

As L.S. Vygotsky (1962) pointed out, the relationship between intellectual development and education is reciprocal. It is possible to accelerate childrens' thinking operations and levels by providing suitable school experiences geared to their cognitive capacity and mode of functioning. In L.S. Vygotsky's terms, didactic instruction normally plays a role in facilitating transition from one stage of cognitive development to another. It is mostly accomplished by making intellectual demands on students that go beyond their current capabilities. The far reaching implications in new teaching methods and curricular practices imposed by House Bill 72 points up the need for students in the fifth and sixth grades to shift from predominantly concrete to predominantly abstract modes of understanding and deal with complex abstract propositions. Contrary to Piagetian developmental stages, students at 10 and 11 years of age are expected to become an abstract verbal learner. Students in modern curricula must acquire new concepts and learn most new propositions by directly apprehending verbal and symbol relationships.

This study was an attempt to find levels of abstract functions as they relate to reading ability and power among a select sample of fifth graders.

#### METHOD

68 students in the fifth grade of an urban population school district were administered the PN-6 form of the Degree of Reading Power (DRP). Forty five percent of the student sample participated in the Federal lunch program. Two groups of 34 students were identified on the basis of relatively high or relatively low DRP scores. Each of the 68 students was administered individually the Gelb-Goldstein-Weigl-Sheerer Object Sorting Test.

The purpose of the Object Sorting Test is to determine whether S is able to sort a variety of simultaneously presented objects according to general concepts and shift these frames of reference. Objects for Ss are toy spoons, chocolate cigars, candles, play-chips, matches, knives, forks, screwdriver, bicycle bell, nails, etc. A total of 31 objects was randomly placed before each S in the following manner. (1) Each S was asked to group articles with an object which S selected himself or herself (Handing Over); then, to group articles with one the examiner selected (Passive Sorting). (2) In the second phase of the test, S was asked to group all the articles as S thought they belonged together (Group Sorting). (3) After completion, S was asked to arrange all articles in still another way (Abstract Shift). (4) If S did not comply satisfactorily for one reason or another, the S was presented with new groupings by the examiner and asked why the objects presented were grouped together in the given manner (Coercive Sorting). In each stage of the test, S was asked to explain why S grouped the articles as S did, or why S did (or did not) accept the groupings.

Data from the protocols of the Object Sorting Test, in each of the five subtests, were rated as passing or failing according to the criteria already presented.

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## THINKING LEVEL AND READING COMPREHENSION

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In the State of Texas, a new educational plan was passed by the Legislature, July, 1983, titled House Bill 72. It is an extremely complex plan in which one of the mandates is that 70 is the passing grade for every course. Any student failing to earn 70 in every course would be ineligible for extra curricular activities, football, baseball, the band, etc. Grades are reported every six weeks. Students who fail to earn a grade of 70 or C would participate in a special remedial class each day after regular school hours. Inherent in the legislation is the concept that children in each grade level should be able to do the work and pass. It is the teacher's responsibility to teach every student in such a way that he passes. This appears to be developmentally unsound.

Not only do children grow cognitively at different rates, but the developmental pattern of different functions is also different. The growth curves of three of eleven tests of the WISC-R show the general trend and pattern of growth during the elementary school years up to age 15. The continuous development of vocabulary from age five to 15 is an indication of the importance of language development as the child grows to maturity (Sigel, 1953; Wechsler, 1950; Clymer, 1961).

**Pass-Fail Criteria For Cognitive Functions On Parts I To IV**

Wechsler, D. Intellectual development and psychological maturity. *Child Development*, 1950, 21, 49-50.

Tests	Pass	Fall
Part Ia, Handing Over	Ability to sort concretely, predominantly, or exclusively	Inability to sort
Part Ib, Passive Sorting	Capacity to sort from at least 3 objects of departure	Inability to make at least 3 concrete sorts
Part II, Group Sorting	Ability to sort all the objects into suitable groups, and capacity to explain	Inability to sort all the objects into groups, or failure to explain reasons for grouping
Part III, Abstract Shift	Ability to shift volitionally to abstract frames of	Inability to make sorts with abstract concepts
Part IV, Coercive Sorting	Ability to explain abstract sortings of at least 3 groups	Inability to explain passive sorts, or abnormally concrete

**RESULTS AND DISCUSSION**

Group A, in which students' scores (DRP) were in the upper fifty percent of the scores, were found to have 19 (56%) scoring on the Object Sorting Test as predominantly abstract in cognitive functioning. The remaining 44% of the students use concrete modes as the predominant way of solving verbal problems in the test. Students in Group B had DRP scores below the fiftieth percentile. At least 10 students showed dominance in abstract functioning, while 24 students were observed using concrete operations in their primary thinking level.

The relationship of word recognition and reading comprehension with concept formation and reasoning is well established in the research literature. If teachers can motivate students to increase their vocabulary and expand their reading of books, it will provide the best predictor of abstract volitional shifts. Young students at 10, 11, and 12 years of age are being challenged rigorously in today's curricula to free their dependency on concrete and observable props and to think rationally in an abstract manner. Probably the inability of students to think symbolically and abstractly is the most frustrating experience of teachers of fifth, sixth, and seventh graders. Frequently, economically deprived students have moderate to severe developmental lag in reading and mathematics. Without the foundation of reading vocabulary and comprehension, it is almost impossible to develop abstract thinking skills and problem solving. Expecting children in remedial classes to perform and make up for inadequate thinking in abstract modes is filled with frustration and despair. When reading skills are not there, thinking levels are reduced to consequences of verbal deficits.

**REFERENCES**

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