

Running Head: JEROME BRUNER

Jerome Bruner and His Influence on Education

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Credited with being one of the principal originators of cognitive psychology, and also having an effect on educational theory and practice, is Jerome Seymour Bruner, born in 1915 in New York. He entered Duke University at the age of 17 years, earning his first college degree there. He later attended Harvard with the end result of earning his doctorate degree in 1947.

His professional career has been somewhat varied. One of the first jobs as a psychologist was working for United States Army intelligence during the World War Two era, working with propaganda and social attitudes issues for the Army. He has been a professor of psychology at Harvard (on two separate occasions), Oxford University, and the School for Social Research (Gale, 2001). While on leave from Harvard in 1965, during which time he was writing his book *Toward a Theory of Instruction*, Bruner was the Bacon Professor at the University of Aix-en-Provence for a month that Spring (Bruner, 1966). In 1991 he went to the New York Law School as a Meyer Visiting Professor, working with Anthony Amsterdam, and later as a research professor (*Jerome Bruner*, n.d.). Bruner also spent some time on a presidential advisory committee. In conjunction with this lengthy and productive career, Bruner has garnered many awards and recognitions.

A perusal of the books and literature written and co-written by Bruner shows him to be very prolific. Many of the publications deal with issues of interest to many educators. He has been published in every decade since the 1940's, starting with his work *Mandate from the People* in 1944 (Britannica, 2002), and the latest the results of his

relationship with the law school in New York. Bruner has shown some change of philosophy throughout the years. Regarding this change Lynda Malm (1993, p. 68) wrote the following:

Jerome Bruner's 1990 book, *Acts of Meaning*, constitutes a challenge to cognitive psychology by one of the founders of that science. It is a tacit admission by a respected mainstream psychologist that the limits of the natural scientific paradigm have been reached. What Bruner says, in effect, is that there is a significant dimension of human life, the dimension of meaning, that cognitive psychology cannot address.

Bruner's philosophy of psychology, and his career, was not developed in a vacuum. He even has admitted to being influenced and has recognized the work by other psychologist and educators. Among those he mentioned was Jean Piaget, L. S. Vygotsky, Benjamin Bloom. I found it interesting his description of Maria Montessori: a "strange blend of mystic and the pragmatist"(Bruner, 1966). Not all of his contemporaries and predecessors had a positive effect on him (which is not always bad, since it can cause thinking and discourse in the disagreement). The behavioral psychologist B. F. Skinner is one that he did not agree with (Boman, n.d.). Sue Lyle (2000, p. 50) in her article claimed that Bruner did not agree with Gardner's theory of multiple intelligences.

His philosophy was developing at a time when behaviorist psychology was considered by many to be in the main stream. For many years, he had difficulty accepting this point of view, but mentioned that within certain limitations it would be possible to

explain certain human behaviors, such as those of infants. Bruner mentioned in his 1966 book that Pavlov's theories were not even held as high regard by the Russians as they once were. On New York University School of Law biographical Web page for Bruner, an example anecdote of his divergence from the behaviorist psychologist stated, "The British director Jonathan Miller once teased Jerome Bruner on the BBC for having rehabilitated what in the dark days of behaviorist psychology was a dirty four-letter word: m-i-n-d." It is this reason that he is credited with being one of the originators of cognitive and constructivist psychology.

Bruner and Goodman (1947) worked together on a research project testing the perception of children. The research subjects were ten-year-olds, with varied economic backgrounds. The subjects were told that it was a type of a game, and then would be shown coins from a penny to a half-dollar and cardboard disks which were the same size. The coins and cardboard disks were shown separately, and when showing the cardboard disk, the investigators did not mention to the subjects that the disks were the same size as the coins. The subjects were then to make a circle, on an apparatus, to be the same size diameter as either the coins or the cardboard discs. What Bruner and Goodman found that for all categories, the coins were always perceived to be bigger than they really were. They attributed this to the societal value given to the coins. They also found that the subjects with a poorer economic background had an even larger error in perceiving the size of the coins.

Another study on perception mentioned in Bruner's 1966 book showed that

younger children usually do not see the relationship between the actual volume of liquid in glasses and the change in size of the glasses. When the glasses were hid from the subjects so that all they could see was the liquid being poured back and forth, the subjects were better able to judge the quantity of liquid relating to the fullness and emptiness of the glasses. The subjects were different of different ages, and in analyzing the results found that generally age made a difference in how the children perceived, and described the amount of liquid in a glass.

