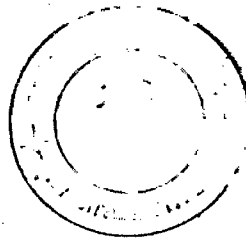


Chapter I
Introduction



Teachers have always been concerned with how students learn what they are asked to learn. What are the factors that influence learning? What effect do factors such as age, sex, environmental conditions and children's backgrounds have on their learning process? What types of learning occur most easily? How well do children remember what they are asked to learn and how well do children learn from what they observe or what they are exposed to? These are some of the questions that have been asked by educators and psychologists who are interested in learning.

Stevenson¹ has stated that, "A great deal of what children learn in their every day social experiences appears to be of an incidental nature." Indeed, incidental learning may occur in many aspects of identification. Children may learn certain modes of responses not because of explicit teaching or instruction but because they observe them during interactions with their parents, teachers, and peers.

¹ H.W. Stevenson. Children's Learning (New York, Appleton Century Crafts, 1972), p. 208.

On the other hand, learning in school is generally intentional. Teachers set out to teach material that has been specifically chosen. So it is important to examine how intentional and incidental learning occur and what variables related to children and to their environment influence their learning and their ability to focus attention on relevant task material.

Purpose of the Study

The purpose of this study is to investigate how well children in partially urban area learn central information which, they are instructed to learn and incidental information which they are not instructed to learn; to examine the development of selective attention; and to examine differences in the performance of males and females on central and incidental memory tasks.

Conceptual Definition

Short- Term Memory.

The Encyclopedia of Psychology² defined short term memory as "the information that may be held for a very

² J.H. Eysenck, W. Arnold, and R. Meile, Encyclopedia of Psychology 2(1972), 252.

short period of time (fifteen or thirty seconds)." Krech, Crutchfield and Livson³ state that "intentional learning is the acquisition that takes place when the learner has received instruction from the experimenter to learn the materials or when there is an explicit mental set to learn." Incidental Memory.

Traverse⁴ defined incidental memory as "the ability to recall the knowledge that the subject has acquired about some aspect of the materials that are not relevant to undertaking the main task." The same idea has been proposed by Krech, Crutchfield and Livson⁵ who state that, "incidental memory is the acquisition that takes place when the learner has received no instruction from the experimenter to learn the material." According to Postman,⁶ "incidental learning

³ D. Krech, R.S. Crutchfield, and N. Livson, Elements of Psychology, (New York: Alfred A Knoff Inc., 1970), p. 237.

⁴ M.W. Traverse, Essentials of Learning, (New York: The Macmillan Company, 1967) 157 - 159.

⁵ Krech, and others, loc. cit.

⁶ Leo Postman, "Short Term Memory and Incidental Learning" Categories of Human Learning, Edited by A. Melton: (New York: Academic Press, 1964) p. 185.

refers to learning that occurs without any intent to learn." In this sense, there is no conscious effort to learn the particular material but the learner learns it without intention.

In the present study central memory is defined as the memory held for a very short period of time (fifteen or thirty seconds) when there are instruction to learn. In the present study the terms short-term, central and intentional memory will be used interchangeably. Incidental memory, contrary to central memory, is the memory which occurs when there are no deliberate instructions to learn.

Serial Positions

Serial positions refer to the order of each stimulus card of test materials as they were presented to each subject for the memory tasks. Primacy is the first presented card or the first position, middle-positions referred to the average of the third, fourth and fifth position and recency is the last presented card or the last position.

Significance of the Study

The study of developmental trends in central or intentional and incidental memory will provide information

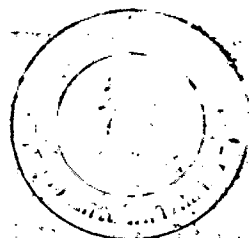
useful in understanding the development of selective attention. It will also shed light on the relationship between perception and learning that is what tasks children attend to most and in what ways they learn. This information will be useful in suggesting methods for teaching young children. Since these concepts have been investigated to a limited extent in Thailand, it is important to study them.

