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Mr. Speice

ISM 3A

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Research Assessment 9

Work Cited:

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Assessment:

As a began to search for topics for my ninth research assessment, I was unable to think of anything to conduct further research on that would still be relevant to my topic. However, after delivering my research speech early this afternoon, I was finally able to determine a topic that would be beneficial to my topic. Although I have already studied child development, I reached the decision to further my knowledge in this topic. Therefore, I chose to focus on Piaget’s Theory of Cognitive Development, so that I may gain a better and deeper understanding of this topic. Through this research assessment, I was able to determine more details based on this theory of child development.

In the first article that I studied, I was able to learn a brief history of Jean Piaget, the Swiss philosopher who created Piaget's theory. I found it very interesting that Piaget began his career as a zoologist, studying the biology and genetics of animals such as the sparrow. As Piaget continued in this career, he realized that he had some interest in philosophy and psychology. Finally, Piaget landed his studies in epistemology, the branch of philosophy concerned with the theory of knowledge. While focusing his studies in this field, Piaget began to create his theory based on the stages that he recognized as children around him developed. Piaget was able to determine that children develop in a series of four stages, each made up of its own age groups and specific characteristics. The first stage relating to this theory is the Sensorimotor stage, consisting of children from birth to two years of age. This is characterized by children mastering physical reflexes and using them for interest and pleasure, as well as growing in awareness of separation and permanent existence of a variety of items. The second stage is known as the Preoperational stage, consisting of children ages two to seven. This is characterized by a child's manipulation of their environment through thoughts about the external world, as well as a child's understanding of words and language. The third stage is known as the Concrete operational stage, with children from ages seven to twelve. This is characterized by a child beginning to show logic in their own thought processes, recognizing that objects have a variety of similarities and differences, and finally showing an understanding of time and numbers in simple mathematics. Finally, the fourth stage is known as Formal operations, present from adolescence through adulthood. This final stage is characterized by orderly thinking, mastery of logic, flexible mental experiments, as well as the manipulations of ideas, creation of hypotheses, and the ability to think with others.

The second and third sources that I evaluated emphasized extremely similar points to the first source, however in slightly more detail, especially in the emphasis of the effect of a child's outside environment. As a child becomes more exposed to its surroundings, he or she is allowed to grow more in their knowledge and experience, as more opportunities for learning are presented. It was also repeatedly emphasized the change of a child's tendency to be very egocentric at young ages, to becoming increasingly aware that other people may have feelings that are different from their own.

Overall, I was able to increase my understanding of this learning theory, and gained a new depth and insight in this topic. Although I can not directly incorporate these ideas into my classroom, I will now have the ability to understand the ways in which children of each age group that I deal with will be able to function in different ways, as their personal development within each stage may not be as mature as others. When dealing with elementary music education, I will typically be dealing with children who are in either the Preoperational stage or the Concrete operational stage, meaning that students should either be able to manipulate their environment through their thoughts, or that they should be able to incorporate logic into their thought process. Piaget's theory will help me to better understand my own students in a future classroom, ultimately allowing me to be a much more effective teacher as a whole, and hopefully causing students to feel safe and comfortable in the classroom environment that I create.

Jean Piaget, (born August 9, 1896, Neuchâtel, Switzerland—died September 16, 1980, Geneva), Swiss psychologist who was the first to make a systematic study of the acquisition of understanding in children. He is thought by many to have been the major figure in 20th-century developmental psychology.

Piaget's early interests were in zoology; as a youth he published an article on his observations of an albino sparrow, and by 15 his several publications on mollusks had gained him a reputation among European zoologists. At the University of Neuchâtel, he studied zoology and philosophy, receiving his doctorate in the former in 1918. Soon afterward, however, he became interested in psychology, combining his biological training with his interest in epistemology. He first went to Zürich, where he studied under Carl Jung and Eugen Bleuler, and he then began two years of study at the Sorbonne in Paris in 1919.

In Paris Piaget devised and administered reading tests to schoolchildren and became interested in the types of errors they made, leading him to explore the reasoning process in these young children. By 1921 he had begun to publish his findings; the same year brought him back to Switzerland, where he was appointed director of the Institut J.J. Rousseau in Geneva. In 1925–29 he was a professor at the University of Neuchâtel, and in 1929 he joined the faculty of the University of Geneva as professor of child psychology, remaining there until his death. In 1955 he established the International Centre of Genetic Epistemology at Geneva and became its director. His interests included scientific thought, sociology, and experimental psychology. In more than 50 books and monographs over his long career, Piaget continued to develop the theme he had first discovered in Paris, that the mind of the child evolves through a series of set stages to adulthood.

