

The Effect of a Summarization-Based Cumulative Retelling Strategy on Listening Comprehension of College Students with Visual Impairments

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Abstract: Because students with visual impairments need auditory materials in order to access information, listening comprehension skills are important to their academic success. The present study investigated the effectiveness of summarization-based cumulative retelling strategy on the listening comprehension of four visually impaired college students. An adapted multiple-investigation design across subjects was used. Findings suggest that the instructional procedures led to increased listening comprehension among participants, and that these gains were maintained at follow-up 30 days later.

Acquisition of information is vital in academic life, and students with visual impairments need to have the same degree of access as their sighted peers. Information resources such as textbooks or professional journals are generally available only in printed format (Senge & Dote-Kwan, 1995), however, and access to materials prepared in alternative formats is limited.

Equality of opportunity is a key premise of the expanded core curriculum, a major aim of which is enabling visually impaired students to live independently in society. It is essential, therefore, that students with visual impairments master the elements of the expanded core curriculum (Hatlen, 1996). The importance of reading in furthering this goal increases as students progress in their educational careers, especially as they prepare for exams or carry out homework assignments. When

those with visual impairments cannot get ready access to materials such as braille or large-print books, auditory materials become especially important. To maximize the benefit of these recorded works, listening comprehension skills are vital. Listening skills are one of the academic compensatory skills that are necessary for students with visual impairments to be able to access all areas of the expanded core curriculum.

Although learning via listening plays such an important role in the academic lives of students with visual impairments (Ghesquiere & Laurijssen, 1999), instruction in the effective use of auditory materials is lacking in the curriculum of the students who live in Turkey, who are the focus of this study. Instead, tactile processing is emphasized for expository materials. The absence of attention to auditory materials in the curriculum results in students with visual impairments using these materials passively. This may put them at a disadvantage, since it has been shown that students' active engagement during course work enhances their competence (Rosenshine, 1978), and listening actively can itself be an effective educational tool for visually impaired students. However, their learning to engage actively in listening requires the development of programs that respond to their unique educational needs (Erin & Corn, 1993).

Teaching reading comprehension

In the present study, for purposes of teaching listening comprehension skills, two reading comprehension strategies--summarization and retelling--have been used. Summarization involves determining what is important in a passage of text and expressing it succinctly in one's own words (Dole, Duffy, Roehler, & Pearson, 1991). By decreasing the amount of information that needs to be recalled, summarization facilitates the comprehension of a given piece of text (Carnine, Silbert, Kameenui, & Tarver, 2004). The general rules for summarization are: (a) deletion of unnecessary information, (b) substitution of a superordinate term for a list of items or actions,

and (c) selection of a topic sentence (Brown & Day, 1983). Malone and Mastropieri (1992) and Gajria and Salvia (1992) have shown the effectiveness of summarization strategy on reading comprehension of middle-school students with learning disabilities; Nelson and Smith (1992) have done the same with elementary-age students who have learning disabilities. Hare and Borchardt (1984) taught five summarization rules to intermediate and high school students: collapse lists, use topic sentences, remove unnecessary detail, collapse paragraphs, and polish the summary. They reported that carefully performed lessons in summarization skills positively influenced students' use of summarization rules and the quality of their summarization products.

Retelling is another strategy used in teaching reading comprehension skills. "The underlying notion is that retelling requires organization of the text-acquired information and that engaging in retelling focuses the reader's attention on restructuring text in a holistic fashion" (Gambrell, Koskinen, & Kapinus, 1991, p. 356). Cumulative retelling is a summarization technique that makes the retelling of a text relatively easier: using summarization, the reader recounts the part of the passage that he or she reads, then combines the retelling of each new part with the previous one, repeating this operation throughout the text. In the end, the reader creates a cumulative summary of the passage (Kameenui & Simmons, 1990).

