

**ASSESSING COMPREHENSION IN THE CLASSROOM:
COMPARING PERFORMANCE ON SENTENCE VERIFICATION AND
CLASSROOM READ-ALoud TASKS**

by

Deirdre Gibbons

Graduate Program of Communicative Disorders

Submitted in partial fulfilment
of the requirements for the degree of
Master of Science

Faculty of Health Science
The University of Western Ontario
London, Ontario
September, 1998

© Deirdre Gibbons, 1998



National Library
of Canada

Acquisitions and
Bibliographic Services

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque nationale
du Canada

Acquisitions et
services bibliographiques

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file *Votre référence*

Our file *Notre référence*

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-30791-3

Canada

ABSTRACT

Listening and reading comprehension are complex processes that are difficult to assess. Many standardized comprehension tests place high demands on memory, assess only sentence length material, and may not reflect how students comprehend classroom material. The present study employed a sentence verification task (SVT) to test 60 grade 7 and 8 students' comprehension of expository passages. Participants read or listened to expository passages and then verified whether test sentences were present in the original passages. The validity of the SVT as a measure of comprehension was examined by comparing performance on the SVT with two standardized comprehension measures and a classroom read-aloud task that was developed. The SVT was strongly correlated with the read-aloud comprehension task. Students comprehended approximately 70% of the expository material presented in these two tasks. The SVT was also moderately correlated with the standardized listening and reading comprehension measures. These findings imply that the SVT is a valid measure of comprehension and may be used to examine students' comprehension of classroom material.

Key words: Listening comprehension, reading comprehension, sentence verification task, classroom read-alouds, expository discourse

ACKNOWLEDGEMENTS

Thank you to Mr. Steve Killup and the Thames Valley District School Board for allowing the study to take place at two of their schools. A special thanks to the principals, teachers, and students who made the experience enjoyable.

I would like to express my gratitude to my research advisor, Dr. Marilyn Kertoy for her support and guidance throughout this project.

I greatly appreciated the contributions of my advisory committee, Dr. Linda Miller and Dr. Genese Warr-Leeper, and thank them for their expertise and interest in my research topic.

Thank you to my family, Pat, Allan, Aoife, and Conor who continually encouraged and supported me.

I also want to recognize the academic efforts of my classmates. I am glad I was able to share this experience with you. Thanks Tammy and Chris for being there.

A special thank you to Rob for helping me keep my priorities straight. His humour, strength, and well timed distractions helped me make it through.

This study was supported in part by a grant from the Ontario Association of Barbershoppers (Harmonize for Speech Fund).

TABLE OF CONTENTS

	Page
CERTIFICATION OF EXAMINATION	ii
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	v
LIST OF TABLES	viii
LIST OF APPENDICES	ix
INTRODUCTION	1
Listening Comprehension and Reading Comprehension	3
Sentence Verification Tasks	6
Classroom Lessons	13
Read-alouds	16
Benefits of Read-alouds	16
Use of Nonfiction Read-alouds	19
Objectives and Predictions	22
Prediction One	23
Prediction Two	24
Prediction Three	24
METHOD	26
Participant Selection	26

Inclusion Criteria	26
Measures	27
Development of a Sentence Verification Task	27
Development of a Read-aloud Activity	28
Development of a Read-aloud Comprehension Task	29
Familiarity Questionnaire	31
<u>Nelson Reading Skills Test</u>	33
Listening Comprehension Scale of the <u>Oral and Written</u>	
<u>Language Scales</u>	33
Testing Administration	34
Session One	34
Session Two	35
Session Three	36
RESULTS	38
Comparison of Performance on the SVT by Grade 7 and 8 Students	40
Comparison of SVT Listening and Reading Tasks	40
Correlational Analyses	42
Psychometric Properties of the Read-aloud Comprehension Task	45
Construct Validity of the Read-aloud Comprehension Task	45
Internal Consistency of the Read-aloud Comprehension Task	45
Item Analysis for the Read-aloud Comprehension Task	46
Familiarity Scores	47

Psychometric Properties of the SVT	47
Internal Consistency of the SVT	47
Internal Structure of the SVT	48
Multiple Regression Analysis	48
DISCUSSION	52
Establishing Validity for the SVT and Read-aloud Comprehension Task...	52
Evidence for the Validity of the SVT	53
Evidence for the Validity of the Read-aloud Comprehension Task...	55
Comparison of Performance on the SVT and the Read-aloud	
Comprehension Task	57
Relationship between the SVT and Read-aloud Comprehension Task...	58
Comprehension of Expository Information	60
Comparison of Listening and Reading Comprehension	62
Future Research and Clinical Implications	63
REFERENCES	66
APPENDICES	72
VITA	87

