society, have set a realistic goal in life, and have begun in earnest to achieve it.

Using Developmental Psychology To Understand the Adolescent

Explaining the psychological development of adolescent is difficult due to the lack of empirical research and the great variety of adolescent behavioral modes. However, developmental psychologists have formulated theories describing human psychological development which are useful in understanding adolescents. They demonstrate sequential patterns of development and make some rough estimates about the ages at which they should demonstrate particular developmental characteristics. Because of the great benefits that developmental psychology offers both teachers and parents in suggesting ways to help children in our society, and its usefulness in identifying children who lack skills, this unit will conclude by exploring three significant theories to show how they characterize adolescent's development in the areas of cognition, moral reasoning, and establishing identity.

In developing lesson plans that utilize these theories, the practitioner/teacher/counselor must find the overall level at which the class is functioning. For example, once Piaget's theory is reviewed, the counselor should develop lessons which will help the students move from the concrete level of thinking, to the formal operational stage. This unit includes two activities in which Piaget's theory is performed with a group of students. As you read the lesson plans based on Piaget's theory, it is the behavioral tasks that are important not the outcome. The more advanced the adolescents performing the experiment, the more systematically they will perform the task.

Upon completion of this exercise, practitioner/teacher/counselor will discover the connection between Piaget's theory and Erickson's psychosocial theory. In order for the adolescent to develop a sense of industry (See Erickson's theory below for explanation), students must feel that they are academically successful in school. Therefore, when students complete "hands-on" academic tasks like those given by Piaget, they will feel good about themselves. Review of Erickson's theory below will stress to the teacher the critical importance of identity development within the adolescent. In the lesson plans provided in this curriculum unit you will find exercises that will help children critically think about their personalities and future vocation.

Another vital aspect of adolescent psychological development includes the evolution of values through moral reasoning. Lawrence Kohlberg's theory on moral development provides valuable insight into the evolution of moral reasoning within human beings. This theory provides educators a basis for understanding how this aspect of adolescent psychological development occurs and helps to categorize the level at which the adolescent reasons.

According to Kohlberg's theory, adolescence should be provided with hypothetical dilemmas where students can explore their feelings and openly discuss their viewpoints in choosing between conflictual situations. Through their discussions, adolescents become more aware of their power to make choices and decisions about their lives. Lesson plans reflecting this theory have been included which involve two hypothetical situations which help to guide adolescent moral reasoning through group discussion. The teacher's role in the lessons will be to act as a facilitator in encouraging the students to voice and accept opinions of others.

Piaget's Theory of Cognitive Development

Jean Piaget dedicated most of his life's work to understanding how children develop intellectually. His work on cognitive development is the most complete theory available today and is widely used. (Pulaski, 1970) According to Piagetian theory, children progress through four stages in their cognitive development—seriomotor (birth to two years of age), pre-operational (2 to 7 years of age), concrete operational (7 to 11 years of age) and formal operational (11 to 15 years of age). Each of these stages represent a qualitative leap forward in the child's ability to solve problems and reason logically.

As children enter adolescence, their cognitive abilities lie somewhere between Piaget's third stage of cognitive development—the period of concrete operational—and the fourth, or last stage—formal operational. During the concrete operational stage, children begin to understand the concept of conservation. From the Piagetian perspective, conservation means that children realize that quantities remain the same, even if they are placed in containers of different shapes and sizes. The adolescent also becomes less egocentric, that is, he now understands that everyone does not see things in the same way that he does. The adolescent also becomes capable of reasoning deductively, perform simple operations with physical objects, and apply logic to arrive at conclusions. Even though adolescents at the latter part of this stage display some cognitive maturity, they still are incapable of thinking abstractly. During this stage, things are understood concretely and literally. For example, you cannot say: "That was the straw that broke the camels back," and expect the child to understand what you are talking about. Unrealistic math problems such as: if a dog has six legs, then how many legs will four dogs have, will result in a child arguing that a dog does not have six legs.

However, once the adolescent enters the last stage—formal operational he/she develops the ability to test hypotheses in a mature, scientific manner. They can communicate their position on complex ethical issues, and become capable of thinking abstractly. They can discuss abstract terms such as freedom or liberty without difficulty.

Although Piaget was not interested in formal teaching strategies, educators have applied Piagetian concepts to educate children. Examples of Piagetian theory being used in school includes: (1) using Piagetian tasks to determine the intellectual ability of students; (2) teaching students with cognitive levels in mind; (3) being careful to sequence instruction; (4) testing children to find the results of teaching; (5) encouraging social interaction to facilitate learning, and (6) remembering that children's thought processes are not the same as adults.

