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ABSTRACT

To learn about teachers' conceptualization of memory strategy use, memory knowledge, and developmental changes in these skills, investigators administered a questionnaire to 59 teachers of children in kindergarten through sixth grades. The questionnaire included sections on strategy use, metamemory skills, and memory monitoring and control activities. Teachers were asked to characterize expected performance for children in their classes achieving at high, average, and low levels. Teachers predicted major differences in memory strategy use, memory knowledge, and memory monitoring activities as a function of classroom achievement level. Differences in responses across grade level occurred for items assessing memory strategies and self-testing activities, and for some of the memory knowledge items. No differences in teachers' expectations at different grade levels were seen in evaluations of a rehearsal strategy, metamemory, or memory monitoring or control activities. Teachers showed reasonably veridical perceptions of memory development, especially in the area of memory strategies. However, findings suggested that teachers of the earlier grades may overestimate the metamemory, memory monitoring, and control skills of the children they teach. (Author/RH)

Teachers' Expectations for Memory and Metamemory Skills of Elementary School Children

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Abstract

Although it is often assumed that teachers influence the development of memory skills in children during the elementary school years, little is known about how teachers conceptualize memory strategy use, memory knowledge, and developmental changes in these skills. In order to learn about teachers' views, a questionnaire was given to 59 teachers of children in grades K through 6. The questionnaire, which was constructed on the basis of a review of the memory development literature, included sections on strategy use, metamemory skills, and memory monitoring and control activities. The teacher was asked to characterize expected performance for the highest achievers, for average achievers, and for the lowest achievers in his/her class. Teachers predicted major differences in memory strategy use, memory knowledge, and memory monitoring activities as a function of classroom achievement level. A developmental question concerned the extent to which teachers would show expectations appropriate to the grade levels of the children they taught. Differences in responses across grade level occurred for items assessing memory strategies and self-testing activities, and for some of the memory knowledge items. No differences in expectations of teachers at different grade levels were seen in evaluations of a rehearsal strategy, metamemory, or memory monitoring or control activities. Teachers showed reasonably veridical perceptions of memory development, especially in the area of memory strategies. However, teachers at the earlier grades may overestimate the metamemory and memory monitoring and control skills of the children they teach.

Aims

It is often assumed that teachers influence the development of memory skills in children during the elementary school years. However, little is known about how teachers conceptualize memory skills and activities, or how they view the development of these abilities. The aims of the present work were first, to examine teachers' expectations for memory task performance of children in the grade level in which they teach, and second, to determine the extent to which teachers hold a developmental view of memory.

Specific questions concerned teachers' awareness that immature learners, either younger in age or lower in achievement, might 1) employ less sophisticated memory strategies, 2) have less knowledge of memory phenomena, including task and person factors affecting memory performance, and 3) be less likely to engage in memory monitoring and control activities during study than are more mature and capable learners.

Method

Fifty-nine teachers (16 at the kindergarten - first grade level, 19 at second and third grades, and 24 at grades four through six) participated in this study. Teachers were volunteers from public schools in urban and suburban areas of a Southern city; 18 (30%) were black, the rest white, most (94%) were female. Many of the teachers (42%) had completed Master's degree programs. Teachers had taught an average of 14.9 years (8.6 years at the grade level they were concurrently teaching).

The teachers completed a three-part questionnaire: In the first section, teachers were asked to predict responses that children from their classes might give to several metamemory items, including items dealing with the phenomena of savings, retroactive interference, recall requirements, and primacy-recency effects. In the second section of the questionnaire, several memory tasks (serial recall, free recall, and a recall task requiring self-monitoring) were described and teachers were asked to indicate the ways in which children in their classes would perform the task. Choices ranged from inefficient non-strategic behaviors to relatively sophisticated and appropriate recall strategies. In a third section of the questionnaire (Tables 1-3), several memory strategies, items of memory knowledge, and behaviors involved in memory monitoring and memory control activities were described in brief sentences. Teachers were asked to indicate simply whether or not children in their classes were likely to demonstrate these skills or know the concepts described. In all three parts of the questionnaire, teachers were asked to make separate judgments for high, average, and low achievers in their classes.