There are only a few studies of the effects of retelling on reading comprehension skills. Gambrell, Pfeiffer, and Wilson (1985) used expository texts of 240 words to examine the effects of retelling on reading comprehension among fourth-grade students. The students were divided into two groups: retelling and illustrating. Those in the retelling group were asked to read the passage silently, and then were asked to write down the important idea and supporting details. Later, the students were paired off and those who did the reading were asked to retell what they had read to their partners. When

compared with those in the illustrating group, students who did the retelling after reading were found to have better performances in terms of immediate free recall, two-days delayed free recall, and cued recall.

In another study (Gambrell et al., 1991), fourth-grade students were divided into two groups: proficient and less proficient readers. The proficient group read narrative stories at a fourth-grade level and retold them immediately afterwards. Less proficient readers read stories at a second-grade level, and they also retold them immediately thereafter. The reading and retelling was done by both groups without any explicit instruction. Based on their responses to eight comprehension questions, both proficient and less proficient readers were found to have improved their reading comprehension.

The only study that involved retelling after listening to expository passages was conducted by Brown, Dune, and Cooper (1996) on junior high school students with developmental disabilities. The researchers tested the recall abilities of the students under three listening conditions: "different" listening, in which students listened to a different audiotaped presentation and then retold, two hours later, what they recalled from the tape; "repeated" listening, in which students listened to the same tape until predetermined instructional goals were met and then retold two hours later; and repeated listening with immediate retell, which was the same as the repeated listening condition except that the students retold what they had listened to immediately after the tape presentation. The researchers found that repeated listening with immediate retell was the most effective of the three conditions. However, this study included no instructional interventions to improve the retelling performance of the students.

In the present study, the following questions were addressed: (a) Will the summarization-based cumulative retelling strategy be effective in improving listening comprehension among students

with visual impairments? (b) Will the students maintain the acquired listening comprehension skills over time? (c) Will the students be able to generalize the listening comprehension skills to other areas of academic life? (d) How will the students view the social validity of the study in which they have participated?

Method

PARTICIPANTS

The research participants were four Turkish college students with visual impairments. All four had completed their elementary education at residential schools for visually impaired students, and all had gone on to middle schools with students who had no visual impairment. At the time this research was conducted, the participants were in the fourth semester at their school's department of special education, and all had volunteered to participate in the study.

Participant 1 was a 20-year-old female who had congenital glaucoma in both eyes, and was congenitally blind. Participant 2 was a 20-year-old male who had congenital cataract and nystagmus in both eyes, and was congenitally blind. Participant 3 was a 22-year-old female who had anophthalmos in both eyes and was congenitally blind. Participant 4 was a 21-year-old female who had optic nerve atrophy in both eyes, and was congenitally blind.

None of the participants' earlier educational experiences had included instruction in the summarization strategy used in the present study. All participants read and wrote using braille, and their native language was Turkish.

SETTING

The research was conducted by the second author in a study room at the university. At the summarization teaching stage, the researcher led a small-group instruction with all participants. At

the listening comprehension stage, participants studied individually at times appropriate to their programs. Each teaching session consisted of 40-50 minutes of study. Throughout the study, the Perkins braillewriter and slate and stylus were available for the students' use.

INSTRUMENTS

Selection of passages for listening

The passages used for measuring the listening comprehension of the participants and for the small-group instruction were selected from the following books: *Introduction to Special Education*, *Child Development and Learning*, *The Education of Children with Speech, Hearing and Vision Disorder*, and *Psychological Counseling and Guidance in Contemporary Education*.

Two criteria were used in the selection of passages: (a) they were drawn from subject matter not previously studied by the participants, and (b) the content was unrelated to subjects covered in earlier sections of the books. The 17 selected passages were read initially by two randomly selected sighted peers of the participants, who were asked to classify the passages as being easy, average, or difficult. Passages classified as difficult by both these students were then distributed equally to the investigations and teaching sessions.

