Piaget and bruner essay sample

Jean Piaget and Jerome Bruner are two theorists who have both had an effect on education over the past century. The process of teaching and learning used by mathematics teachers has been greatly contributed to by Piaget and Bruner. Constructivism is based on the ideas formed by Piaget and Bruner, " a theory that views the child as creating knowledge by acting on experience gained from the world and then finding meaning in it." (Sperry-Smith, Van De Walle, Karp and Bay-Williams, 2012, p. 10). Jean Piaget created a four-stage cognitive development theory, much of what we know about development and how and when it occurs comes from the research that has been based on Piaget's stages. The first stage is sensorimotor period is from birth to age two. This is the beginning of a child understanding the world. Touch, taste, sight, hearing, smell, and muscles are all senses that are sensory and are all used in this first stage. Children are encouraged to use their sensory and also their motor abilities to learn skills and concepts that are basic. Preoperational stage is stage two and ranges from about ages two until seven.

Children begin to grasp concepts that an adult can do but are still incomplete to what they will eventually be like when they are older. Language is undergoes rapid growth and there is an increase in speech to explain knowledge. Symbolic behaviour is used in this period especially when children play. The third stage is concrete operations, from ages of about seven until eleven. Children are now able to hold knowledge in their mind and then make changes to that knowledge if something is added or changed. Children are becoming conservers. However, in the transitional phase from stages, ages five to seven, every child's thought process is different and

growing at their own rate some children will already be conservers and others will not be. The fourth and final stage is formal operational, from age eleven through on into adulthood. Children are able solve problems logically and in the right order. They can see a solution to a problem before figuring it out on paper. Children are also able to know something is there without needing concrete materials to prove it. In order for Piaget to gather and formulate his developmental theory of mathematics he studied his own children and asked them questions in order to see how children think in relation to different subjects. " Piaget argued that learners actively construct their own knowledge" (Reys, Lindquist, Lambdin, and Smith, 2012, p. 20) and personal experiences and prior knowledge build new knowledge.

" Mathematics understanding is made (constructed) by children, not found like a rock or received from others as a gift" (Piaget, 1972, as cited in Reys, Lindquist, Lambdin, and Smith, 2012, p. 22). Piaget divided knowledge into three main areas: Physical knowledge is about objects in environments and their characteristics; Logic-mathematical knowledge is the relationships students create to make sense of the physical world but to also organise information; Social knowledge is created by people, for example rules, it can also be known as conventional knowledge. As Children learn about the physical characteristics of objects the logico-mathematical are built so that knowledge can be categorised and organised by the child. This means that physical knowledge and logico-mathematical knowledge both rely on each other for the other to be developed properly by the child and therefore, will develop at the same time. There are other experiences children go through

that relate closely to Piaget's view. One such example is naturalistic experiences.

This is where the child controls their actions and choices, they can either be informal where it is just the child choosing the activity and actions, with adult intervention at times or they can be structured where the adult chooses the activity and the child has a little input into their actions. Piaget describes a state where the child thinks they understand something but they then realise that they do not understand what they think they did, this state is known as disequilibrium. For Piaget social interactions are vital to aid a child's learning, as they are a stimulus for their learning. Jerome Bruner describes the process of education in a three mode representation of development. During the enactive stage the child has direct contact with the world, the child can only act and react to the world in front of them.

During the iconic stage the child's " representational thinking is based on pictures, images, or other representations" (Reys, Lindquist, Lambdin, and Smith, 2012, p. 22). Bruner's third mode is the symbolic mode children in this stage are able to manipulate symbols to reflect what they are thinking. While all these modes are separated they can occur together at the same time. " Bruner describes intellectual development as proceeding from an enactive mode to an iconic mode and then finely to a symbolic mode" (Sperry-Smith, Van De Walle, Karp and Bay-Williams, 2012, p. 11). Bruner's process of learning is found in today's mathematics teachings through; having objects students can physically manipulate; being able to rely on memories of clues that students can see, hear or that are kinesthetic; and lastly having meaning behind number symbols so that they can be used with

meaning. Bruner notes that in order for children to work with symbols they first need to be aware of and begin working with the objects the physical world provides. Children then need to work with pictures and other representations, then after they have successfully been able to do these things children can work with symbols.

" Learning reflects a social process in which children engage in dialogue and discussion with themselves as well as with others (including teachers) as they develop intellectually" (Bruner, 1986, as cited in Reys, Lindquist, & Smith, (2012), p. 22). This suggests that students should explore the physical world by manipulating objects, describing the relationships between two or more objects, creating their own way to solve problems, and discover patterns. However, students should also share their experiences, show how they came to get their answer, and to stand by the process used to get an answer.

" Current standards for mathematics curriculum and instruction take a constructivist view based on the theories of Jean Piaget and Jerome Bruner" (Charlesworth, & Lind, 2010, p. 13). Piaget has added to the understanding that learning is an internal process through his search for answers about how children learn and think. This means meaning about the world is brought by the children and not the world gives meaning to the child. What a child believes is what is real to them, the errors a child has are normal. While the work on both Piaget's and Bruner's theories are dated, many new ideas for teaching mathematics and other teaching areas are being based on the work from both theorists. Their work will continue to influence education into the future.

Reference List:

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