Results

Analyses were made to examine teachers' expectations for children's memory skills and knowledge. The first question concerned teachers' views of memory strategy use by children. Responses made on questions concerning strategy use in serial recall, free recall, and recall readiness tasks were examined, as were items concerned with memory strategies taken from the Children's Memory Abilities Scale (CMAS). For

both the free recall and recall readiness tasks, teachers' expectations for strategic behavior increased over grade level (Table 4). Major differences were also expected as a function of children's achievement level, with increasing use of appropriate strategies expected among students of higher achievement levels. For serial recall, viewed by teachers as the easiest of these three tasks, no grade differences were found. Teachers expected both high and average achievers to use appropriate strategies (rehearsal) in serial recall. In their evaluations of the seven strategies queried on the CMAS, teachers showed strong expectations for variation in performance as a function of the child's achievement level, as indicated in Table 1, and showed grade differences in expectations on several scales. For two relatively immature strategies (saying or writing items repeatedly), teachers' expectations varied as a function of both grade level and achievement criterion: Teachers at grades K-1 expected high use of these immature strategies by their high achievers, teachers at grades 2-3 expected highest use by average achievers, and teachers at grades 4-6 expected high use by low and average achievers. Self-testing as a way to evaluate learning was expected to increase with achievement level among teachers at grades K-1 and 4-6; for teachers of grades 2-3, average as well as high achievers were expected to show high use of self-testing. Other items concerning strategy use (Table 1) did not show grade level differences that might be expected on the basis of the memory development literature, although teachers were likely to describe achievement level differences within their classrooms.

Teachers' views of their children's memory knowledge was assessed with items concerning metamemory and seven items from the CMAS (Table

2). On all items, teachers expected major differences as a function of achievement level. An exception is an item on the CMAS concerned with age differences in memory ability, for which teachers expected low achievers to show greater awareness than high achievers did. Although there was no grade difference on the metamemory items, responses varied with grade level for memory knowledge items on the CMAS. This effect reflected teachers' expectations for increasingly complex knowledge over grade. When individual items were examined, a statistically significant grade difference appeared only for an item concerned with children's awareness of the need to vary study depending upon the nature of the examination that would be used to assess knowledge. Teachers at the highest grade level expected children to show such understanding to a greater extent than teachers at the earlier grades did.

Teachers' views of their children's ability to monitor the state of their knowledge or to use appropriate control processes to regulate study were examined on several items from the CMAS (Table 3). On these items, again, teachers showed strongly different expectations as a function of the child's achievement level; however, there were no differences as a function of grade level. Overall, there was less difference between teachers of different grades in their expectations for metamemory and memory monitoring and control activities than might be expected on the basis of the research literature. Lack of change across grade appears to reflect the high expectations for children by teachers at the earlier grade levels.

Conclusions

Teachers of elementary school children expected differences in many aspects of memory performance and understanding as a function of children's classroom achievement level. Higher achievers are seen as more competent in most aspects of memory.

Differences in expectations by teachers of different grade levels are seen in judgments of memory strategy use and some aspects of memory knowledge. Less difference by grade level is shown for less immediately observable characteristics, those having to do with metamemory and monitoring and control activities.

In relationship to developmental changes in memory knowledge and monitoring and control processes described in the literature, it appears that teachers at the earlier grades (especially kindergarten and first grade) expect more mature and sophisticated memory skills than their children are likely to demonstrate. A question for future investigation concerns the relationship of grade-appropriate expectations to the nature of memory training efforts teachers make in the classroom.

References

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. American Psychologist, 34, 906-911.

Kreutzer, M. A., Leonard, C., & Flavell, J. H. (1975). An interview study of children's knowledge about memory. Monographs of the Society for Research in Child Development, 40, No. 1. (Serial No. 159).

Table 1

Mean Scores Assigned to High, Average, and Low Achievers by Teachers for Memory Strategy Items from the CMAS.

Memory Strategy Item	Achievement Level			
	High	Ave	Low	Overall
1) Children are able to study items by saying the names of the items over and over to themselves.	.61	.81	.59	.67
2) Children write items over and over as a way of remembering them.	.44	.63	.64	.57
3) Children say that they can create visual images in order to help them remember.	.69	.33	.07	.37
4) Children are able to make up a sentence about two unrelated items as a way of remembering them together.	.49	.17	.03	.23
5) Children engage in self-testing to see if they have learned something (e.g., giving themselves the test, practicing the steps involved to see if they can get them right, etc.).	.83	.47	.12	.47
6) Children know that grouping together related items can be helpful in trying to remember them.	.80	.42	.15	.46
7) Children are able to plan and organize their study activities without assistance.	.74	.25	.00	.33

Table 2

Mean Scores Assigned to High, Average, and Low Achievers by Teachers for Memory Knowledge Items from the CMAS.