Development of digital recordings

The selected passages were recorded by a digital sound recorder at a speed of 100 words per minute. In order to keep the speed constant, a digital metronome was used. The duration of the auditory texts varied from 3 minutes to 4 minutes 45 seconds. Each paragraph of the texts was recorded as a separate file.

Selection of summarization materials

To assess students' summarization performance, and for

purposes of teaching them summarization, paragraphs consisting of 59 to 124 words were drawn from the first three of the four books used for selection of passages for listening (see above). The criteria for the selection of the summarization paragraphs were (a) paragraphs should not refer to prior parts of the text, and (b) paragraphs should not be related to each other. These selections were also read by the participants' two sighted peers, who classified them as easy, average, or difficult. Paragraphs deemed to be difficult by both of these students were then equally distributed to the testing and teaching sessions. The selected summarization paragraphs were written in braille.

PROCEDURES

Baseline procedure

Two types of baseline measures were conducted during the research. First, to assess their summarization skills, participants were asked to read the paragraphs presented in braille and summarize them in written form. Second, digitally recorded text was introduced to assess participants' performance on measures of listening comprehension. During this phase, participants were provided with a slate and stylus and a braillewriter, and were told that they would be allowed to stop the recordings and take notes as they wished. However, during investigations or probes, the participants were not allowed to replay the auditory materials. The participants were then asked seven comprehension questions regarding the material they had read, all of which were textually explicit and required short answers. All the probes were recorded digitally and in written format.

Next, participants were given the instructions in summarization (outlined below). Then their paragraph summarization performances were again assessed. They were given new paragraphs and asked to read and then summarize them.

In order to clarify whether improvements in performance were attributable solely to the participants having received instruction

in paragraph summarization or to their use of paragraph summarization in conjunction with cumulative retelling, second baseline measures were conducted after the students had been taught summarization skills.

Teaching procedure

As already noted, this study included two stages of instruction for its college-student participants: the first being paragraph summarization, the second devoted to listening comprehension.

Paragraph summarization.

In the study's first stage, small-group instruction focused on enabling the students to summarize the paragraphs they had read. This involved the following steps: (a) identifying the major idea in the paragraph (that is, selection of a topic sentence); (b) determining the key details that supported the major idea; (c) deletion of unnecessary information; and (d) substitution of a superordinate term for a list of items or actions. In the first step, the instructor served as a model, undertaking the reading and summarizing of sample paragraphs. In the subsequent steps, the instructor similarly took the lead, teaching participants to recognize the major idea, delete unnecessary information, and so forth. Participants were then asked to read the paragraph silently, and each was asked to identify the major idea, supporting details, superfluous information, and an overall theme. Based on these responses, a summary statement was created, which was then read aloud by one of the students and written down by all of them. If the statement was lengthy, the participants were instructed to condense it. If participants misidentified the major ideas and details in the material, the instructor offered corrective feedback and further analysis of the paragraph in question. When the students were able to summarize paragraphs independently, the study moved to the assessment stage.

Listening comprehension.

Participants were asked to write summaries of the paragraphs

they heard, each of which was recorded as a separate file. After the participants had listened to and summarized each paragraph, they retold the prior paragraphs and the present paragraph cumulatively. During this stage of cumulative retelling, the participants were told that they could listen to the paragraphs as many times as they needed and they could read summaries as they wished. However, they were expected to listen to progressively less auditory material and read fewer written summaries. After each passage was retold cumulatively by the participants, comprehension questions related to the passage were presented, and participants' responses were recorded.

When participants were able to summarize the passages by listening just once, retell the material without reading their summaries, and answer 70% of the comprehension questions correctly, the teaching sessions ended. However, the research protocol in this regard was strictly enforced: If a participant had to listen again to even one paragraph of the auditory material or read a summarized paragraph more than once, the listening comprehension stage was not considered to have been completed successfully. During the teaching session, the digital sound recorder was controlled by the instructor, who responded to requests of the participants. In each instructional session, digital recording of single texts was used.