Erik Erikson's Psychosocial Theories

Psychosocial theorists based the development of identity on the outcome of crises that occur during the life of a person. Psychosocial theorists define crises as times at which a person actively focuses on, and questions, aspects of his/her identity. Erickson's psychosocial theory states that human beings develop according to a preset plan, the epigenetic principle, that consist of two main elements. First, personality develops according to a predetermined pattern that is maturationally set. Second, each society is structured to encourage challenges that arise during these times.

According to Erikson's theory, individuals proceed through eight stages of development which begin at birth and conclude at death. If the particular crisis is handled appropriately, the outcome will be positive. If not, then a negative outcome will be the result. The two stages which involve conflicts that significantly affect early and late adolescent development are stage 4, the latency state (ages 6-11), and stage 5, puberty and adolescence (ages 12-18).

Stage four of Erikson's theory occurs during the middle school years when children must master skills in math, reading, and writing. At that time the child is faced with the conflict of industry versus inferiority. If the child masters the skills, the child develops a sense of industry and has a positive view of the achievement. However, if a child doesn't meet the expectations of mastering these skills and is constantly criticized, then he/she may develop a feeling of inferiority.

The fifth psychosocial stage occurs during the ages of 11-18. Adolescents begin to consider their futures and decide on careers. During this stage they face the conflict of identity versus role confusion. If the adolescent formulates a satisfying plan of action about his/her future, then the outcome is positive and establishment of identity is achieved. Adolescents who do not develop

this sense of identity may develop “role confusion” and aimlessly move through life without any plan of action or sense of security about their future.

Erikson’s theory demonstrates the importance of the educator’s role in helping children establish their identity upon reaching adolescence. The child must master academic skills in order to feel positive about him/herself. In addition to monitoring skill mastery, the educator must cover the topic of career exploration, and expose the adolescence to as many career choices as possible. Should the adolescent show interest in a certain occupation, then exposure to the right vocational program or academic track is in order to help him/her successfully pursue a goal.

Kohlberg’s Theory of Moral Reasoning

Lawrence Kohlberg viewed development in terms of different levels of reasoning applied to choices people make in their lives. This type of moral reasoning occurs throughout a person’s life and depends on an individual’s social interaction. A person evolves from one level of reasoning to another as he/she is able to understand the higher level of reasoning and is able to experience in social interactions a conflict that implies then to accept the newer, higher-level values. Kohlberg viewed moral reasoning in three levels which included six sequential stages. Kohlberg perceived these stages as universal, that is, no stage is ever skipped, and applicable to all cultures. Kohlberg stressed that the actual decisions people make are not important, but that the reasoning behind the decisions was important. This reasoning determines which stage of development a child is in.

Unlike the other theories discussed above, Kohlberg’s developmental levels and stages are not related to age. Developmental levels are determined by the dilemmas people face and the reasoning they apply in making decisions to resolve these dilemmas. The levels of development range from reasoning based upon self-gratification (preconventional morality), to reasoning based upon conformity (conventional morality) to reasoning based upon individual values that have been internalized (postconventional morality). As each level and its respective stages are discussed below, it is important to remember that adolescents will function at a level or stage more so than others. Determination of the stage at which an adolescent is functioning must be determined by observation and evaluation of the reasoning applied by the child to the dilemmas he/she faces.

Level One: Preconventional Morality

At this level, the child makes decisions based on cultural roles of what is considered to be right or wrong. The reasoning applied is based upon reward and punishment and the satisfaction of their own needs. This level is divided into two stages.

Stage One Punishment and Obedience Orientation.

The child acting in this level avoids breaking rules because he/she may be punished. The child demonstrates complete deference to rules. Often the interest of others are not considered.

Stage Two Instrumental Relativist Orientation.

The reasoning applied during this stage is the one that satisfies the needs of the individual and sometimes the needs of others. However, the only reason that the individual helps another is because a deal has been made where the person the individual helps owes him/her something.

Level Two: Conventional Morality

Conformity is the most important aspect at this level. The individual conforms to the expectation of others, including the general social order. Kohlberg has identified two stages within this level.

Stage Three Interpersonal concordance or “Good Boy/Nice Girl Orientation.”

Living up to the expectations of others and good behavior are the important considerations for the individual in this stage. There is an emphasis on gaining approval by being nice.