LIST OF TABLES

Table		Page
1	Percentage of Multiple Choice Questions Answered Correctly by University Graduate Students on Three Read-aloud Passages	32
2	Means, Standard Deviations and Range of Performance on Test Measures for Grade 7 and 8 Students Combined	39
3	Mean Percent Correct and Standard Deviations for Performance on the Sentence Verification Task by Grade 7 and 8 Students	41
4	Correlation Matrix for the Comprehension Measures	43
5	Means and Standard Deviations for SVT Passages	49
6	Correlation Matrix for the four SVT Passages	50

LIST OF APPENDICES

Appendix		Page
A	Information Letter	72
B	Consent Form	74
C	Hearing Questionnaire	75
D	Sample Sentence Verification Passage	76
E	Sample Answer Sheet for the Sentence Verification Task	77
F	Guidelines for Preparing a Read-aloud	79
G	Material Sources for the "Space" Read-aloud Passage	80
H	Bloom's Taxonomy	81
I	Mean Percent Correct on Pilot of Read-aloud Questions According to Bloom's Taxonomy	82
J	Read-aloud Comprehension Task	83
K	Familiarity Questionnaire	86

Assessing Comprehension in the Classroom: Comparing Performance on Sentence Verification and Classroom Read-Aloud Tasks

Listening is recognized as one of the language arts, along with speaking, writing, and reading (Trelease, 1989). It is a valuable skill that is required daily in everyone's life. Researchers, however, acknowledge that listening is one of the least studied language arts (Pearson & Fielding, 1989).

Listening comprehension has been defined as an interactive process that allows a listener to gather meaning from an acoustic input signal as well as the context in which it is presented (Montgomery, Scudder, & Moore, 1990; Samuels, 1987). Various models have been proposed to help explain the process of understanding spoken sentences (e.g. Massaro, 1975; Swanson, 1987). "Bottom-up" theories describe processes that are driven by the perceptual input, whereas "top-down" approaches describe the influence of general knowledge and contextual cues on the comprehension process. Recent cognitive processing models take both a top-down and a bottom-up approach to illustrating the elements involved in processing incoming information (Butler, 1986). A simplified overview of the interactive nature of the cognitive processing model will be presented.

When an utterance is spoken, the listener transforms the acoustic waveform into meaningful phonetic features through several auditory processes. Phonological analysis results in a stream of phonemes. The listener uses his or her word recognition skills to change this stream of phonemes into words. Meaning is attached to the words by accessing representations in a mental lexicon (Bishop,

1997). The listener must have the ability to reconstruct the speaker's message into phrases and propositions that can be linked with existing schema. Information is then stored in memory in order to aid comprehension of further input (Samuels, 1987). At each stage, general knowledge and contextual cues influence processing. Listening comprehension also involves knowledge of phonology, syntax, semantics, and discourse structure. These sources of knowledge interact with the acoustic input to aid in processing information "on line" (Bishop, 1997). An individual must be able to process multiple aspects of language needed for a given listening task (Montgomery et al., 1990; Pearson & Fielding, 1982). This ability is required, particularly when one is faced with comprehending extended discourse, or text longer than a single sentence (Bishop, 1997).

Carlisle (1989) has examined how extended discourse is understood and has suggested two major components essential to processing spoken as well as written discourse (Carlisle, 1989). The first component is the listener's ability to represent the speaker's message in his or her mind. This preliminary function is the result of language processing, which may proceed in the manner described above. Situations, events, and objects are represented along with the relationships between these representations, in order to help the individual summarize the information (Bishop, 1997). The second component is the ability to act on the mental representation of the message, which involves reasoning or the use of strategies. Therefore, understanding input involves more than simply decoding meaning. One must select meaning from a range of possibilities (Bishop, 1997).

There is growing support for the hypothesis that context and prior knowledge are involved in interpreting incoming information as each word is received (Bishop, 1997). This constructive process involves the integration of input with context and prior knowledge to build a mental model or representation of meaning (Bishop, 1997). In particular, the surrounding physical environment and linguistic context (i.e. words and sentences that surround the message) interact with knowledge of the topic, text structure, and the individual's general knowledge (Bishop, 1997; Leal, 1992). Researchers have noted that there are varying degrees to which prior knowledge and context are used to support comprehension. Good comprehenders show a greater awareness than poor comprehenders of text structures and the various strategies available to them for processing information (Carlisle, 1991a). In addition, they tend to use more strategies, such as building inferences and focusing on key vocabulary (Kletzien, 1992). Proficient comprehenders are able to alternate between processing the meaning of each word to processing the overall meaning of extended discourse depending on the difficulty of the material. They also are aware of when and why a particular strategy should be used (Kletzien, 1992).