Another example Bruner pointed out that showed the difference in cognitive ability of children is the game of twenty questions. Younger children usually ask questions that are hit or miss as to the correct response. The older children will ask questions that will narrow the scope bit by bit toward the correct response. This was just one way of showing the change in thought processes that occurs as children grow.

Now turn the attention back to the differences between the behavioral and cognitive psychology. These examples show how cognition changes, mostly as a function of age. From a behaviorist standpoint, the subjects would have adapted to the correct responses given enough stimuli. To help understand the differences between cognitivism and behaviorism, Malm quoted M. S. Chodorow and S. K. Manning (1993, p. 73) “showing that what was learned was more complex than simple associations or even linear chains of associations.” In reflecting on these difference theories, there are situations that could reinforce both theories, just as Bruner mentioned (1966, p. 18).

These examples do provide empirical evidence toward the support of the cognitive

theory of psychology. Malm (1993, p. 70) wrote regarding cognitivism “that behavior is a result of the way in which the subject categorizes and transforms stimulus situations.”

Through his experiences, Bruner desired to know “how people reach their high-water mark” (1966, p. 4), which led him to be involved in educational matters. Part of his contribution to educational theory deals with curriculum. He admitted (1966) that it was not the job of a psychologist to determine the goals of education, but psychologists can definitely influence those goals. The example he gave in presenting this idea was that of a general (in our American society), how the general does not determine if a country goes to war, but will influence the politicians who do such determination.

Among his ideas on curriculum and education was the concept that education needs to be constantly evaluating itself as it undergoes changes. The purpose of this is to ascertain that the curriculum is meeting the needs, which needs are based on the specific circumstances. Related to this idea of changing the curriculum to meet these needs, is that before and during the development of curriculum, that this developing curriculum be evaluated and assessed. Waiting until the curriculum is finished to evaluate its effectiveness is waiting too long. Putting these ideas together, we can conclude that curriculum will probably always need to be undergoing change. Like I have said before, this change needs to be for the better, better for the students learning, and not just change for change. But if the change is for the better, than those ongoing changes will meet the needs of society and the students.

Bruner also had the opinion that curriculum should have as a goal the mastery of

skills, which in turn will lead to the mastery of even more powerful skills (1966, p. 35). When a student recognizes that cognitive or intellectual mastery has occurred, they will have an intrinsic reward. As part of this intrinsic reward is the realization that those skills that have been mastered can be transferred to other domains (1966, p. 30). In the same vein of thought, as the students advance through school and are successful, then their confidence will increase (1966, p. 120). Both of these ideas promote the concept of skills and confidence increasing in an upward spiral, not just a cycle. This ties in with the motivational factors migrating from mostly extrinsic motivation to mostly intrinsic motivation. Once again, cognition philosophy helps explain part, if not most, of these phenomenons. I wonder if he was doing the same types of research studies now, if he would have had the same results.

When Bruner was discussing “the curriculum revolution” (which I assume he referring to what was occurring in the era that his 1966 book was being written), one concept that he disputed was that of readiness to learn. He called readiness a half-truth. In his rebuttal (half-rebuttal?) to the concept of readiness, he stated that two ways exist to have students be ready for an educational experience. One is to teach the prerequisite skills to the students. The other was to provide opportunities for the students to nurture those prerequisite skills. Just waiting for readiness to happen was not going to happen.

One of his studies (1966, pp. 56-66) that could be used to show readiness is based on cognitive status and not Piaget’s theory is that of teaching four above average intelligent eight year old children, using algebra tiles (although Bruner did not call them

such) to learn quadratics. From this study Bruner concluded that these students were successful since they demonstrated a firm sense of abstraction and had a good repertoire of visual images to embody those abstractions. This same study also has ties to discovery learning since the method the students used in learning was relatively close.

This philosophy of readiness may have been why he was influential in the creation of the Head Start program (*Jerome Bruner*, n.d.). Regarding Head Start, Joel Spring (2001, p. 371) wrote that it was established to provide an opportunity for children of lower economic status to enter school on equal terms as those from affluent economic status.

One of the similarities, noted during the research for this paper, between Bruner and Vygotsky is their thoughts on linguistics. In Bruner's 1966 book, he mentions linguistics various times in explaining the cognitive processes children use. Some of his examples of the place of linguistics in education are the following: as a teaching tool, as symbolic representation, and as an instrument of thought.

