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## **R-8: Conservation of Identity**

The development of this knowledge construction function orients the learner to distinguish between essential and incidental characteristics. Anything we encounter, or create, has characteristics: People, animals, objects or events all have characteristics as do the traces, symbols or signs that are used to point to them (R-5). Let's refer to all of them simply as entities. What happens when the characteristics of entities change? When a characteristic changes the entity has changed but at what point do we say that the identity of the entity has changed? What changes are incidental to conserving the identity of an entity and what changes are essential? As we will see from the examples below these can sometimes be philosophical questions that may have no clear or definitive answers. The development of this knowledge construction function orients the learner to ask and to examine these questions if not always to answer them.

Here are some examples that illustrate what this knowledge construction function is about.

(1) George wears a blue sweater on Monday and a yellow sweater on Tuesday but George, on Tuesday, is still George. The change in sweater does not change George's identity. It seems simple enough. But what if the color of the sweaters signified membership in or loyalty to groups such as different sports teams? What if the change implies that George now is playing for the Panthers rather than the Musketeers? George is still George but the change is clearly bigger than simply changing into a different sweater. Is George still the same George? If so, what has changed?

(2) Take a carrot, chop it up, put it into a pot, add water, heat to a boil, watch the carrot disappear, look at the broth. When would you say that the carrot stops being a carrot? Or would you! What if you were to consume the broth? Now think back to the time before you

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purchased the carrot. Was there a time when the carrot was not a carrot? When did it become a carrot?

(3) Take a wooden boat. Change a plank. Is it a new boat? Change another plank. Continue. When it is a new boat? Is it a new boat after the last plank has been changed? After half the planks have been changed? Thinking back to when the boat was first built when did it become a boat back then?

(4) Take a square. Rotate it 90 degrees. Enlarge all four sides by the same measure. Change the color of the lines. Is it still a square? What would be a change that would put an end to the square being a square?

(5) Take an amount of water. Pour it into a narrow glass cylinder. Now pour this water into a wider glass cylinder. Which cylinder shows the most water? Go back and forth. Piaget discovered that young children believed that the glasses contained different amounts of water because the containers looked different even when they were shown that the same amount was poured into the two glasses. It is normal for young children up to ages six or seven to base their knowledge on how things look rather than using cognition and logic.

A child who has difficulty with this knowledge construction function may loose the "identity" of an object when incidental changes occur or preserve identity when essential changes occur. For example, a square that has been rotated will no longer be thought to be a square (an incidental change) or a lump of clay that is transformed into a beautiful vase is still identified as clay (an essential change).

The concept of reversibility is another aspect of conservation of identity and very difficult for young children to grasp. For example, the math problem 4 + 2 = 6 is the same as 6 = 4 + 2. A young child or a learner who has difficulties with this knowledge construction function will believe these equations to be different because they look different.

Identities are conserved and transformed in infinite ways. It is important for children to have an understanding of the process of how objects and ideas can undergo changes maintaining their identity in some ways while loosing it in others. Having an understanding of this process enables students to be guided by cognitive rather than perceptual criteria in their thinking.

As a teacher you can provide many opportunities that will allow your students to experience the concept of conservation. To mediate the

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development of this function, provide your students with different guided experiences whereby they can explore and discover an understanding of conservation by supplying them with various manipulatives to conduct experiments. For example, provide a balance scale with objects of equal weights but in different shapes and/or sizes. Talk about and have students explore weights and measures. Is eight ounces the same as one cup? Talk about things such as the value of money. Is a quarter the same value as two dimes and a nickel?

In addition, help your students to identify the essential characteristics of an object that are needed to maintain its identity. Adequate comparative ability is necessary so that the students can look at the object and the object transformed or changed to determine if the object is the same or different. For example, with the square and rotated square referred to earlier, you could point out to the students the essential criteria of a square: it must have four sides; the sides must all be equal in length; it must have four angles; the angles must all be right angles; and the lines must two by two, be parallel to each other. Other characteristics are incidental. Remember in guiding your students, it is important to ask questions so that the students can come to discover the properties of an object rather than you simply telling them. "Let's see, what can you tell me about these lines? How do they look? How many lines are there?"