Listening Comprehension and Reading Comprehension

Listening comprehension has frequently been examined in conjunction with reading comprehension as two components of overall language comprehension ability. Researchers have investigated both listening and reading comprehension to determine the extent to which they share similar processes. It is generally

agreed that there is a strong relationship between these two types of comprehension, although differences in specific encoding skills may exist (Townsend, Carrithers, & Bever, 1987). A commonly held "unitary view" suggests that similar comprehension processes are involved for both listening and reading once the initial stimulus has been encoded (Carlisle, 1991b; Danks, 1980). Thus, listening comprehension is equated to language comprehension, while reading comprehension incorporates a visual decoding element into the comprehension process (Royer, Kulhavy, Lee & Peterson, 1986). Following from this perspective, listening comprehension is thought to develop from exposure to oral discourse while reading comprehension requires more focused instruction in decoding (Shapiro, 1992).

There is some variability in the strength of the relationship between reading and listening comprehension skills as children develop (Sticht & James, 1984). In grade 1, children are just beginning to develop their decoding skills and are still generally receiving greater exposure to oral rather than to written language (Carlisle, 1989). As such, listening comprehension skills are initially superior to reading comprehension skills and the correlation between listening and reading comprehension is low ($r = .35$). Sticht and James (1984) reviewed the literature and found higher correlations for grade 4 students ($r = .60$). By grade 6, comprehension performance in the two modalities was generally equal. This trend toward stronger associations between listening and reading with increasing age was supported by another study of students in grades 3 to 8 (Aaron, 1991).

Correlations between listening and reading comprehension ranged from $r = .58$ in the early grades to $r = .74$ in the later grades (Aaron, 1991). Investigations of adult listening and reading comprehension have also revealed strong correlations ($r = .82$) between the two modalities (Palmer, McLeod, Hunt, & Davidson, 1985). Therefore, as students improve their word recognition and decoding skills, their reading comprehension also improves, until it eventually approaches the level of listening comprehension abilities by junior high school grades. At this stage, comprehension of written text might actually exceed listening comprehension of the same material if the reader is able to return to the text to verify information (Royer, et al., 1986). In a study of adult performance on a sentence verification task measuring both listening and reading comprehension, performance on the listening task ($M = 79\%$) was significantly lower than performance on the reading task ($M = 88\%$) (Holstein, 1995). Possible explanations offered for the superior performance of adult participants on the reading task included the ability of readers to read a passage at their own pace and/or reread confusing elements of the passage. Listeners only had the opportunity to hear the test passages once (Holstein, 1995). In addition, the test sentences varied according to the level of processing necessary to respond to each item. The levels of processing affected comprehension of the test sentences differently for listeners and readers (Holstein, 1995).

The progression from discrepant to comparable listening and reading comprehension abilities in the school-age student is important when considering

how to approach comprehension assessment and instruction (Carlisle, 1991a; Pearson & Fielding, 1982). If one assumes that listening and reading are based on similar processes, then boosting students' listening skills early in development may positively influence their reading comprehension skills. Therefore, direct instruction that focuses on listening skills should not be ignored. In the same manner, improving reading comprehension may influence listening comprehension by enhancing overall comprehension ability (Carlisle, 1991b).

Sentence Verification Tasks

When children enter school, they branch out from the familiar structure used to describe personal events and send social messages at home, and become acquainted with new types of discourse (Tattershall & Creaghead, 1985). At school, students are exposed to expository text and lecture. Expository discourse is used to relay factual information in a logical, organized manner (Berko Gleason, 1993; Nelson, 1993). This type of discourse is displayed by students, for example, when explaining the procedure for a science experiment, or when discussing plants in biology class.

Comprehension of spoken, expository information is required daily of students, yet few good measures exist for examining comprehension in the classroom. Comprehension is difficult to assess because it is a covert, receptive process. Tasks used by investigators in the past to tap comprehension have included multiple choice questions, open-ended questions, free recall, and cloze procedures. The ability of each of these methods to obtain an accurate measure

of comprehension of extended discourse has been challenged (Carlisle, 1991b).

Multiple choice and open-ended questions are frequently used to investigate an individual's comprehension. Both types of questions require the use of reasoning skills when responding, which could influence listening comprehension abilities. Since information about the text is being presented a second time when the question is asked, the individual may change his or her initial understanding of the text to match the information given in the question (Carlisle, 1991b). Free recall minimizes this problem by simply asking the individual to give as many details as they can about previously presented material. The assumption is that the ability to recall the presented material is directly related to the depth of understanding (Royer, Lynch, Hambleton, & Bulgareli, 1984). Though the amount of reasoning involved is reduced, free recall still places demands on memory and expressive language ability. For example, the individual's ability to formulate a response may influence the number of details they are able to generate. These memory and expressive demands may affect responses and lead to underestimating a student's comprehension of discourse. In the cloze procedure task, the student is required to fill in blanks in the text with appropriate words (Carlisle, 1991b). The cloze procedure has proven useful for testing reading comprehension, but is less effective for testing listening comprehension since the student cannot look forward or back on the text to obtain meaning. In addition, the cloze procedure tends to examine sentence rather than passage level comprehension (Carlisle, 1989).