Some of his research (see previous examples) led Bruner toward what is referred to by some (Kearsley, 2001) as constructivism. The student's learning process is constantly moving, and the learners construct new knowledge based on formerly learned knowledge. This construction comes from transforming knowledge, making and applying hypotheses, and then making decisions using cognition to do so.

Constructivism is related to Discovery Learning. Dr. Tomei (1998) stated: "Discovery Learning matches cognitive development." Hassard's (2000) interpretation of

Bruner's philosophy of Discovery Learning is "that students learn best by discovery and that the learner is a problem solver who interacts with the environment testing hypotheses and developing generalizations."

Central to Bruner's philosophy on Discovery Learning are three stages, or modes. The first is enactive, then iconic, followed by symbolic. The enactive stage is one of action. The learner's actions can be varied, but the uses of manipulatives are important here since they have to be able to touch, feel, move, etc. the object. The iconic stage is a visualization stage. The learners use images, drawings, and graphics to represent the concept being discovered. The third stage of symbolic representation involves uses symbols, language (here is Bruner's linguistic philosophy in practice), and logical statements to represent the abstract part of the concept being taught.

With the Discovery Learning model, it is important for the teacher to teach to, or model for, the students the discovery process. In the end, it is the process that will have more value for the students than the actual knowledge learned. Bruner felt that retrieval of knowledge was not the most important part of education, as demonstrated by his allusions to computer technology even back in 1966. He even mentioned that storing and retrieval of information would progress. Bruner was wrong in one aspect; he stated that in a thousand years we would be swamped with information (p. 36). He was off by about nine hundred fifty years. Thus the reason, process is more important than memorizing facts.

In the paper Perry (2002) uses for one of his college classes, the author mentioned

that many undergraduate instructors are either unwilling or unable to use a discovery learning technique in their classes. This same problem with attitudes, time constraints, etc. affects many teachers and instructors. Tomei (1998) stated: “To be successful, discovery projects often require special materials and extensive preparations. And these preparations do not always guarantee success.” Tomei also recognized the criticism that lower ability students may not have the necessary background information and experiences for Discovery Learning to be effective for them. It is also important that the teacher provide just the right amount of motivation. If the students receive too much, they will become frustrated and will have the tendency to give up. If the students do not receive enough, then they will not achieve that which they are capable of achieving.

The textbook by Joyce et. al. (2000) has a chapter devoted to a model which they attribute to Bruner and others, the model being Attaining Concepts. This model is, as quoted in the textbook, “the search for and listing of attributes that can be use to distinguish exemplars from non-exemplars of various categories.” The students are given several examples and several nonexamples and are asked to determine the criteria for categorizing each. From what I can gather, this model combines parts of Bruner’s cognitive theory with his Discovery Learning, although the way concept attainment is presented that it is not the same as Discovery Learning. The big difference is in the first stage of Discovery Learning, enaction, since the students do not actually handle the examples and non-examples.

Included in Bruner’s philosophy was that of the student ability having more to do

with cognition and culture factors than biological factors. Culture in many ways affects education. These themes recurred in much of the literature.

I was impressed while reading parts of “Toward a Theory of Instruction” of his references to concepts that I had assumed were more recent, such as the use of technology and math manipulatives (the algebra tiles). Several of his examples and studies related to mathematics. He seemed to recognize the unique pedagogical problems associated with mathematics. It is not the age of the student that determines readiness to learn topics such as algebra, but instead the cognitive background of the students. One thing that stands out most to me as the most important in the mathematics classroom is preparing students cognitively for the learning task at hand. Without this readiness, our teaching will be to the walls, and not to the students.

There was a lot more of Bruner’s material, especially some of his newer books that I did not have access to, but in reading some of the quotes (in the other articles) from his newer material I can tell that he is still thinking of ways to improve education.

As I read through the various material, researching Bruner’s philosophy of psychology and education, I was impressed with the breadth of his undertakings. While he has not gained the notoriety of those like Piaget, Montessorri, Skinner, and Bloom, his accomplishments are not small. His accomplishments have covered seven decades, including the first decade of the new millennium. It is possible that he is not as well know since he did not concentrate, or had others concentrate for him, on one aspect. His writings have covered many different topics, many of which have directed to the education

community. Among these topics have been found cognition, curriculum, linguistics, and teaching and learning models.

I must admit that before I started the research for this paper, I could not even remember who Jerome Bruner was. But in doing this research I have come to realize many of the subtle influences Bruner has had on current pedagogical theory and philosophy. In looking at all that he has contributed, and realizing his influences, it is hard to discredit his place in recent educational history.

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