Stage Four “Law and Order” Orientation.

The person acting in this stage is oriented towards authority and maintaining the social order. The emphasis is on doing one’s duty and showing respect for authority.

Level Three: Postconventional Morality

People who are in this level make decisions on the basis of individual values that have been internalized. These values are not dependent on one’s friends, family, or group, but totally on the individual making the decision. The stages of reasoning also comprise this level.

Stage Five Social Contract, Legalistic Orientation.

In this stage, correct behavior is defined in terms of individual rights and the consensus of society. Right is a matter of personal opinion and values, but there is an emphasis on the legal point of view present here.

Stage Six Universal Ethical Principle Orientation.

In this highest stage, the correct behavior is defined as a decision of conscience in accordance with self-chosen ethical principles that are logical, universal and consistent. These are very abstract guidelines. (Kohlberg and Kramer, 1969)

Procedure

1. Explain to the student what theories are, and how Piaget studied the intellectual development of children.
Explain to the student that children between the ages of seven and eleven operate on
2. the concrete level, and list some of the characteristics of concrete thinkers. (See Piaget’s theory within the curriculum)
Explain to the students that as they reach the ages of eleven to fifteen, they should
3. gradually start thinking on the formal operational level. List some of the characteristics of students operating from this level. (see Piaget’s theory)
Tell the students that they will perform two of Piaget’s exercises that he performed on
4. children during his studies. Let them know that they should try to solve the problem in a systematic manner.

PROBLEM ONE: Have students use a combination of colors to make the color green.

PROCEDURE FOR PROBLEM ONE:

- A. Have the students work in groups of four.
- B. Instruct the students to place 5 ml of water in a container.
- C. Instruct the student to place three drops of different colored food coloring into each container.
- D. Have the student to use an eyedropper to mix different combinations of the colors until they make the color green.
- E. They should place the drops on wax paper.
- F. After the student completes the above exercise, ask them the following questions: (1) What combination of colors did they use to make green? (2) List the steps of the

experiment.

- G. Let the students know that they just used formal operational strategies by experimenting to solve a problem.
- H. Give the students the following directions for the next problem.

PROBLEM TWO: Number Combination (Procedure as follows)

- A. Give each group consisting of two students, four cards.
- B. Have them write the number one on a card, then the number two on another card, then three on the next card, then the number four on the last card.
Instruct the student to write as many combinations with the four cards keeping the one in the thousandth place. There are only six different combinations (1234, 1243, 1324, 1342, 1432, and 1423).
- C. Allow the students only three minutes to complete the task.
- D. Ask the students how many combinations did they end up with?
- E. If the child came up with the six correct numbers, they have just completed a formal operational task.
- F. If the class could not solve the problem, explain how to systematically come up with it.
- G.

Evaluation Have participants/students write as many combinations as they can keeping the four in the thousandth place.

Procedure

Complete the Questions to Consider for Professionals Working with Adolescents

Questions to Consider for Professionals Working with Adolescents

Source: ReCAPP <http://www.etr.org/recapp/theories/AdolescentDevelopment/questions.htm>

- How does the work that you (or your organization) do incorporate what we know about adolescent development?
- Are the program activities you are currently implementing appropriate to adolescent physical, cognitive, emotional, social, and behavioral development? What evidence do you have to support your answer?
- How would you adapt the current program you are using to better meet the developmental capacities of the early, middle and late adolescent? How would the program change for the three different stages of adolescence?

- How well do you think the adults working with teens you know understand and apply adolescent development principles to the work they do with teens?
- If your answer to the last question was something like "not so well," then how might you open the dialogue about adolescent development with these adults?

Other possible Mini-Activities

1. From an assigned life stage, identify a specific issue, or condition, i.e. biological, psychological, or social, that developmental theory has consistently associated with the life stage. Develop a presentation that includes:

- An overview of the issue or condition (define and describe the issue or condition);
- Link potential individual outcomes to family and community systems.
- Social and developmental theories : Discuss the underlying relationship between individuals in the assigned life stage and factors that put them at risk for the identified issue or condition.

2. Acquire techniques for observing, recording, and reporting observable behaviors of "at-risk" children and adolescents.

