The Many Implications of Piaget's Work for Education

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In this thought-provoking article, Nasrine Adibe argues that the work of Piaget can be of immense value to both teachers and students at all levels if more widely understood. Acknowledging the difficulties of making Piaget's often abstract and widely dispersed work comprehensible to the practising teacher, and the dangers of oversimplification, she argues that the attempt is worth making in the interests of better education everywhere. Her six part article focuses first on the difficulties of assessing student's cognitive levels, familiar enough to all educators — and shows how a knowledge of Piaget's stages of development and the application of his 'clinical method' of listening to students' errors can be of immense help in this difficult task. She goes on to discuss the vital role of language in teaching and learning and uses Piaget's theory of the operational, symbolic nature of language, to point out the dangers of equating a students' verbal facility with his understanding of the concepts being taught. Next, she points out how Piaget's work on the way children at various stages explore objects has implications for teaching at all levels, and recommends that teachers should first present the 'global' aspect of a concept, then analyse it, and leave the final synthesis to the student. On the most important topic of motivation, Nasrine Adibe points out how Piaget's theory of disequilibrium (i.e. catching the student 'off balance') is of great value to the teacher, and recommends surprise and play for stimulating curiosity. Dr Adibe then utilises Piaget's theory that emotions and intellect are inextricably connected to warn against a content orientated approach to teaching, and reminds teachers that learning at all levels is a humanistic, interactive activity. She concludes her article by stressing Prof. Piaget's idealistic concern that the educational process, by being better understood, should produce more critically aware individuals if a better world is to be established. It could be argued that many of the above viewpoints are not exclusive to Prof. Piaget, but it is clear from this article that a wider application of his immense labour along the lines suggested would greatly improve education as it is now.

Introduction

Piaget's publications are numerous and widely dispersed. Only a small percentage has been translated into English. His findings on the nature of knowledge, on the genesis of intelligence and its development from infancy to adulthood are the result of over half a century of continuous research. His methods are unique and manifest his great empathy and sensitivity to the mental activities of the subjects he has observed. His solid background in biology, logic, mathematics, philosophy, and psychology have enabled him to integrate ideas and research from various disciplines in formulating his theories. He continually revises and refines his conclusions in the light of the new evidence for or against his findings.

Because Piaget's findings provide insight into the complex and mysterious working of the human brain, his observations have particular significance for universal education: by studying his findings teachers are sensitized to student's mental processes. In Elkind's words, 'after becoming acquainted with Piaget's work, teachers can never again see children in quite the same way as before' (1). Or, as another author puts it, the effect is like 'taking the top off the child's head and watch-
Jean Piaget: Father of the new teaching

By Donna Joy Newman

Jean Piaget is a giant among men—and children.

The Swiss child psychologist is the international Dr. Spock of children's education.

He's not a household word, tho. You wouldn't consult his books to find out how to change a diaper or deal with a temper tantrum. But your child's teacher probably has a well-thumbed Piaget book tucked among the pencils and erasers.

Piaget came to Chicago last week, and an audience of psychiatrists, psychologists, teachers, and child development experts crowded into Northwestern University's Little Thorne Hall auditorium and gave him a reverent standing ovation, knowing that he probably has advanced the understanding of children's cognitive, or mental, Development farther and faster than anyone else in this century.

Piaget is the John Dewey of this school generation. He is widely regarded as the intellect behind the open classroom, the new math, the hands-on science, and many other ideas in modern education that look at learning from the child's point of view, spurning the more traditional approach that the child is a receptacle that a teacher must fill with knowledge.

At 78, Piaget is physically frail and looks like a kindly old grandfather. But at the University of Geneva he continues to teach classes in genetic epistemology, which is what he calls his scientific studies of the ways children acquire knowledge.

Piaget theorizes that all children go thru four stages of mental development: an early sensory motor stage, in which babies start to regard objects and persons in their environment in terms of space and time; a symbolic stage, beginning about age 2, when language develops, an early mental operations stage, beginning about age 7 or 8, when children reason about objects they are working with; and, finally, the logical reasoning stage, at 11 or 12, when children are able to form hypotheses.

Piaget believes there is "every advantage in respecting these stages," and not force-feeding knowledge before the child is ready for it. His belief has given rise to the kind of classroom in which children learn by doing, in an environment richly supplied with materials that enable them to discover concepts for themselves, a classroom in which the teacher is the facilitator of learning and not just a conduit for facts.

In a Saturday lecture sponsored jointly by the Chicago Institute for Psychoanalysis and the Erikson Institute for Early Education, Piaget gave examples of the stages a child's learning processes go through.

He described an experiment in which children from ages 3 to 12 were asked to crawl on all fours and then explain how they had done it. The crawling is a universal action of normal young children, the explanations varied according to age. The youngest children said they crawled by moving their arms first and then moving their legs, which was incorrect.

Children 6 AND 7 years old said they first moved the hand and leg on one side and then the one on the other. Also incorrect, but closer to reality, said Piaget, speaking in French, thru his interpreter, Dr. Eleanor Duckworth.