Chapman (1978) discussed the adequacy of formal tests to assess everyday

comprehension and suggested that such tests have been designed to reduce the influence of general knowledge and environmental context. As such, formal comprehension tests may have little bearing on daily performance. Furthermore, standardized tests may be measuring other abilities along with comprehension (e.g. memory and cognitive skills) (Royer, Greene, & Sinatra, 1989). In summary, many listening comprehension tests place unnecessary demands on memory, focus only on short units of discourse, and may not reflect the processes that individuals use to comprehend discourse in educational settings.

Researchers have turned to sentence verification tasks in response to the difficulty in using the previous tasks to effectively and efficiently measure comprehension of passage length material. Sentence verification tasks have been employed in psychological research for a variety of reasons (Royer, et al., 1984). These types of tasks have several advantages including a reduced demand on memory and potentially greater ecological validity when developed with classroom material, as compared to formal test batteries (Carlisle, 1989; Royer & Hambleton, 1983). Sentence verification tasks are thought to lessen memory demands since the individual is only required to recognize and verify information that was presented previously, rather than recall it. The ecological validity of a sentence verification task results from the ability to create passages from grade appropriate classroom content. Teachers need information about how well students are comprehending classroom materials in order to plan future instruction and a sentence verification task can provide this information (Royer, et al., 1989).

To test comprehension with a sentence verification task (SVT), an individual is presented with an oral or written passage. Once the passage has been read or listened to, the individual is then asked to read a list of sentences taken from the original passage. The comprehender is required to confirm whether the idea presented in each sentence was contained in the original passage (Royer, Hastings, & Hook, 1979). Different types of test sentences are created based on the original passage. 'Originals' are exact sentences taken directly from the passage. 'Paraphrases' retain the meaning of the original passage sentence, however, the words in the sentence are changed. In contrast, 'meaning changes' only change a few words in order to create a meaning that is different from the passage sentence. Finally, 'distractors' contain both different words and a different meaning than the passage sentence. However, the overall theme and structure of the distractor is designed to match the passage (Marchant, Royer, & Greene, 1988; Royer, et al., 1984).

Use of the SVT as a measure of comprehension is based on the previously discussed model of comprehension. The 'constructive' process involved in understanding information results in a mental representation of the meaning of what has been heard or read. Examining whether the individual had created an adequate mental representation would reflect his or her ability to comprehend the material (Marchant, et al., 1988). The SVT allows this examination by requiring individuals to compare the meaning of a test sentence to their memory representation of the passage sentences that they had read or heard previously.

The reader or listener must form an appropriate mental representation of the meaning in order to label originals and paraphrases as "old", and meaning changes and distractors as "new" (Royer, et al., 1984). For example, if a participant judged paraphrases successfully, this would reveal that the individual understood the meaning of the text and had not just memorized the words without comprehending.

Royer and colleagues (Royer, et al., 1979; Royer & Hambleton, 1983) and Carlisle (1989) have developed and used a sentence verification task to assess both listening and reading comprehension. In addition, the construct validity of the SVT as a measure of comprehension has been investigated (Royer, et al., 1979; Royer, et al., 1984; Carlisle, 1989). Determining construct validity is frequently accomplished by obtaining a significant correlation between performance on the new test and performance on a standardized test generally accepted as a measure of the desired construct (Brown, Sherbenou, Dollar, 1982; Dunn & Dunn, 1997). Studies have compared performance on the SVT to performance on standardized reading comprehension measures. Carlisle (1989) demonstrated that both SVT listening and SVT reading tasks were correlated with the reading comprehension subtest of the Gates-MacGinnite Reading Test ($r = .64$ and $.55$, respectively). The SVT reading task also displayed a $.50$ correlation with the reading comprehension subtest of the Standford Achievement Test (Royer, et al., 1979).

Other studies have shown the SVT to correlate with measures of listening comprehension. One study compared the performance of grade 7 students on the SVT listening task with their performance on the Listening Grammar subtest of the

Test of Adolescent Language-2 and a story comprehension task (Kertoy & Goetz, 1995). Kertoy and Goetz (1995) developed expository passages for grade 7 and 8 levels to be used in an SVT. The researchers demonstrated that the SVT was a valid instrument for measuring listening comprehension based on the relationships found between performance on the SVT and performance on several other measures of language comprehension. The SVT was moderately correlated with the Listening Grammar subtest of the Test of Adolescent Language-2 ($r = .45$) and the story comprehension task ($r = .48$). A measure of internal consistency for the SVT was also calculated and a coefficient alpha of .68 was obtained (Kertoy & Goetz, 1995). Previous reliabilities for the SVT have been examined and the coefficients ranged from 0.69 to 0.90 (Marchant, et al., 1988; Royer, Sinatra, & Schumer, 1990).