Piaget saw the child as constantly creating and re-creating his own model of reality, achieving mental growth by **integrating simpler concepts into higher-level concepts at each stage**. He argued for a “genetic epistemology,” a timetable established by nature for the development of the child’s ability to think, and he traced four stages in that development. He described the child during the first two years of life as being in a sensorimotor stage, chiefly concerned with mastering his own innate physical reflexes and extending them into pleasurable or interesting actions. During the same period, the child first becomes aware of himself as a separate physical entity and then realizes that the objects around him also have a separate and permanent existence. In the second, or preoperational, stage, roughly from age two to age six or seven, the child learns to manipulate his environment symbolically through inner representations, or thoughts, about the external world. During this stage he learns to represent objects by words and to manipulate the words mentally, just as he earlier manipulated the physical objects themselves. In the third, or concrete operational, stage, from age 7 to age 11 or 12, occur the beginning of logic in the child’s thought processes and the beginning of the classification of objects by their similarities and differences. During this period the child also begins to grasp concepts of time and number. The fourth stage, the period of formal operations, begins at age 12 and extends into adulthood. It is characterized by an orderliness of thinking and a mastery of logical thought, allowing a more flexible kind of mental experimentation. The child learns in this final stage to manipulate abstract ideas, make hypotheses, and see the implications of his own thinking and that of others. Piaget’s concept of these developmental stages caused a reevaluation of older ideas of the child, of learning, and of education. If the development of certain thought processes was on a genetically determined timetable, simple reinforcement was not sufficient to teach concepts; the

child's mental development would have to be at the proper stage to assimilate those concepts.

Thus, the teacher became not a transmitter of knowledge but a guide to the child's own discovery of the world.

Piaget reached his conclusions about child development through his observations of and conversations with his own children, as well as others. He asked them ingenious and revealing questions about simple problems he had devised, and then he formed a picture of their way of viewing the world by analyzing their mistaken responses.

The Piaget stages of development is a blueprint that describes the stages of normal intellectual development, from infancy through adulthood. This includes thought, judgment, and knowledge.

The stages were named after psychologist and developmental biologist Jean Piaget, who recorded the intellectual development and abilities of infants, children, and teens.

Piaget's four stages of intellectual (or cognitive) development are:

- Sensorimotor. Birth through ages 18-24 months
- Preoperational. Toddlerhood (18-24 months) through early childhood (age 7)
- Concrete operational. Ages 7 to 12

- **Formal operational. Adolescence through adulthood**

Piaget acknowledged that some children may pass through the stages at different ages than the averages noted above and that some children may show characteristics of more than one stage at a given time. But he insisted that cognitive development always follows this sequence, that stages cannot be skipped, and that each stage is marked by new intellectual abilities and a more complex understanding of the world.

Sensorimotor Stage

During the early stages, infants are only aware of what is immediately in front of them. They focus on what they see, what they are doing, and physical interactions with their immediate environment. Because they don't yet know how things react, they're constantly experimenting with activities such as shaking or throwing things, putting things in their mouths, and learning about the world through trial and error. The later stages include goal-oriented behavior which brings about a desired result.

Between ages 7 and 9 months, infants begin to realize that an object exists even if it can no longer be seen. This important milestone -- known as object permanence -- is a sign that memory is developing.

After infants start crawling, standing, and walking, their increased physical mobility leads to increased cognitive development. Near the end of the sensorimotor stage (18-24 months), infants reach another important milestone -- early language development, a sign that they are developing some symbolic abilities.

Preoperational Stage

During this stage (toddler through age 7), young children are able to think about things symbolically. Their language use becomes more mature. They also develop memory and imagination, which allows them to understand the difference between past and future, and engage in make-believe.

But their thinking is based on intuition and still not completely logical. They cannot yet grasp more complex concepts such as cause and effect, time, and comparison.

Concrete Operational Stage

At this time, elementary-age and preadolescent children -- ages 7 to 11 -- demonstrate logical, concrete reasoning.

Children's thinking becomes less egocentric and they are increasingly aware of external events. They begin to realize that one's own thoughts and feelings are unique and may not be shared by others or may not even be part of reality. During this stage, however, most children still can't think abstractly or hypothetically.

Formal Operational Stage

Adolescents who reach this fourth stage of intellectual development -- usually at age 11-plus -- are able to logically use symbols related to abstract concepts, such as algebra and science. They can think about multiple variables in systematic ways, formulate hypotheses, and consider possibilities. They also can ponder abstract relationships and concepts such as justice.

Although Piaget believed in lifelong intellectual development, he insisted that the formal operational stage is the final stage of cognitive development, and that continued intellectual development in adults depends on the accumulation of knowledge.