- Define anecdotal, running, and specimen recording procedure.
- Record at least five observations of either child or adolescent behavior per week, ensuring subject confidentiality.
- Compare observed behaviors to published milestones or age expectancy.
- Recognize observable symptoms of visual, hearing, speech, learning and behavior disorder.
- Identify inappropriate behaviors as either normal, problem or referable, based published milestones
- Describe possible intervention strategies involving youth, parent, and organizational staff to reduce specific identified inappropriate behaviors.
- Demonstrate skills for recommending appropriate placement in programs based upon knowledge of the individual's learning level and stage of development.

3. Implementation of Educational Philosophy Observation Assignment

GOAL: For you to consider WHY staff/instructors do what they do in the instructional setting and the match between beliefs and practices.

For the following five exercises, jot down your notes in a journal.
Do each exercise during different classes, perhaps with different teachers.

- A) Describe how principles of reinforcement are used to manipulate students' behavior for an event. Think how subtle methods are used such as verbal praise.

Encouraging Desirable Behavior:

- Negative: removing something bad, i.e. "Okay, because you were so cooperative in class today, I won't keep you after for five minutes."
- Positive: giving something good, i.e. "Thank you for being so cooperative in class today, you can work on the computer today."

Discouraging Undesirable Behavior:

- Punishment: give something bad, i.e. "Stop fighting, you'll have to stop working with this group" or removing something good, i.e. "You have talked too much in class so you will not be able to leave class early today."

How effective do you believe the use of behaviorist principles were in these instances? What were the short term effects? What do you think will be the long term effects?

B) . Look for evidence that guiding principles of constructivism are being used.

- Posing problems of emerging relevance to students
- Structuring learning around primary concepts: the quest for essence
- Seeking and valuing students' points of view
- Adapting curriculum to address students' suppositions
- Assessing student learning in the context of teaching

Describe your findings.

What were the short term effects of the lack or presence of these principles in the given setting? What will be the long term effects?

C). Describe the instructors/staff goals for the lesson.

- What are the content goals? Who decided what the content should be?
- What is the purpose of this lesson? Is it for the individual (i.e. to create individual meaning)? For "society" (i.e. to acquire unchanging ideas)?
- What methods are used to educate the students?
- Do students make decisions regarding the curriculum they learn?

Of the theorists you have explored, who do you think this staff/instructor's philosophy is similar to? Why? Do you think this philosophy is effective for this group of students? Why? What other philosophy might be more effective? Why?

D). Ask the staff/instructor you observed for exercise (C) about his/her philosophy of teaching.

Try to get answers to our four questions. What is the purpose of this class? What methods are used? What is the content? (and who decides?) What is students' nature? Do not necessarily ask these specific questions, but try to get a feel for why the staff/instructor does what he/she does.

E). From your perspective, did the staff/instructor observed in exercise (C) match her/his philosophy with his/her practice? Why? Why not? Reflect on how you might create a match between your philosophy/beliefs. What types of things would you do in your classroom that would indicate to an observer what your philosophy of education is?

F). Using notes from your journal, SUMMARIZE your findings to the five exercises. What did you learn from the exercises? What aspects of the experience were valuable? What aspects of the experience were less valuable? What might make it more valuable?

4. Adolescent Development Observation Assignment Educational Psychology

GOAL: For you to consider the role that adolescent's cognitive, social, and physical development plays in the situations that you are observing.

OVERVIEW: Observe a couple of settings while you think of the perspectives outlined in the first three points. Write in your journal answers to questions under those topics.

A) Emotional and Practical Intelligences In your observations of participants so far during your observations, which participants appear to have higher **emotional** intelligence? Which have higher **practical** intelligence? What does that mean? How might the staff/instructor be affecting or utilizing participants' **emotional** or **practical** intelligence in this classroom? Why do you think so? In what ways might you nurture or capitalize on the emotional or practical intelligence of the students in this classroom? Write your answers to these questions in your journal.

B) Multiple Intelligences

Many have suggested a number of ways to address multiple intelligences in the classroom/informal settings. In what ways are participants' different intelligences evident in this classroom? In job interviews a typical question is "How would you address the multiple intelligences of your students?" How would you adjust your instruction of participants to affect and utilize students' multiple intelligences? Write your answers to these questions in your journal.

C) Social and Physical Development

Erikson's stages of psychosocial development indicate that children are developing a sense of themselves at an early age. A critical time for girls occurs when they are developing confidence in themselves, particularly as they begin to look more like women—for boys, particularly as they begin to look like men, "try on personalities". How do you think this stage of development affects the dynamics and interactions in your situation or in the informal settings you are observing? Consider each participant and their personal lives with family and friends. How might an awareness of these development and personal relationships impact your instruction? Write your answers to these questions in your journal?