In addition to measuring listening and reading comprehension of passages, the SVT has shown promise in diagnosing reading abilities (Carlisle, 1989; Carlisle & Felbinger, 1991). Carlisle and Felbinger (1991) used the SVT to test the listening and reading comprehension skills of students in grades 4, 6, and 8. Patterns of performance on the SVT test sentence types varied depending upon the mode of presentation of the passage (oral or written) and the type of comprehension difficulties the students experienced (Carlisle & Felbinger, 1991). In another study, one group of students presented with general comprehension difficulties that were revealed through poor performance on both SVT listening and reading tasks. In contrast, students who displayed age appropriate performance on the SVT listening

task, yet poor performance on the SVT reading task were more likely to have a specific reading disorder (Carlisle, 1991b). The results indicated that comprehension difficulties could be attributed to a variety of reasons and that comparing listening and reading performance helped determine the nature of the reading difficulties (Carlisle, 1991b). Researchers have also suggested that the SVT was sensitive to text readability, formal text characteristics, differences in reading skill, and working memory capacity (Marchant, et al., 1988; Royer, Marchant, Sinatra, Lovejoy, 1990; Royer, et al., 1989).

In summary, advantages of the SVT procedure for measuring comprehension include its reliability and validity as a measure of comprehension. Further, the SVT has been developed for passage length discourse based on classroom materials, and can be administered in a short time to groups of students. These advantages make it potentially useful for educators as well as speech-language pathologists when assessing comprehension.

The missing link in the previous research with the SVT has been the relationship between students' comprehension performance on the SVT compared to their comprehension of classroom lessons. Few formal procedures are available to assess how well students comprehend classroom material. Teachers develop their own classroom tests of comprehension and other interested professionals must infer from general test batteries and informal observations how well a student will actually comprehend classroom material. Royer and colleagues (1989) suggested that the SVT demonstrated considerable promise as a classroom based

test of comprehension, yet this suggestion has not been directly tested. The goal of the present study was to assess students' comprehension of orally presented material in a classroom setting. Testing comprehension of a classroom listening task through the use of both an SVT and a classroom-based comprehension test would allow direct comparison of these assessment methods. The knowledge that performance on the SVT is associated with performance on a test of classroom listening would provide support for applying the SVT as a valid measure of classroom listening comprehension. In turn, the SVT may be used to predict students' comprehension of classroom material.

Classroom Lessons

A classroom lesson is an example of complex oral discourse, with a unique structure and content. Classroom discourse tends to be decontextualized, in that the topics of discussion need not be based on the "here and now", but can include past or future events (Corno, 1989). Sinclair and Coulthard (1975) created a hierarchy of discourse levels, with speech acts (e.g. requesting, apologizing) being the least complex, and lessons being the most complex form of discourse. Both students and teachers have distinct roles to play and there are behaviours that are acceptable in classroom discourse (Bloome & Knott, 1985).

As Terrell (1985) pointed out, students enter school knowing many rules for social discourse. It is at this time that they must learn the new discourse rules in order to play the "language game" at school. Students also have their own ideas, or schema, about what to expect in a classroom setting (Tattershall & Creaghead,

1985). A schema is defined by Rumelhart (as cited in Tattershall & Creaghead, 1985; p. 29) as "an abstract unit of knowledge, representing the generic concepts in our memory". As students become more familiar with school routines, they develop schema to help them comprehend novel situations, such as a schema for reading-time, or morning-exercises (Tattershall & Creaghead, 1985). Knowledge of the classroom context, the structure of classroom lessons, and the expectations of each individual is shared among the students and teachers. This knowledge contributes to the comprehension of discourse in the same manner as general knowledge (Corno, 1989).

Bloome and Knott (1985) do not use the term schema when discussing classroom discourse; however, they do suggest that knowledge of classroom discourse as a specific context enables teachers and students to understand communicative interactions with each other. Students "construct interpretive frameworks for understanding what is occurring in classroom" (Bloome & Knott, 1985, p.54). Discourse can be interpreted in various ways, depending upon the speaker, tone of voice, situation, etc. This perspective that meaning is situation specific supports the notion that the context surrounding a communicative interaction can influence comprehension (Bloome & Knott, 1985).

An initiation-reply-feedback discourse pattern is frequently observed in the classroom. When the teacher asks a question and evaluates the student's response, it sets up a context for the teacher-student interaction. This context helps the student learn what is to be considered as knowledge (Mehan, 1979).

Much of classroom discourse is expository in nature involving the relaying of instructions or the sharing of factual information about various topics. Students recognize that certain types of information will occur in exposition and those expectations aid comprehension (Carlisle, 1991a). Studying comprehension within a lesson format affords the experimenter an opportunity to study the impact of students' knowledge of expository structure on comprehension. Moreover, assessing how students comprehend certain elements of a lesson with a typical format would allow speech language pathologists, psychologists and educators to generalize this information to comprehension issues experienced by students in everyday classroom situations.