Introduction

From his observation of children, Piaget understood that children were creating ideas. They were not limited to receiving knowledge from parents or teachers; they actively constructed their own knowledge. Piaget's work provides the foundation on which constructionist theories are based. Constructionists believe that knowledge is constructed and learning occurs when children create products or artifacts. They assert that learners are more likely to be engaged in learning when these artifacts are personally relevant and meaningful.

In studying the cognitive development of children and adolescents, Piaget identified four major stages: sensorimotor, preoperational, concrete operational and formal operational. Piaget believed all children pass through these phases to advance to the next level of cognitive development. In each stage, children demonstrate new intellectual abilities and increasingly complex understanding of the world. Stages cannot be "skipped"; intellectual development always follows this sequence. The ages at which children progress through the stages are averages--they vary with the environment and background of individual children. At any given time a child may exhibit behaviors characteristic of more than one stage.

Stages of Cognitive Development

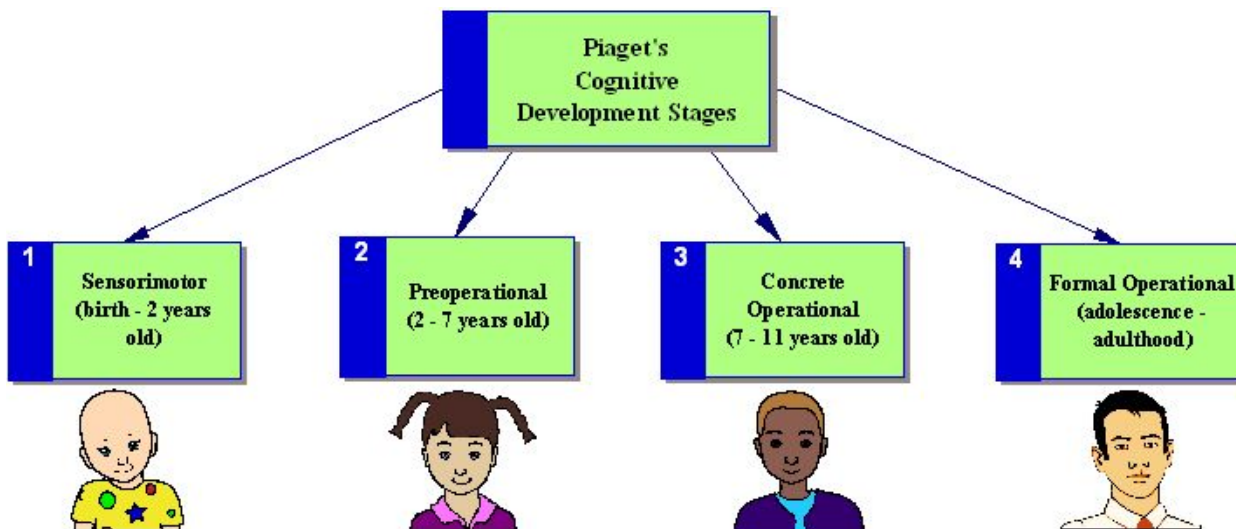


Figure 1. The Inspiration web above illustrates Piaget's four cognitive development stages; sensorimotor (birth-2 years), preoperational (2 - 7 years), concrete operational (7 - 11 years),

and formal operational (adolescence - adulthood). By Tiffany Davis, Meghann Hummel, and Kay Sauers (2006)

The first stage, **sensorimotor**, begins at birth and lasts until 18 months-2 years of age. This stage involves the use of motor activity without the use of symbols. Knowledge is limited in this stage, because it is based on physical interactions and experiences. Infants cannot predict reaction, and therefore must constantly experiment and learn through trial and error. Such exploration might include shaking a rattle or putting objects in the mouth. As they become more mobile, infants' ability to develop cognitively increases. Early language development begins during this stage. Object permanence occurs at 7-9 months, demonstrating that memory is developing. Infants realize that an object exists after it can no longer be seen.