Generalization procedure

In this study, participants were asked single-sentence questions designed to elicit short answers in the preinstruction and instruction phases of the listening comprehension assessment. However, in their actual academic life, students are more likely to encounter essay questions on exams. Thus, the study attempted to determine whether the listening comprehension strategy used here also enhanced participants' ability to deal with essay-type questions. In the generalization phase, the participants were tested on one essay question that required their recall of the breadth of the text after listening to the auditory

material.

Maintenance procedure

The maintenance measures of the research were conducted 30 days after the termination of intervention. Maintenance measurements were conducted under the same conditions as listening comprehension investigations.

SCORING PROCEDURES

Written summaries

To assess the participants' written summaries, paragraphs were summarized independently by two authors according to the summarization criteria outlined above. Later, these were integrated into a single summary by comparing and rectifying inconsistent elements. An answer key was created, and the summaries were evaluated by the second author with each of the following scored as one point: (a) identifying the major idea in the paragraph, (b) inclusion of supporting details in the topic sentence, (c) deletion of unnecessary information, and (d) substitution of a superordinate term for a list of items or actions.

Listening comprehension

To score the listening comprehension responses of the participants, the second author prepared answer keys for the questions related to listening passages. The responses of the participants were scored as correct, partly correct, or incorrect. If the participant's answer corresponded to the answer key, two points were scored; if partly correct, one point; if incorrect or unresponsive, no points were given.

Generalization

To score the essay-question responses, the amount of information that the question called for was determined and the extent to which the participant's written response provided the

required information was recorded.

INTERSCORER RELIABILITY

To determine interscorer reliability, all of the summaries that the participants had completed in the pre- and post-instruction investigations were scored by a graduate student on the basis of an answer key and assessment criteria. Then, 20% of the responses in the listening comprehension investigations were scored by a graduate student on the basis of an answer key. The percentage of agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements, and multiplying by 100. Interscorer agreement was 92% on summarization and 90% on listening comprehension questions.

INTERVENTION FIDELITY

The summarization and listening comprehension teaching sessions were recorded using a digital sound recorder.

Checklists that covered the critical steps in the instruction were prepared. Across all teaching sessions, the procedural fidelity was 100%.

EXPERIMENTAL DESIGN

In the present research, an adapted multiple-probe design across participants was employed to assess the effectiveness of the summarization-based cumulative retelling strategy in facilitating the listening comprehension of the participants. The experimental phases included two listening comprehension baselines and one summarization baseline, one post-summarization test, listening comprehension instruction, generalization, and maintenance.

The design began with a baseline investigation condition (B1) in which all participants completed three summarization and three listening comprehension probes across three days. In the summarization probes, participants were concurrently assessed across three days. In the listening comprehension probes, each

participant was assessed individually across three days. Next, the paragraph summarization teaching phase was initiated with the four participants in a small-group session. When participants reached 100% mastery in paragraph summarization, they completed a single probe (PSI). Then, a second baseline listening-comprehension investigation was completed in three days (B2). Next, the summarization-based strategy was introduced to teach listening comprehension. At the end of each session, a seven-question listening comprehension test was implemented (DI).

When Participant 1 was able to summarize the passages--by listening once and retelling the passages without reading the summaries--and when she answered 70% of the comprehension questions correctly, the teaching sessions ended. The intervention with Participant 2 was then implemented, and the same sequence continued with Participants 3 and 4. Each participant also completed a generalization probe after termination of the intervention. The design ended with a maintenance condition for all participants.

SOCIAL VALIDITY

To assess measures of social validity, a 3-point Likert scale consisting of three items was developed. The scale included the following statements: "Listening comprehension instruction facilitated my listening comprehension and responding to the question," "It provided for the information to be more permanent," and "I want to utilize the listening comprehension strategy for studying subjects." For each of these statements, "agree," "partially agree," and "disagree" options were offered.