A typical lesson format used in classrooms is the direct lesson, which has been outlined by Pasch, Langer, Gardner, Starko, and Moody (1995) as a comprehensive plan for teachers. The first element in the direct lesson is "The Set". Its purpose is to actively involve students from the very beginning by introducing the lesson in an interesting and engaging manner. The students' attention is focused by requiring them to actively interact with the topic through imagining, speaking, or writing activities. The Set also serves to transfer relevant prior knowledge. Students are given an opportunity to recall information they have previously learned about the topic. Creating connections between old and new information on a topic aids retention of the lesson, thus supporting comprehension of the material (Pasch, et al., 1995). A read-aloud activity can be used as a set or opening to introduce the content of a lesson quite effectively (Richardson, 1994).

Read-alouds

The term "read-aloud" is a label used by educators for the process of reading material to students. In a read-aloud, the teacher reads interesting, informative material while the students listen. The simple procedure of a teacher reading to students has received much attention, as evidenced by the number of articles appearing in educational journals concerning read-alouds, and the bi-monthly section by Judy S. Richardson in the Journal of Adolescent and Adult Literacy called "Read It Aloud". Teachers frequently begin lessons by reading aloud to their students for a variety of reasons. For example, interest in the lesson can be stimulated, information can be presented in a less didactic manner, and new forms of discourse can be introduced (Doiron, 1994). Variety also exists in the techniques used to present read-alouds. A familiar approach that matches the common pattern of classroom lessons is Initiate-Respond-Evaluate, during which the teacher initiates the read-aloud, students respond, and the teacher evaluates the response. Teachers may also allow students to initiate read-alouds and give comments during the read-aloud to promote more involvement (Oyler, 1996).

Benefits of Read-alouds

There are numerous benefits reported with reading aloud to students. Although the amount of empirical evidence is limited, support of these claims comes from anecdotal reports. The benefits can be categorized into two main advantages. The first group of benefits relates to the students' reactions towards reading. By making reading an enjoyable process, read-alouds can foster positive attitudes

toward reading. The teacher models reading that is animated and enthusiastic when reading aloud and "invites listeners to be readers" (Richardson, 1994, p.100). Trelease (1989) agreed with this position, and noted that parents and teachers serve as primary language models for children. Children not only have something to imitate, but can be inspired and entertained. Through entertaining read-alouds, children are engaged in a pleasant social experience rather than in drill type exercises (Trelease, 1989).

The second category of benefits associated with read-alouds is the improvement of literacy skills. Authors have cited the 1983 Commission on Reading report (Anderson, Hiebert, Scott, & Wilkinson, 1985) that concluded the single most important activity for building the knowledge required for eventual success in reading is reading aloud to children (Hoffman, Roser, & Battle, 1993; Trelease, 1989). One reason for the importance of reading aloud is that it exposes students to print. Print exposure has been linked to skills that are necessary precursors to literacy, including sound-symbol correspondence (Adams, 1994; Barron, 1991). These skills are part of phonological awareness which is an important step in literacy development and subsequent success in reading (Berko Gleason, 1993). Young children begin to develop an awareness that the stream of speech that they hear and speak can be segmented into words. They later recognize that words can be broken into syllables (Catts, 1991). Children then eventually learn that words can be broken into smaller units, including onsets (a consonant or consonant blend), rimes (elements that follow the onset and contain

a vowel and consonants) and finally phonemes (Barron, 1991; Catts, 1991). This knowledge allows the children to engage in rhyming. When phonemic awareness and sound-symbol knowledge have developed, children begin to connect speech and print. This process is enhanced by exposing children to large amounts of printed material (Barron, 1991). In this manner, read-alouds provide children with the exposure and experiences necessary for literacy development. Moreover, read-alouds provide experiences with more advanced books that are too complex for students to currently read. By exposing students to complex vocabulary and syntax, reading comprehension may be improved (Juel, Griffith, & Gough, 1986; Trelease, 1989).

There is an abundance of information regarding the ability of read-alouds to positively influence the development of reading and writing skills; however, the examination of listening comprehension skills in this process is not frequently discussed. Trelease (1989) agreed that reading aloud to students does improve their reading, writing, and speaking. He suggested that reading aloud first improves listening comprehension skills and these improved skills then benefit reading and writing. Intuitively this makes sense because proficiency in listening comprehension precedes proficiency in reading comprehension skills at the early stages of literacy development (Carlisle, 1991b; Trelease, 1989).

The term 'emergent literacy' has been used to describe the pre-reading stage that begins as early as two years of age (Nelson, 1993). Oral language is a prominent part of this stage and involves reading and telling stories to children.

