

---

## RETENTION OF EXPERIENCE BY SCHOOL CHILDREN

JOHN F. BENDER, University of Oklahoma, Norman

Children go to school to learn. What they learn has been called by one philosopher "the picked winnings of the human race." As children learn they are going through the experience of becoming familiar with, understanding, and memorizing useful items of knowledge, of acquiring desirable attitudes and viewpoints, and of achieving skills in the use of knowledge. The capacity of children to learn and the ability of the school to teach are both measured by the degree of retention of school experience exhibited by the pupil. There are many problems of successful living which must be solved both by the individual and by the various organized groups of society. The successful solving of these problems depends to a great degree on the extent and quality of the schooling of children. An important objective of teaching is so to present selected items of learning that children will retain them and will be able to bring them to bear with ease on the solution of individual or social problems.

Teachers and parents especially are concerned about the retention of experience of children. Standardized tests have been devised for the various school subjects. These tests are objective, so far as scoring or evaluating responses is concerned, and they are usually timed. They measure the extent of recall, the accuracy of recall, and the speed of recall. These are measures of the effectiveness of learning. When properly applied on a large scale these tests may be used to measure the extent and nature of forgetting, or the loss of control over school experiences.

In the typical American school, children have a three-month period in the summer when normal and formal instruction is suspended. Usually school closes in May and reconvenes in September. It would be natural to assume that children forget something of what they have learned during the period that formal teaching is in abeyance. However, it is desirable to have something better than an assumption in this matter. By the use of available and dependable tests some definite figures on the extent of forgetting during summer vacations may be secured.

This problem was investigated in the schools of Cordell, Oklahoma, in 1936 (Randle 1937). The problem was studied in four phases and data were secured on each phase. The first phase consisted of finding what proportion of children in the various subjects forgot or lost in score, what proportion

gained in score, and what proportion neither lost nor gained. In the second phase the boys and girls were studied as separate groups and figures on losses and gains in various subjects were secured. In the third phase attention was centered on the extent of forgetting in the different subjects. In the fourth phase the relationships between the measures of loss and gain and the measures of intelligence were calculated.

The testing program involved giving a total of 1592 individual tests in grades 3 to 8 inclusive, covering seven different subjects of instruction and intelligence. In each grade and subject tests were given in the last week of school in May 1936. The same achievement tests were given to the same children when they returned in the first week of school in September 1936. As stated, 1592 tests were administered in May. The achievement tests were repeated in September. From these data the gains or losses for each pupil in each subject were computed.

The subjects in which tests were given were state test, arithmetic fundamentals, arithmetic reasoning, composition, word knowledge, reading, spelling, and intelligence.

The following is a brief summary of the findings from this testing program.

On the state test five per cent of the children (both boys and girls) neither gained nor lost; 42 per cent lost in that they scored lower in September than in May; and 53 per cent gained in that they scored higher in September.

In the fundamentals of arithmetic the corresponding findings were: neither gained nor lost, 11 per cent; lost, 53 per cent; gained, 36 per cent.

In reasoning in arithmetic 30 per cent neither gained nor lost; 29 per cent lost; 41 per cent gained.

In composition 39 per cent neither gained nor lost; 36 per cent lost; 25 per cent gained.

In word knowledge 13 per cent neither gained nor lost; 35 per cent lost; 52 per cent gained.

In reading 13 per cent neither gained nor lost; 42 per cent lost; 45 per cent gained.

In spelling 14 per cent neither gained nor lost; 53 per cent lost; 33 per cent gained.

When these seven subjects are thrown together and considered as a unit there are 19 per cent who neither gained nor lost; 41 per cent who lost; 40 per cent who gained.

When the differences between boys and girls are analyzed on the basis of the combined percentages in each case of those who just held their own, that is, neither gained nor lost, plus those who gained, the results show that the girls surpassed the boys in every subject except arithmetic fundamentals. The respective percentages are as follows: State test girls 33, boys 24; arithmetic reasoning, girls 40, boys 31; composition, girls 36, boys 28; word knowledge, girls 36, boys 29; reading, girls 30, boys 28; spelling, girls 27, boys 20; all subjects taken together, girls 33, boys 26.

In this margin of 7 per cent in all subjects the girls seem to have a considerable advantage over the boys. Their percentage margin is about 27 per cent greater than that of the boys.

If attention is centered on the losses, or extent of forgetting, in the different subjects, the results are as follows when the subjects are ranked in the order of greatest percentage of pupils who lost: In arithmetic fundamentals, 53 per cent; in spelling, 53 per cent; in reading, 42 per cent; in state test,

42 per cent; in composition, 36 per cent; in word knowledge, 35 per cent; in arithmetic reasoning, 29 per cent; in all subjects, 41 per cent.

The positive statement of these percentages in terms of no losses or gains plus actual gains give the following figures: arithmetic reasoning, 71 per cent; word knowledge, 65 per cent; composition, 64 per cent; state test and reading, each 58 per cent; arithmetic fundamentals and spelling, each 47 per cent; all subjects, 59 per cent.

As already indicated an intelligence test was given to the pupils whose losses and gains in achievement in the seven subjects mentioned have been analyzed. The scores in intelligence were correlated with the scores indicating loss or gain in each of the seven subjects. The Pearson Product-Moment Method of correlation was used. The coefficients of correlation for the different subjects were as follows: arithmetic reasoning, 0; arithmetic fundamentals, +.0001; word knowledge, +.003; spelling, —.006; state test, —.02; composition, —.02; reading, —.05. The conclusion is that there is practically no relationship between the rank of a pupil in gains or losses, and his or her rank in intelligence. In other words, losses and gains in achievement in school subjects during the summer vacation are conditioned by factors other than intelligence.

In another study (Kunkel 1937) the same method here described to determine losses and gains during the summer was used to discover what progress pupils make from the beginning of school in September to the close in May. Standardized tests were given in September to all the eighth grade pupils of the Shawnee Junior High School in five subjects. The same tests were given to the same pupils the following May. The computation of progress showed that 86.5 per cent of the pupils gained, 9.8 per cent lost, and 3.7 per cent neither gained nor lost. These figures indicate that a loss on scores by 41 per cent of pupils following a vacation of three months should be interpreted in the light of a loss by nearly 10 per cent following a nine-month period of continuous and formal instruction.

#### LITERATURE CITED

- Kunkel, R. M. 1937. The learning of eighth grade pupils over a period of nine months. Master's thesis, unpublished. University of Oklahoma.
- Randle, W. F. 1937. Losses and gains of school children following the summer vacation. Master's thesis, unpublished. University of Oklahoma.