Results

In the course of this study, Participant 1 had six investigations and four instructional sessions, Participant 2 had seven investigations and four instructional sessions, Participant 3 had eight investigations and five instructional sessions, and

Participant 4 had nine investigations and four instructional sessions. Data relating to the listening comprehension and summarization performances of the participants is shown in [Figure 1](#).

BASELINE

The four participants' mean scores regarding the preinstruction probes of listening comprehension skills were 41%, 48%, 16%, and 19%, respectively. Their respective mean scores on preinstruction summarization skills performance were 0%, 0%, 11%, and 0%. None of the participants could summarize any of the paragraphs according to the predetermined criteria.

SUMMARIZATION INSTRUCTION

This study found that, following the summarization teaching sessions, all four participants could summarize paragraphs in a manner that fully met the predetermined criteria.

SUMMARIZATION-BASED CUMULATIVE RETELLING

Mean scores of the four participants on listening comprehension after summarization instruction were 24%, 34%, 6%, and 7%, respectively. It was found that acquisition of paragraph summarization skills did not improve listening comprehension on the part of any of the four participants.

The scores of Participant 1 during the first two instructional sessions--based on listening to the auditory material more than once and reading its summary--were 93% and 100%, respectively; the mean listening comprehension score was 97%. The scores for Participant 1 in the third and fourth instructional sessions--based on listening to the auditory material once and retelling without reading the summary--were 93% and 86%, respectively; the mean listening comprehension score was 90%.

The performance of Participant 2 in the first three instructional sessions--listening to the auditory material more than once and

reading its summary--was scored as 100% for all three sessions. This participant's score in the fourth session--listening to the auditory material only once and retelling without reading the summary--was also 100%.

The scores for Participant 3 in the first four instructional sessions--listening to the auditory material more than once and reading its summary--were 93%, 71%, 93%, and 86%, respectively; the mean listening comprehension score was 86%. The performance of Participant 3 in the fifth instructional session--listening to the auditory material once and retelling without reading the summary--was scored as 71%.

The score for Participant 4 in each of the first three instructional sessions--listening to the auditory material more than once and reading its summary--was 100%, and in the fourth instructional session--listening to the auditory material once and retelling without reading the summary--it was 86%.

GENERALIZATION

The scores of the four participants on the essay questions, which require recalling a larger amount of the auditory material, were 100%, 100%, 86%, and 71%, respectively. These results indicate that use of the summarization-based cumulative retelling strategy enabled participants to recall more of these extended auditory passages.

MAINTENANCE

Based on the maintenance measures conducted 30 days after the termination of intervention, the respective mean listening comprehension scores of the four participants were 100%, 93%, 90%, and 86%. These results suggest that gains realized through the use of the summarization-based cumulative listening comprehension strategy can be sustained over time.

SOCIAL VALIDITY

After the completion of the instructional sessions, the second author interviewed the participants individually. All four expressed agreement with statements affirming that: (a) the instruction they received has facilitated their understanding of the subject matter and their responses to the research questions; (b) it allowed the information gained to be retained more permanently; and (c) the strategy employed in the research can be useful to participants in their further studies.

Discussion

The results of this research show that the summarization-based cumulative listening comprehension strategy led to improvement in the listening comprehension performance of all four participants. After three sessions, three of the participants were able to respond correctly to most of the comprehension questions by listening to the passage only once, and without having to refer back to the written summaries; the fourth participant did so after four instructional sessions. These findings are in keeping with the aims of the study, and show that summarization, retelling of the passages that have been read, and retelling of the auditory material have positive effects on the ability of students to recall the text.

The present study found that instruction in paragraph summarization did not lead to improvement in listening comprehension on the part of participants. This suggests that separate assessments of the listening and reading comprehension of visually impaired students would be appropriate. Educators should keep in mind that a student who understands what he or she reads will not necessarily understand what he or she listens to.