Reading stories aloud to children provides experiences with books, how they are used, and the common elements of story structure and grammar. Children are able to talk about what they have heard and experienced, and then begin to create a framework of story structure that will help them to understand future stories (Nelson, 1993). By linking oral language to written language, children can build on their knowledge of the two interacting communication forms (Berko Gleason, 1993). Reading aloud to older school-age children is a valuable method of providing these students with opportunities to learn about new content and the similarities and differences between various text structures (Adams, 1994). Understanding narrative and expository text structures can aid comprehension of oral and written discourse.

Use of Nonfiction Read-alouds

Oyler (1996) noted the abundance of research on the use of narratives and the corresponding sparse use of nonfictional text during read-aloud sessions. A survey in classrooms revealed that nonfiction books did not appear on the list of most frequently read titles (Hoffman, et al., 1993). Moss (1995) suggested that this preoccupation with the narrative genre is due to the fact that in the past, nonfiction books were of poor quality, few children were interested in this genre, and overall, nonfiction was ignored as an option. These criticisms may no longer apply to newer nonfiction which has improved in quality and popularity.

Nonfiction read-alouds highlight the textual structure of exposition for students (Moss, 1995). The content and structure of expository text is often

different than that of narrative or personal event stories. Information books are usually in present tense and contain a high number of descriptions and general statements about animals, objects, places, and/or people (Pappas, Kiefer, & Levistik, 1995). Elements of expository discourse used to describe an item include definition, division and classification, and comparison. Cause and effect, sequential order, and enumeration are common patterns in expository text (Moss, 1995). Narrative discourse, in contrast, tends to use past tense and occurs in oral reports and stories the teacher or students read. These narratives follow the actions of characters and the resulting conflicts and exploits (Pappas, et al., 1995). Elements of this type of discourse include setting, problems or conflict, goals, plan, action and event, and conclusion (Nelson, 1993).

Neville (1988) compared students' comprehension of narrative and expository texts. Over 3000 students in grade 4, 7, and 10 were tested using recall and cloze procedures. The researcher discovered that students experienced more difficulty understanding the expository passage than the narrative passage, even when headings were provided in the text. The students' recall of main events for the expository passage was weak and poorly organized. On cloze tests, students were only able to fill in a few of the blanks in the expository text (Neville, 1988). It was suggested that narrative passages tended to be easier to comprehend than expository text since narrative structure is very familiar to students. Even young children were able to recall and understand narrative passages (Neville, 1988). Students must learn through classroom exposure how to listen for the critical

elements of both types of discourse in order to comprehend well. As Moss (1995) pointed out, students begin to internalize expository patterns with continued experience with expository discourse.

Teachers are beginning to discover the value of reading aloud from information books as a means of presenting information and of exposing students to the elements of expository discourse. Nonfiction "accommodates the wide variety of skill and interest levels we see in our classrooms" (Richardson & Breen, 1995, p.504) by providing information in a context that is interesting and less formal than a didactic lecture. Oylar's (1996) study of a classroom revealed that a teacher used information books as effective introductions to the content of a unit. Students can be exposed to the relevant terminology and concepts of the lesson that is to follow (Moss, 1995). Reading aloud with nonfiction allows the listener to create schema which he or she can apply to understanding other expository texts (Leal, 1992). Through nonfiction read-alouds, students are exposed to events and people that they may otherwise not experience, and they can develop frameworks to be used for future reference (Moss, 1995). The use of nonfictional classroom material also helps students to become eager to learn more information by "enhancing and lending immediacy to science" (Moss, 1995, p.124). Students can listen to read-alouds about events happening around them (e.g. volcanic eruptions, earthquakes, snow storms). Although read-alouds have been used primarily with preschool and grade 1 students, it is easy to see the benefits for students and adults at all educational levels (Richardson, 1994).

After listening to expository presentations through the read-aloud procedure, students' comprehension of the material can be assessed. It is necessary to keep in mind the different types of text structures in expository passages that may be used and tested. These include description, cause-effect, sequence, comparison, and problem-solution. The structures vary in terms of complexity and this complexity may influence the amount of information that is recalled (Carlisle, 1991b). The type of text structure should, therefore, be controlled for when assessing comprehension. Expository passages can be used to assess students' reading comprehension from grade 4 (i.e. when they are experienced readers) to secondary school. This is a useful way to reveal difficulty with the content of classroom textbooks and/or lessons (Carlisle, 1991a).

In summary, read-alouds offer many benefits for classroom instruction. Moreover, nonfiction read-alouds help to familiarize students with expository text and content. Comprehension of these read-alouds can be assessed to aid classroom planning decisions.

Objectives and Predictions

Freeman (1992) commented that teachers may have difficulty determining what children are actually comprehending during a read-aloud. Students may appear to be listening intently, but may not in fact understand or follow the story. Therefore, it would be valuable to have a tool to readily assess what a student has comprehended after listening to classroom material.