Delimitation

The present study explored the development of central and incidental learning of subjects in a provincial town in the North East of Thailand the subjects were 4 - 5, 7 - 8 , 10 - 11, 14 - 15 and 20 - 21 years old. There were twenty subjects in each group with equal number of males and females. Short-term and incidental memory was tested using paired pictures of animals and objects from children's books familiar to Thai children. These pictures of animals and objects were paired in sets of cards.

Central or intentional memory was investigated by means of a game, the central task being to recall the location of objects (animals) among the seven stimuli presented one after the other and then turned upside down.

Incidental learning was measured by the recall of which animals (objects) went with which objects (animals) during the testing of central memory.



Developmental Studies

The development of short-term (or central) and incidental memory has been studied in the United States of America. The results of these research studies have revealed some important information about the development of attention and memory.

The development of selective attention has been examined by Hagen⁷ through experiments on central and incidental memory. Forty children per grade in the first, third, fifth and seventh grades were tested. Each subject was tested individually on central memory by presenting pictures of animals and objects paired in cards. Half of the subjects were asked to remember the location of animals; the other half were asked to remember the location of the objects as central task memory for twelve trials. After the completion of the central memory test, incidental memory was tested by asking the subjects to recall the paired pictures, objects for those subjects that had animals as central task and animals for those subjects that had objects as central task. The results showed that the central memory task scores increased regularly as a

⁷ J.W. Hagen, "The Effect of Distraction on Selective Attention." Child Development, 38(1967), 685 - 694.

function of age from grades 1, 3, 5 to 7 but the incidental scores did not increase and actually declined at the oldest age level (grade 7).

Maccoby and Hagen⁸ tested central and incidental memory, using different materials. They studied children in grades 1, 3, 5 and 7. A set of cards with different colors and pictures were presented to the subjects. Central memory was tested by asking children to recall color cards. After completion of central memory test, children were asked to recall the pictures that went with specific colors as an incidental task. The results indicated that the children's ability to recall the relevant stimuli increased with age, but the ability to recall irrelevant stimuli increased from grade 1 to grade 5 and then decreased markedly in grade 7. These results were replicated by Druker and Hagen⁹ with different subjects in a study entitled "Development Trends in the Processing of Task-Relevant and Task-Irrelevant Information."

⁸ E.E., Maccoby and J.W. Hagen, "Effects of Distraction upon Central Versus Incidental Recall." Journal of Experimental Child Psychology 2(1965), 280 - 289.

⁹ J.F. Druker, and J.W. Hagen, "Development Trends in the Processing of Task-Relevant and Task-Irrelevant Information." Child Development, 40(1969), 370 - 382.

In 1954, Stevenson¹⁰ investigated the incidental memory of children ages 3 to 7 years. The children were told to play a game by opening boxes in order to find prizes for central learning. In each box, there was an assortment of objects, and the ability of the children to locate the objects was assumed to be incidental learning. The results indicated that the amount of incidental learning increased from ages 3 to 7. Later Siegel and Stevenson¹¹ studied incidental learning in children between ages 7 and 14, including adults ages 19 to 35. The results coincided with Stevenson's previous study. Incidental learning scores increased between ages 7 - 8 and 11 - 12 and declined from ages 13 to 14; but for the adults, the incidental learning increased. Thus, there was a curvilinear relationship between age and incidental learning. Stevenson explained that increasing amount of incidental learning between ages 7 and 12 might be attributable either to an increasing ability to learn and retain or to an increasing tendency to attend to the incidental stimuli. The decline

¹⁰ Stevenson, op. cit. p. 209.

¹¹ A. W. Siegel, and H. W. Stevenson, "Incidental Learning. A Developmental Study," "Child Development, 37(1966), 811 - 817.

in the amount of incidental learning between ages 12 and 14 might be due to the tendency of the children to disregard the irrelevant stimuli. For adult subjects, the amount of incidental learning probably increased because the task was extremely simple for them.