The summarization-based cumulative retelling strategy not only improved the listening comprehension performances of the participants, it also led to a high degree of correct responses on the essay questions. This suggests that the gains realized in this

research may serve to guide the participants in their future study practices and thus bolster their performance on academic tests. In addition, all four participants maintained their gains up to 30 days after the completion of the intervention. When questioned, study participants all stated that they had benefited from the listening strategy, and that they would apply it to their studies. During informal conversations, participants also stated that this strategy facilitated their reading comprehension.

LIMITATIONS AND FUTURE RESEARCH

Although summarization-based cumulative retelling strategy was found to produce improvements in the listening comprehension of the participants, some caveats and limitations of the present findings should be noted. For example, when the participants were asked comprehension questions based on having listened to a passage once and being able to retell it without reading the summaries, their performances showed a relative decrease in all but one case. This decline in performance may have been caused by the fact that the participants had poor prior knowledge of the material they listened to, or it may have been due to a lack of practice in the method. Because of time limitations, additional practice that might have led to improvement in the listening comprehension by the participants was not possible. Future studies could address this possibility by evaluating the benefits to participants of having additional practice time for retelling passages after listening just once.

Participants' listening comprehension assessments were conducted after they had heard the passages and retold them immediately. Although participants scored high on performance levels, this study did not determine how effective the listening comprehension strategy was in the delayed recalling of these passages. Assessment of the strategy's effect on delayed recall would be beneficial in terms of its application in educational settings.

To assess the listening comprehension performances of the

students, this study used textually explicit questions. Future research might explore the relative effects of the summarization-based cumulative retelling strategy on responses to textually implicit questions.

In the generalization stage, study participants were asked essay questions that required their recalling larger portions of a text to which they had listened. It is not clear, however, whether their positive scores on this measure represent genuine improvement. Future research should seek to determine preinstruction performance of participants on essay questions in order to yield more reliable data.

The auditory material used in the study was recorded at 100 words per minute. Whether or not an increase in the speed of verbalizations would affect the performance of study participants should be examined in future research.

The auditory material used in this research was recorded by means of a digital sound recorder, with each paragraph saved as a separate file. This was intended to allow the researchers to be able to return to any particular paragraph that a participant asked to hear again. It was assumed that allowing the participants to return to the material without having to spend time sifting through longer passages would enhance their focus on the content in question. Whether traditional audio cassette recording would have any differential effect on test performance is another question that might be addressed in future studies.

Although this research found that the summarization-based cumulative retelling strategy had positive effects on the listening comprehension skills of four visually impaired college students, Gajria and Salvia (1992) have pointed out that techniques requiring the guidance of a teacher may not in themselves be able to realize the full potential of the approach. While Gajria and Salvia's study was conducted with elementary school students, their findings might be applied to future work with college students so that comprehension strategies can be

implemented by the students themselves.

The duration of the auditory materials used in the study ranged between 3 minutes and 4 minutes 45 seconds. Further research needs to be conducted to determine whether the approach used here will show similarly positive effects on comprehension performance when recordings of longer duration are used.

Finally, investigating whether the acquisition of listening comprehension skills will have positive effects on students' test-taking performance would be useful in designing curriculum materials for students with visual impairments.

IMPLICATIONS FOR PRACTICE

In summary, this study highlights the effectiveness of summarization-based cumulative retelling instruction for improving listening comprehension skills of college students with visual impairments. The intervention helped visually impaired students not only to acquire listening comprehension skills but also to maintain those skills and generalize them to related areas of learning.

These findings suggest that teaching listening comprehension strategies to students with visual impairments at an earlier stage of education might increase their chances of acquiring knowledge. This study focused on a strategy for enhancing listening comprehension in college students. However, summarization and cumulative retelling strategies might also be used to teach reading comprehension skills to younger students. To apply the summarization-based cumulative retelling strategy more effectively with elementary school students, the students must be able to make summarizations independently. To help students develop and apply listening comprehension skills, auditory materials suitable for their level should be prepared. Developing auditory materials for primary school students can be a time-consuming task for teachers. Preparation of materials by teachers of the same grade level may make the process less

burdensome.

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