5. Motivation in the Classroom Observation Assignment

GOAL: For you to consider WHY adolescents do what they do and evidence of motivational principles in learning settings.

OVERVIEW: observe two different classes with the following perspectives. Interview Adolescents and staff about motivation issues. As you do this, write your findings in your journal. Write a paper summarizing your findings.

A): Observing Staff Expectations

Using the tally sheet below regarding general focus, for each participation/interaction with the staff member, note the adolescents name and make a tally in the appropriate column.

B). In the same setting, choose two adolescents. Choose one "low" and one "high". (In your reflection explain how you have defined these terms.) Tally the marks on the individuals' focus handout.

Observing Expectations
General Class Focus

Directions: For each participation/interaction with the teacher, note the student's name and make a tally in the appropriate column.

Student	Raised Hand to Contribute Orally	Asks for Help	Receives Praise (P) or Correction (C)

Observing Teacher Expectations
Individual Students Focus

Behaviors	Tallies/Notes	
	Student A: "High"	Student B: "Low"
Non-verbal behavior		
1. Smiles, nods, touches affectionately, etc.		
2. Frowns, ignores, touches roughly, etc.		
Questioning		
3. Asks a question		
4. Probes, encourages student to respond		
5. Praises responses		
6. Criticizes response		
Instruction		
7. Gives instruction, teaches		
8. Evidence of ability grouping		
Other Interaction		
9. Positive interaction, e.g., identifying important points student made		
10. Negative interaction, e.g. reprimanding		
Other observations:		

Adapted from Allyn and Bacon, Educational Psychology (1993)

**Questions for Teachers to Ask to Help Them
Monitor Behavior Toward
High and Low Achievers
Stipek, D. Motivation to Learn. (1988)**

1. Am I as friendly with low-achieving students as I am with high-achieving students?
2. Do I praise or encourage "lows" when they initiate comments?
3. Do I stay with "lows" in failure situations?
4. Do I praise "lows" only for performance that is truly deserving of praise (i.e. that required real effort)?
5. Do I call on "lows" in public situations?
6. How often do "lows" have positive success experiences in public situations?
7. Are "lows" placed in a "low group" and treated as group members rather than individuals?
8. Are "lows" needlessly criticized for wrong answers or failures to respond?
9. Do I ignore the minor inappropriate behavior of "lows," or do mild violations of classroom rules bring on strong reprimands?
10. Do I make assignments variable, interesting, and challenging for "lows"?
11. How frequently do "lows" have a chance to evaluate their own work and to make important decisions?
12. What are the work preferences of individual students--do they like to work in pairs--and how often are those work preferences honored?
13. Do I intervene with "highs" when they are having difficulty?
14. Do I praise "highs" regardless of their effort or the quality of their performance?

B): Student Motivation

In your journal, write out observed examples of at least 3 of the following motivational issues then answer the questions below:

Ability Conceptions:

Adolescents who see ability as something that develops as the result of effort and persistence v s . adolescents who do not expect to succeed and who see ability as a fixed quantity.

Task Orientation:

Adolescents who are performance oriented vs. Task oriented Interest
Adolescents who are intrinsically motivated vs. Extrinsically motivated

Autonomy:

Adolescents who are highly dependent on the teacher. v s . Independent from the teacher and able to take responsibility.

Utility Value:

Students who perceive the usefulness of an activity/connections to life outside school. v s .
Students who perceive the activity as useless and abstract.

1. How do you think the issues raised affect the individual student(s) involved?
 2. How do you think the issues in each example affect the whole class?
 3. How do you think the issues in each example affect the teacher's actions?
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6. **Choose at least two adolescents in a class. Choose adolescents who seem to have different levels/types of motivation. Interview them regarding their motivation in class. Why do they choose to do what they do in class--participate, do assignments, etc. or not participate, do assignments, etc.?**

 7. **Interview staff/instructors regarding adolescents motivation in his/her class. Why he/she think adolescents do what he/she wants them to do? Why do adolescents choose to not do what the staff wants them to do? Write a brief reflection regarding your discussion.**

 8. **Have students complete the [Cognitive Theory WebQuest](http://suedstudent.syr.edu/%7Eebarrett/ide621/cognitiveprocess.htm) (<http://suedstudent.syr.edu/%7Eebarrett/ide621/cognitiveprocess.htm>)**