Piaget’s Cognitive Developmental Theory

Abstract

Piaget’s (1936) cognitive developmental theory looks at different development stages categorized by age. Working with a sixth grade class towards the end of the school year, the targeted developmental stages observed are concrete operational and the beginning of formal operational. Students were observed in a science setting, specifically a science fair project. There are lessons the students had in order to help them better understand how they would implement those ideas into their own projects. As concrete operational learners, they are able to concretely understand the lesson independently, but at the formal operational stage, they are able to take that lesson and use abstract, theoretical, and hypothetical thinking to turn it into a part of their project.

Theory

In Piaget’s 1936 developmental theory, there are 4 different stages broken down by age groups. However, for this grade level, it is more zoned in on the concrete operational and formal operational stage, though all developmental stages are being used.

Stage 1: Sensorimotor Age 0-2 years
Coordination of senses with motor response, sensory curiosity about the world. Language used for demands and cataloguing. Object permanence developed.

Stage 2: Preoperational Age 2-7 years
Symbolic thinking, use of proper syntax and grammar to express full concepts. Imagination and intuition are strong, but complex abstract thought still difficult. Conservation developed.

Stage 3: Concrete Operational Age 7-11 years
Concepts attached to concrete situations. Time, space and quantity are understood and can be applied, but not as independent concepts.

Stage 4: Formal Operations Age 11+ years
Theoretical, hypothetical, and counterfactual thinking. Abstract logic and reasoning. Strategy and planning become possible. Concepts learned in one context can be applied to another.

Results/Discussion

Instructions for assignment
The students were given these papers with the instruction to lay out the steps of making a PB&J sandwich as detailed as possible so that someone who has never even heard of a sandwich would be able to correctly make one based off their instruction alone. I instructed them to be so detailed and literal that they have to write the step of scooping out the jelly without assuming that the reader would have the common sense to take out the jelly from the jar. If the instruction is to place peanut butter on the bread, assume the reader would place the entire jar on the bread. Be specific enough that there is no question to what needs to happen in each step. I also showed them a video of a teacher following his students instruction to this same assignment, and all the simple tasks left out so the teacher ended up with anything other than a sandwich. The students had a great example to follow, and were left to be as detailed as possible.

Sample A - The student who completed this sample was able to think abstractly with visualization of the process of creating a PB&J so well that their step-by-step instructions were very thorough and detailed properly from the beginning to the end. This shows that the student is thinking in the formal operational stage of Piaget’s cognitive theory.

Sample B - This student seemed to have been thinking concretely about the process of making a PB&J, and was very detailed. However, this student couldn’t separate the directions appropriately. For example, in one step, her directions were to grab the knives, peanut butter, and jelly as well as scooping out the peanut butter and spreading it on the bread. Not being able to separate the directions into different steps and not being specific enough as instructed (something simple like; place the knife down, then open the jar, and place the lid on the side) shows the student is quite at the formal operational developmental stage yet. Though, I believe she is almost there, because her though process was clearly stated and was very detailed, just not as much as was required in this specific lesson. I would say this student in the concrete operational stage on her way to formal operational.

Sample C - This student work is an excellent example of a student who is in the beginning of the concrete operational stage. He was able to lay out the steps to making a PB&J into sections, meaning he was able to abstractly think about the process without having it in front of him, and break it apart into small steps. However, the instructions of this assignment were to be as detailed as possible, including simple tasks that we wouldn’t usually think about. For example, he put scooping out the jelly and then scooping out the peanut butter. If I had completed the task as he had written the instruction, I would have ended up with two knives in my hands at the same time with peanut butter and jelly on them, when they should have been split up with the step of spreading the peanut butter before even scooping the jelly. This student has more cognitive development to go before reaching formal operational regardless of his age.

Implications for Teaching

It has been thought that the level of a persons intelligence has to do with mainly biological traits. Through Piaget’s theory, it has become clear that an individuals intelligence is based off where they are in their cognitive development. Just because student C didn’t complete the assignment with all of the required information, does not mean that he is any less smart than the other two students who included more detailed information, it just means he is not as cognitively developed as them yet in this topic/area. Generally, students are grouped into developmental stages based off age, however it does not restrict them from being in any other developmental stage. The students who I took samples from are all in the same class and same age, but they are in two different cognitive developmental stages, concrete operational and formal operational.

References


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Results/Discussion cont.