From the above American research, it can be concluded that older children respond selectively on relevant tasks and ignore irrelevant tasks more efficiently than younger children.

Dusek and Wheeler¹² have investigated the effects of attentional and cognitive factors on children's incidental learning. The subjects in their study were kindergarteners, third and fifth graders who were tested in an incidental learning pattern. For half the subjects, the central and incidental stimuli, line drawings of familiar animals and household objects, were spatially separated on the eight stimulus cards; for half, the stimuli were contiguous. Half the subjects were instructed to label the central stimuli as the cards were exposed; half were not. The results indicated that central learning increased with grade level from kindergarten to fifth, but incidental

¹² J.B. Dusek, R.J. Wheeler, "The Effects of Attentional and Cognitive Factors on Children's Incidental Learning," Child Development, 44(1973), 253 - 258.

learning remained constant. They discussed further that spatial separation of central and incidental stimuli had no effect on central learning, but it was easier for the subjects to ignore the incidental task when the stimuli were separated. Labeling of central stimuli had a facilitative effect on central learning and a detrimental effect on incidental learning.

A study was conducted by Hagen and Kingsley¹³ to explore the effect of labeling on central memory. The subjects ranged in age from nursery school to grade 5. and were tested individually in a game situation. The subjects were asked to find the presented card which matched a cue card by turning up cards until they found the correct one for 16 trials. Half of the subjects labeled the stimuli and half did not label them. The results indicated that both groups of subjects, those who labeled and those who did not label, got high performance scores on the last card presented and low performance scores on the first card presented as measured by proportion of correct responses for each position.

¹³ J.W. Hagen, and P.H. Kingsley, "Labeling Effects in Short-Term Memory. Child Development. 39(1968),

All the research discussed so far has been conducted in the United States. There is limited Cross-Cultural research.

Recently Wagner¹⁴ conducted a cross-cultural study on the development of short-term and incidental memory in Mexico. He compared the performance of subjects in urban and rural Yucatan in Mexico. Test materials were adapted from Hagen's¹⁵ (1967). The subjects were tested individually on central and incidental memory tasks. The results indicated that central task scores of the Urban group increased from age 7 - 8 to age 25 - 27 but in the Rural group the central task scores increased from age 7 - 9 to age 10 - 12 and then slightly declined from ages 13 - 15 ages 22 - 35. Analysis of the serial position of the primacy effect showed that primacy remained generally constant over age in Rural group while it increased with age in Urban groups. There were no significant differences in primacy recall between Urban

¹⁴ D.A., Wagner, "The Development of Short-Term and Incidental Memory A Cross-Cultural Study." Report to Department of Psychology, University of Michigan, 1973. of Michigan,

¹⁵ Hagen, loc. cit.

and Rural groups at either age 7 - 9 or 10 - 12. Analysis of the recency effect showed that the Urban group scored significantly higher than the Rural group. Middle-position measures remained relatively constant over age for Rural groups, while an increase with age occurred in Urban groups. The incidental memory task scores in the Urban group increased from age 7 - 9 to age 13 - 16 then declined at age 22 - 27. The incidental memory task scores in the Rural group increased slightly from age 7 - 9 to age 20 - 21 then declined at 22 - 27. And there were no significant trends in the correlations with increasing age. Wagner concluded that education was a more important influence than cultural setting on central memory performance, and the over-all increase in central task performance with age and education of the Urban group replicated the American studies of central and incidental memory.

According to my knowledge, no one has studied the developmental ability of Thai children. Therefore the present study plans to examine the development of central and incidental memory in Thai children in order to ascertain whether Thai children have learning ability similar to that of American children.

Hypothesis

The present study was set up to test the following hypotheses.

1. Central memory scores increase with age.
2. For the central memory task, the stimuli presented last are remembered significantly better than stimuli presented first and in the middle.
3. Incidental task scores decline with age, and there is a curvilinear relation between incidental memory scores by age level.
4. There are no differences in performance on central and incidental memory between male and female subjects.
5. There is no correlation between central and incidental memory scores.

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