Memory Knowledge Items	Achievement Level			
	High	Ave	Low	Overall
1) Children realize that a shorter list is easier to remember than a longer one.	.86	.85	.73	.81
2) Children know that familiar things will be easier to learn than are things entirely new to them.	.81	.76	.51	.69
3) Children can distinguish harder from easier study items.	.85	.71	.42	.66
4) Children realize that it is easier to study when one's surroundings are quiet than when a great deal of noise is going on.	.83	.69	.32	.62
5) Children realize that studying longer will lead to better learning than very brief study will.	.71	.51	.22	.48
6) Children know that they should study in different ways for different kinds of tests--distinguishing, for instance, between a multiple choice and an essay test, or a true-false and a short answer test.	.54	.20	.03	.26
7) Children believe that older children are better able to remember things than younger children are.	.39	.49	.59	.49

Table 3

Mean Scores Assigned to High, Average, and Low Achievers by Teachers for Memory Monitoring and Control Items from the CMAS

Memory Monitoring Item	Achievement Level			
	High	Ave	Low	Overall
1) Children are able to distinguish between things they don't know and things they have known in the past but can't think of at this moment.	.71	.54	.31	.52
2) Children are likely to use different kinds of study techniques when told to remember something than they will if told simply to look over the material.	.81	.47	.24	.51
3) Children are able to judge whether an answer given on a test is correct or incorrect.	.80	.46	.08	.45
4) Children are able to judge correctly that they know something and don't need to study it further.	.85	.44	.03	.44
5) Children are able to predict accurately how well they will do on exams in school.	.69	.32	.12	.38
6) Children are able to divide their study time so that difficult items are studied for a longer time than easy items.	.64	.36	.05	.35
7) Children are able to judge the relative effectiveness of two different ways of studying the same material.	.69	.17	.00	.29

Table 4

Changes in Teacher Expectations for Recall Task Performance as a Function of Grade Level

	Grade Level			
	K-1 (N=16)	2-3 (N=19)	4-6 (N=24)	OVERALL (N=59)
Free recall	1.08	1.34	1.40	1.29
Recall readiness	1.33	1.58	1.79	1.60
Serial recall	1.67	1.68	1.78	1.72

Table 5

Items Assessing Teachers' Expectations for Children's Memory Strategy Use

How Children Carry Out Memory Tasks

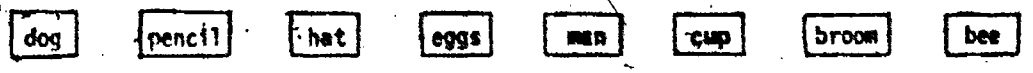
We have written descriptions below of some memory tasks that children might perform and ways that they could study in order to remember. Alternative ways of studying are given under "A", "B", "C", and "D".

Please answer the questions by circling the letter of the alternative that you think would be most characteristic of the group of children specified. Notice that we would like you to consider first the five children in your class who are the most outstanding achievers. Next, please answer for five children who are about average in achievement in your classroom. Then, consider the five children in your classroom who are lowest in achievement, and indicate how they might approach each memory activity.

Next, we would like you to think about what you would expect of an IDEAL child of the grade level you teach: That is, a child who is performing appropriately for his/her developmental level and whom you would enjoy having as a member of your class. Please answer the next question for this IDEAL child.

The last question asks you to evaluate the alternative study activities, in terms of which would be the best one to use in preparing for recall.

The child is shown a set of pictures of common objects, arranged in a row on cards like that shown below. The goal of the task is for the child to recite the list of pictures in order, from left to right, when the pictures are no longer in view. The child is given two minutes to study the pictures, and his or her study behavior is observed. Recall is checked at the end of the two-minute period.



A. The child looks at the pictures at the start of the study period but gets distracted by other things in the room for most of the last minute.

B. The child says the names of the pictures one at a time, repeating each label five times in a row. Rehearsal would sound like this: "Dog, dog, dog, dog, dog, pencil, pencil,..."

C. The child says the names of the pictures consecutively, from left to right, first while looking at the pictures and then with his eyes turned away. Rehearsal would sound like this: "Dog, pencil, hat, eggs, man, cup...."