The **preoperational** stage usually occurs during the period between toddlerhood (18-24 months) and early childhood (7 years). During this stage children begin to use **language; memory and imagination** also develop. In the preoperational stage, children engage in make believe and can understand and express relationships between the past and the future. More complex concepts, such as cause and effect relationships, have not been learned. **Intelligence is egocentric and intuitive, not logical.**

Caption: This animation demonstrates one of the Piagetian classic experiments known as the "Three Mountain Problem." He designed this experiment to support his theory that children possess egocentrism characteristics of thought during the preoperational period of cognitive development. Piaget wanted to show that children have a self-centered perception of the world at this age. This flash animation demonstrates Piagetian theory. The girl is sitting in front of a mountain that has a cross visible only from her side. In addition, there is a doll on the other side

of the mountain. According to Piaget, if preoperational children are asked to say what the doll can see, their response would reflect what can be seen from their perspective only. Clicking on the green button rotates the mountain to reveal true perspective of the doll. It does not show the cross. Critics of this experiment contend that the Three Mountain Problem is too complex. The same experiment was done using a simplified scene and the child was able to explain the view from the other side, thus displaying non-egocentric behavior Kuanchung Chen, Kris Irwin, Jamie Parker, Saied Roushanzamir (2004).

The **concrete operational** stage typically develops between the ages of 7-11 years. Intellectual development in this stage is demonstrated through the use of **logical and systematic manipulation of symbols**, which are related to concrete objects. Thinking becomes less egocentric with increased awareness of external events, and involves concrete references.

The period from adolescence through adulthood is the **formal operational** stage. Adolescents and adults use symbols related to abstract concepts. Adolescents can think about multiple variables in systematic ways, can formulate hypotheses, and think about abstract relationships and concepts.

Piaget believed that intellectual development was a lifelong process, but that when formal operational thought was attained, no new structures were needed. Intellectual development in adults involves developing more complex schema through the addition of knowledge.

Educational Implications

An important implication of Piaget's theory is adaptation of instruction to the learner's developmental level. The content of instruction needs to be consistent with the developmental level of the learner.

The teacher's role is to facilitate learning by providing a variety of experiences. "Discovery learning" provides opportunities for learners to explore and experiment, thereby encouraging new understandings. Opportunities that allow students of differing cognitive levels to work together often encourage less mature students to advance to a more mature understanding. One further implication for instruction is the use of concrete "hands on" experiences to help children learn. Additional suggestions include:

- Provide concrete props and visual aids, such as models and/or time line
- Use familiar examples to facilitate learning more complex ideas, such as story problems in math.
- Allow opportunities to classify and group information with increasing complexity; use outlines and hierarchies to facilitate assimilating new information with previous knowledge.
- Present problems that require logical analytic thinking; the use of tools such as "brain teasers" is encouraged.

Huitt and Hummel (1998) assert that "only 35% of high school graduates in industrialized countries obtain formal operations; many people do not think formally during adulthood". This is significant in terms of developing instruction and performance support tools for students who are chronologically adults, but may be limited in their understanding of abstract concepts. For both adolescent and adult learners, it is important to use these instructional strategies

- Use visual aids and models.
- Provide opportunities to discuss social, political, and cultural issues.
- Teach broad concepts rather than facts, and to situate these in a context meaningful and relevant to the learner.

Criticisms of Piaget's Theory

Researchers during the 1960's and 1970's identified shortcomings in Piaget's theory. First, critics argue that by describing tasks with confusing abstract terms and using overly difficult tasks, Piaget underestimated children's abilities. Researchers have found that young children can succeed on simpler forms of tasks requiring the same skills. Second, Piaget's theory predicts that thinking within a particular stage would be similar across tasks. In other words, preschool children should perform at the preoperational level in all cognitive tasks. Research has shown diversity in children's thinking across cognitive tasks. Third, according to Piaget, efforts to teach children developmentally advanced concepts would be unsuccessful. Researchers have found that in some instances, children often learn more advanced concepts with relatively brief instruction. Researchers now believe that children may be more competent than Piaget originally thought, especially in their practical knowledge.

Caption: This illustration demonstrates a child developing a schema for a dog by assimilating information about the dog. The child then sees a cat, using accommodation compares existing knowledge of a dog to form a schema of a cat. Animation created by Daurice Grossniklaus and Bob Rodes (2002).

When the parent reads to the child about dogs, the child constructs a schema about dogs. Later, the child sees a dog in the park; through the process of assimilation the child expands his/her understanding of what a dog is. When the dog barks, the child experiences disequilibria because the child's schema did not include barking. Then the child discovers the dog is furry, and it licks the child's hand. Again, the child experiences disequilibria. **By adding the newly discovered information to the existing schema the child is actively constructing meaning.** At this point the child seeks reinforcement from the parent. The parent affirms and reinforces the new information. Through assimilation of the new information the child returns to a state of equilibrium.

The process of accommodation occurs when the child sees a cat in the park. A new schema must be formed, because the cat has many traits of the dog, but because the cat meows and then climbs a tree the child begins to actively construct new meaning. Again the parent reinforces that this is a cat to resolve the child's disequilibria. A new schema about cats is then formed and the child returns to a state of equilibrium.