The correct explanation, moving opposite arms and legs together, was perceived by only two-thirds of the 9- and 10-year-olds.

Another example concerned whirling a ball on a string and letting it go so that it landed in a box. The 4- and 5-year-olds performed the action correctly, it was only

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at age 9 or 11 that children could generally explain how it was done and why the ball landed in the box, Piaget said.

In his recent book, "To Understand Is To Invent, The Future of Education," Piaget foresees a closer cooperation between psychologists and educators.

He praises the new math, which emphasizes understanding. But he criticizes what he calls the "sometimes psychologically archaic" method in which it is presented, that is, by simple transmission of knowledge instead of by the child's self-discovery.

He criticizes the teaching of science, as it is generally practiced, because schools "have almost systematically neglected to train pupils in experimentation."

Summing up his theory of "active methods" of learning, Piaget says: "To understand is to discover, or reconstruct by rediscovery, and such conditions must be complied with if, in the future, individuals are to be formed who are capable of production and creativity and not simply repetition."
La aplicación en la escuela de la teoría de Piaget: la pedagogía operatoria

Montserrat Moreno

La ciencia y la técnica han experimentado en las últimas décadas una profunda evolución que ha incidido en la transformación de la forma y los límites de la educación de nuestra sociedad. Sin embargo, no todas las teorías y descubrimientos tienen un mismo rastro de aplicación en una práctica inmediata. Como pedagogos, los profesores al campo de la ciencia, dada la rentabilidad de la utilización de aquellas en las sociedades de los contemporáneos. Dentro de estos últimos, los que conciernen a las ciencias humanas se apli- can aún con mayor limitación. Sin comparación, por ejemplo, los medios de transporte utilizados hace 40 años con los actuales, y no obstante que las transformaciones que han sufrido no corresponden en absoluto a los cambios que se han operado en el mismo periodo de tiempo, en los sistemas de enseñanza, parece haber vuelto la espita a los descubrimientos científicos como el de la ciencia de la sociedad, habiendo cas- tigado a perpetuidad el poder a la par que de un aula repleta de viejas fórmulas intranscendentes.

Los descubrimientos en el campo de la psicología se han ido multiplicando hasta anular un amplio sistema explicativo del desarrollo infantil. En este sentido, los traba- jos realizados por Piaget y su escuela constituyen la mayor aportación que existe hasta el presente al conocimiento de la evolución de la inteligencia del niño.

La Pedagogía necesita incorporar a sus recientes avances, tanto en el campo de la Psicología como en el de la Física, la Teoría de la Inteligencia de Piaget. No es lógico que sabiendo que el pensamiento infantil tiene unas formas de evolución y unos fundamentos propios de desarrollo, la escuela se empeñe en conducirse por otros derroteros ajenos a su propia forma de funcionamiento, volviendo quizá para el adulto pero que dificultan la comprensión en el niño con las técnicas que conduce su actividad espontánea. La imposición de unos conocimientos no comprensibles por el niño lleva a este a inmovilizarse, a repetirle, de manera lenta y perezosa, del niño la misma concepción en que ha sido aferrado, sin duda, incluso a realizar el trabajo de la escuela de la Pedagogía operatoria.

La teoría de la inteligencia en Piaget

Según Piaget, la inteligencia es el resulta- do de una interacción del individuo con el medio. Gracias a ello, se produce, por parte del individuo, una asimilación de la realidad exterior que comporta una inter- pretación de la misma. Las formas de in- terpretar esta realidad no son iguales en un niño de 6 años, en uno de 10, o en un adulto. Cada uno de ellos tiene unos siste- mas propios de interpretación de la reali- dad que Piaget denomina "estructuras del pensamiento". Así, por ejemplo, si a un niño de 5 años le mostramos dos recipientes de igual nivel en uno de los cuales hemos introducido la misma cantidad de agua, el niño juzgando por la igualdad de los niveles de líquido, dirá que hay la misma cantidad en uno de los dos. Si, a la vista del niño, vertemos todo el contenido del segundo recipiente en un ter- cer, los niños mayores dirán que el recipiente de mayor altura está lleno de agua que el de menor altura. El niño de 5 años no ha notado una relación entre el aumento de altura, y el que va a llenar el tercer recipiente de agua que en el primero hemos vertido. El niño de 10 años, al juzgar por la interpretación que hace del propio nivel de líquido en el recipiente de menor altura, además de interpretar que hay más líquido en el recipiente de mayor altura que en el de menor altura, además de interpretar que hay más líquido en el recipiente de menor altura.

La aplicación de la teoría de Piaget a la escuela

La escuela es la institución encargada de transmitir la cultura y las formas de com- portamiento aceptadas por la sociedad, pe- ro no sólo es una función estatutaria, sino también de transmisión de los conocimientos científicos- tecnológicos. Mientras que los primeros intentan ser representados por medio de razonamientos que los expúllos, los segundos se presentan como principios independientes del razonamiento, no son alternativos entre éstos.