D. The child looks carefully at each of the pictures and is not distracted from the task during the two-minute period.

Which of the study activities above would you expect the five children in your class who are highest in achievement to use? (Circle one) A B C D

Which of the study activities above would you expect five children in your class who are average in achievement to use? A B C D

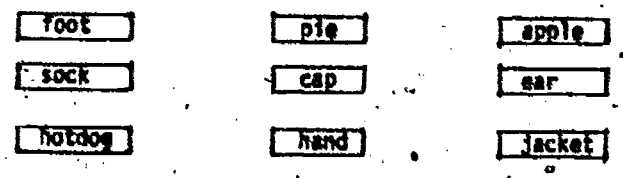
Which of the study activities above would you expect the five children in your class who are lowest in achievement to use? A B C D

Which of the activities would you expect from the IDEAL child of the grade level you teach? A B C D

Which of the four activities would be the most useful in preparing for recall? A B C D

Table 5, continued

The child is shown a set of pictures of common objects, arranged on cards in a random display like that below. The child is told that he or she should learn the names of the cards, in order to repeat them from memory. The cards can be recalled in any order that the child wants to use. The child is given three minutes to study the pictures, and his or her study behavior is observed. Recall is obtained at the end of the three-minute study period.



A. The child looks at the pictures at the start of the study period but gets distracted by other things in the room for most of the last minute.

B. The child says the names of the pictures over and over to him/herself, while looking at each in turn.

C. The child moves some items to put them in pairs with others (grouping, for example, sock and foot, hand and hot dog) but leaves other pictures unsorted.

D. The child sorts the items into categories of related things (food, clothing, and body parts) and studies them in these sets.

E. The child looks at the pictures intently and is not distracted from the task during the two-minute period.

Which of the study activities above would you expect the five children in your class who are highest in achievement to use? (Circle one) A B C D E

Which of the study activities above would you expect five children in your class who are average in achievement to use? A B C D E

Which of the study activities above would you expect the five children in your class who are lowest in achievement to use? A B C D E

Which of the activities would you expect from the IDEAL child of the grade level you teach? A B C D E

Which of the five activities would be the most useful in preparing for recall? A B C D E

Suppose that the child received a task just like the last task described above, but with one change in the instructions. Now the child is asked to study the items as long as he or she wants to, and to indicate when he/she knows them by ringing a bell. When the bell is rung, the teacher will ask the child to recall the items seen.

A. After studying, the child gives him/herself a little "test" to see if he/she knows all of the items. When the child can say them correctly in practice, he/she will ring the bell.

B. The child will say each item to him/herself a fixed number of times (e.g., three times, five times) and then will ring the bell.

C. The child will look at some of the items, and then will ring the bell.

D. The child will look at and say each item just one time, and then will ring the bell and say the items as quickly as possible.

Which of the study activities above would you expect the five children in your class who are highest in achievement to use? (Circle one) A B C D

Which of the study activities above would you expect five children in your class who are average in achievement to use? A B C D

Which of the study activities above would you expect the five children in your class who are lowest in achievement to use? A B C D

Which of the activities would you expect from the IDEAL child of the grade level you teach? A B C D

Which of the four activities would be the most useful in preparing for recall? A B C D

Table 6

Items Assessing Teachdrs' Expectations for Children's Memory Knowledge

What Children Know About Memory

Below we have written some descriptions of situations in which a child is asked about memory activities. Please read each description and then think about how you would expect the children in your classroom to answer the questions about each situation. We have provided four different answers that children might give for each item, labeled "A", "B", "C", and "D".

Please answer the questions by circling the answer that you would expect to hear from the groups of children indicated. Notice that we would like you to consider first the five children in your class who are the most outstanding achievers. Next, please answer for five children who are about average in achievement in your classroom. Then, consider the five children in your classroom who are lowest in achievement, and indicate how they might answer each question.

Next, we would like you to think about what you would expect of an IDEAL child of the grade level you teach: That is, a child who is performing appropriately for his/her developmental level and whom you would enjoy having as a member of your class. Please answer the next question for this IDEAL child.

The last question asks you to evaluate the alternative answers, in terms of which would be the best answer for a child to give.

"Jim and Bill are in science class. The teacher wanted them to learn the names of all the kinds of birds they might find in their city. Jim had learned them last year and then forgot them. Bill had never learned them before. Do you think one of these boys would find it easier to learn the names of all the birds? Which one? Why?"

