A2 Psychology Coursework Sept 2005

Investigating cognitive thinking processes and the age at which they develop.

Abstract

This research was based on the work of Jean Piaget and was influenced mainly by him, the aim of the research was to assess the differences in children's cognitive development (thinking processes) at age ranges from 4-6, 7-8 and 9 and above and to find out whether they would be able to use their logic in 3 tasks originally set out by Piaget. A Lab experiment was thought best because of the ability to replicate, in this case it was a classroom in the setting (a nursery setting in Trowbridge, Wiltshire) and 12 different children of varying ages were used as opposed to the same age group or the same gender.

Introduction

The topic that was chosen to base this research upon is one that is featured in the A2 psychology syllabus, and is entitled Development of thinking; this fell under the main topic of cognitive development.

Throughout this research, a Swiss psychologist, Jean Piaget, known for his research in developmental psychology was used as a point of reference. He studied under C. G. Jung and Eugen Bleuler in Zürich, and then in Paris at the Sorbonne. There, he worked with Alfred Binet in the administration of intelligence tests to children. In re-evaluating the tests, Piaget became involved in the types of mistakes children of various ages were likely to make. After returning to Switzerland, Piaget began to study intensively the reasoning processes of children at various ages.

Piaget's theory identifies four developmental stages and the processes by which children progress through them. The four stages are:

1. *Sensorimotor stage (birth - 2 years old) --* The child, through physical interaction with his or her environment, builds a set of concepts about reality and how it works. This is the stage where a child does not know that physical objects remain in existence even when out of sight (object permanence).
2. *Preoperational stage (ages 2-7) --* The child is not yet able to conceptualise abstractly and needs concrete physical situations.
3. *Concrete operations (ages 7-11) --* As physical experience accumulates, the child starts to conceptualise, creating logical structures that explain his or her physical experiences. Abstract problem solving is also possible at this stage. For example, arithmetic equations can be solved with numbers, not just with objects.
4. *Formal operations (beginning at ages 11 -15) --* By this point, the child's cognitive structures are like those of an adult and include conceptual reasoning.

During all development stages, the child experiences his or her environment using whatever mental maps he or she has constructed so far. If the experience is a repeated

one, it fits easily or is assimilated into the child's cognitive structure so that he or she maintains mental "equilibrium." If the experience is different or new, the child loses equilibrium, and alters his or her cognitive structure to accommodate the new conditions. This way, the child erects more and more adequate cognitive structures.

Aims and Hypothesis

The rate at which thinking processes change and develop has always interested psychologists and it was thought that through this piece of research a little more light on the subject would be shared. Therefore the aim of this research was to assess the differences in children's cognitive development (thinking processes) at age ranges from 4-6, 7-8 and 9 and above and the aim was to find out whether they would be able to use their logic in 3 tasks originally set out by Piaget.

The conservations tasks which were carried out were done by Piaget in the 1950's, therefore it was already predicted from his research that conservation of liquid would not normally be achieved until the age of 11 or 12, because conservation of volume involves the coordination of both dimensions of length and width, it presupposes that the conservation of length has already been successfully constructed and conservation of length, was predicted, would not normally be established until the age of 7 or 8.

The younger the child, (those in the 4-6 category) the more likely it would be that their thinking would be non logical and therefore they would be unable to give accurate answers even when shown, however, children which falls between the ages of 7 and 9 would be more likely to give accurate answers as their thinking is more developed and they are able to use more of their acquired logic.

In this research the alternative hypothesis would be that the children will be able to use their logic to answer given questions correctly according to their age (as above), the null hypothesis states that they will not (they will answer differently to what I predicted). In this research it was above 95% accurate that, based on studies by other psychologists the children will answer according to their age, therefore the null hypothesis was rejected and the alternative hypothesis accepted.

Method

Design and Participants

So that my research could be carried out again if necessary I decided to conduct a lab experiment, whereby I was able to eliminate confounding variables or circumstances that may interrupt or change the outcome. The experiment used 12 children, both male and female aged between 4 and 9. They were tested in a fixed condition at the back of the setting, a nursery/after-school club in Trowbridge, Wiltshire. It was here, away from the rest of the children and any interruptions that the experiment was carried out as below. The children were selected as the 12 that were in on that particular day, and those that had returned a permission Performa.

Apparatus/ Materials

A tray was placed to one side of a table not more than a metre off the ground, (at child's height) with a stool at one side. On the tray was 3 glasses, 2 the same and a

taller, thinner glass. 2 rods each the same length and 12 chocolate coins, 6 of one size and 6 which were slightly bigger. For permission to be granted, a letter had to be sent to all parents of the children involved which included a slip which had to be detached and returned, (See appendix 1) Record sheets were also used to record the answers that the children gave (See appendix 2)

Each child went through the same procedure; therefore the following was carried out a total of 12 times, once for each child. In the conservation of liquid task, two small glasses filled about halfway with water were placed in front of the child. They were asked whether there was the same amount of water in each glass and the answer that they gave was recorded. While the child watched, I then poured the water from one of the glasses into another glass, which was taller and thinner. I then asked them again if there was the same amount of water in the two glasses. In the conservation of number task I first made two parallel lines of sweets. One had 8 chocolate coins the other had 8 also, but slightly smaller coins. They were lined up such that they were in direct opposition to each other. They were asked if there were the same number of sweets in each line and their answer was recorded. Then, while the child watched I moved one row so that they were spaced further apart, I again asked them if there was the same number of sweets in each row their answer was recorded. Finally, the conservation of Length task, in this task I had 2 straws, each which were approximately 12 inches long, lined up, one under the other. I asked the child whether they were the same length, their answer was recorded then while they watched, I moved the second straw slightly to the right, making it protrude further than the first straw. I then asked the child which was longer and their answer was recorded. Please note that in the conservation of length and number tasks, the second row was always the one to be manipulated, keeping the first the same.

Results

The data that has been collected was written on record sheets that were designed to give the answers exactly as the child responded. These are shown in the appendix.