A. "It would be easier for Jim, because he would remember about the birds from what he had learned before."

B. "It would be easier for Bill, because he wouldn't get the names confused with what he had learned before."

C. "It would be easier for Jim, but I don't know why."

D. "I don't know."

Which of the answers above would you expect from the five children in your class who are highest in achievement? (Circle one) A B C D

Which of the answers above would you expect from five children in your class who are average in achievement? A B C D

Which of the answers above would you expect from the five children in your class who are lowest in achievement? A B C D

Which of the answers would you expect from the IDEAL child of the grade level you teach? A B C D

Which of the four alternatives is the BEST answer a child could give? A B C D

Table 6, continued

"If you wanted to phone your friend and someone told you the phone number, would it make any difference if you called right away after you heard the number or if you got a drink of water first? Why?"

A. "I don't know."

B. "It wouldn't make any difference whether you called right away or got a drink first."

C. "It would be better if you phoned first, but I don't know why."

D. You should phone first, because otherwise, you might forget the number while you went to get a drink."

Which of the answers above would you expect from the five children in your class who are highest in achievement? (Circle one) A B C D

Which of the answers above would you expect from five children in your class who are average in achievement? A B C D

Which of the answers above would you expect from the five children in your class who are lowest in achievement? A B C D

Which of the answers would you expect from the IDEAL child of the grade level you teach? A B C D

Which of the four alternatives is the BEST answer a child could give? A B C D

"One day two friends went to a birthday party and they met eight children that they didn't know before. I'll tell you the names of the children they met: Bill, Fred, Jane, Sally, Anthony, Jim, Lois, and Cindy. After the party one friend went home and the other went to practice a play that he was going to be in. At the play practice he met seven other children he didn't know before, and their names were Sally, Anita, David, Maria, Jim, Dan, and Fred. At dinner that night both children's parents asked them the names of the children they met at the birthday party that day. Which friend do you think remembered the most, the one who went home after the party, or the one who went to practice in the play where he met some more children? Why?"

A. "The one who went straight home would remember more, but I don't know why."

B. "The one who went to the play would remember more, because some of the children at the play had the same names as those at the party, so it would remind him."

C. "I don't know."

D. "The one who went straight home would remember more, because he wouldn't get mixed up by hearing all the other names of the children at the party."

Which of the answers above would you expect from the five children in your class who are highest in achievement? (Circle one) A B C D

Which of the answers above would you expect from five children in your class who are average in achievement? A B C D

Which of the answers above would you expect from the five children in your class who are lowest in achievement? A B C D

Which of the answers would you expect from the IDEAL child of the grade level you teach? A B C D

Which of the four alternatives is the BEST answer a child could give? A B C D

Table 6, continued

"The other day I played a record for a girl. I asked her to listen carefully to the record as many times as she wanted so she could tell me the story later. Before she began to listen to the record, she asked me one question. 'Am I supposed to remember the story word for word, just like on the record, or can I tell you in my own words?' Which would be easier for her to do, to learn the story word for word, or in her own words? Why?"

A. "I don't know."

B. "It would be easier for her to learn to say it in her own words, because she could just explain the general idea. If she had to do it word for word, she might forget some of the words and that would ruin the whole story."

C. "It would be easier for her to learn to say it word for word, because she would listen to each of the words on the record very carefully."

D. "It would be easier for her to learn to say it in her own words, but I don't know why."

Which of the answers above would you expect from the five children in your class who are highest in achievement? (Circle one) A B C D

Which of the answers above would you expect from five children in your class who are average in achievement? A B C D

Which of the answers above would you expect from the five children in your class who are lowest in achievement? A B C D

Which of the answers would you expect from the IDEAL child of the grade level you teach? A B C D

Which of the four alternatives is the BEST answer a child could give? A B C D

A person asking questions shows the child cards that have pictures of common objects on them. "Now suppose I wanted you to remember these pictures, so that you could say them back to me in the same order that I use when I show them to you. Which ones do you think would be easiest to remember: the ones I show you first, the ones at the end of the set, or the ones in the middle? Why?"

A. "They would all be the same. It wouldn't make any difference if they came first or last or in the middle."

B. "The ones at the end would be easiest to remember, because you just finished seeing them and would still have them on your mind."

C. "The ones at the beginning would be easiest, because you saw them first."

D. "I don't know."

Which of the answers above would you expect from the five children in your class who are highest in achievement? (Circle one) A B C D

Which of the answers above would you expect from five children in your class who are average in achievement? A B C D

Which of the answers above would you expect from the five children in your class who are lowest in achievement? A B C D

Which of the answers would you expect from the IDEAL child of the grade level you teach? A B C D

Which of the four alternatives is the BEST answer a child could give? A B C D