The SVT is a useful means of assessing one's understanding of larger units

of text or discourse versus word or sentence level material (Carlisle, 1991a). Although the SVT has been shown to be a valid measure of listening comprehension (Kertoy & Goetz, 1995), it has not been used to measure comprehension of material presented orally in a classroom setting. This study compared performance on the SVT to performance on a multiple choice test designed to assess comprehension of a read-aloud containing expository text.

Prediction One

Null Hypothesis 1: The correlation between performance on the SVT and performance on the read-aloud comprehension task = 0.

The purpose of the present study was to investigate if performance on a sentence verification task would be associated with comprehension of orally presented classroom material. A correlation between performance of grade 7 and 8 students on an SVT that used expository passages and their performance on a listening comprehension task of a nonfiction read-aloud was calculated. The SVT passages were similar in content (ie. a science lesson), and academic demand (ie. same grade level) to the classroom listening comprehension task. Both measures also required understanding of the meaning of passage length discourse. It was hypothesized that there would be a positive correlation between the performance on the SVT and performance on the classroom read-aloud passage. Knowing that easy to administer comprehension tests like the SVT are related to students' comprehension of classroom lesson materials would be useful to teachers and speech-language pathologists when planning assessments and instruction.

Prediction Two

Null Hypothesis 2: The correlation between performance on the SVT and performance on the Nelson Reading Skills Test = 0.

Null Hypothesis 3: The correlation between performance on the SVT and performance on the Listening Comprehension Scale of the Oral and Written Language Scales = 0.

Determining if performance on the SVT was correlated with performance on commonly used standardized measures of listening and reading comprehension was also of interest. Strong correlations between the SVT and standardized measures of comprehension would reflect good construct validity for the SVT as a measure of comprehension. Therefore, students' comprehension skills were also assessed through standardized comprehension tests, the Nelson Reading Skills Test and the Listening Comprehension Scale of the Oral and Written Language Scales, and correlations between the SVT and these measures were completed.

Prediction 3

It was hypothesized that the SVT would account for a significant amount of variance in performance on the read-aloud comprehension task. This prediction was examined through a stepwise multiple regression analysis. Since the SVT and the read-aloud comprehension task both utilized passage level expository material, the SVT was expected to be the best predictor of read-aloud comprehension over the Nelson Reading Skills Test and the Listening Comprehension Scale of the Oral and Written Language Scales.

Descriptive Data

In addition, descriptive information (means, standard deviations, and ranges) was gathered for the performance of the grade 7 and 8 students on the SVT listening and reading tasks, as well as the read-aloud comprehension task. These descriptive statistics would allow comparisons to be made between performance of older school-aged children on the SVT listening and reading tasks. Information concerning students' comprehension of a read-aloud based on expository material would also be valuable to educators when developing future tests.

Method

Participant Selection

Two schools from the Thames Valley District School Board participated in the study. One hundred and thirty information letters and consent forms (see Appendix A and B) were sent home to parents of participating students and collected by the classroom teachers of two grade 7 and two grade 8 classes. Thirty-nine grade 7 and thirty-one grade 8 students, for a total of seventy students, agreed to take part in the study. Two students withdrew from the study and four did not complete the three testing sessions. Therefore, the total number of participants was 64 (36 seventh grade students and 28 eighth grade students). The mean age of the participants was 13-9 (years-months), with a range of 12-2 to 14-1 years of age.

Inclusion Criteria

Students were required to meet two inclusion criteria of normal hearing ability and average non-verbal intelligence. Normal hearing was defined as the absence of hearing difficulties as obtained through a self report and/or a hearing threshold of 20 dBHL at 500 Hz, 1 kHz, 2 kHz and 4 kHz. Students completed a questionnaire about their hearing history (see Appendix C). This information was used to determine if hearing acuity should be examined further through a hearing screening.

Students were required to display average nonverbal intelligence on the Test of Nonverbal Intelligence (TONI). Average performance was defined as standard

scores at or above 85 (i.e. above -1 standard deviation) on the TONI. This criterion was used to establish a homogeneous group in terms of a nonverbal skill. The TONI was not thought to be highly related to the verbal experimental tasks participants would perform. Form A of the TONI was used and has a reported internal consistency of 0.88 (Brown, Sherbenou, & Dollar, 1982).

Four students did not meet the inclusion criteria and were excluded from the study. One grade 8 student reported a hearing condition that may have affected his performance on the experimental tasks. Three grade 7 students scored below a standard score of 85 on the TONI. Therefore, the scores of 60 participants were analyzed.

Measures

Development of a Sentence Verification Task

The present study employed SVT passages and test sentences developed by Kertoy and Goetz (1995). These researchers developed expository passages for use with grade 7 and 8 students following the methods suggested by Royer and colleagues (1986; Royer et al., 1979) and Carlisle (1989). The passages were based on the topics of solar energy, microbiology, blizzards, and volcanoes. Each passage contained 12 sentences and the reading level of the content ranged from grade 7.9 (Blizzard) to grade 8.8 (Volcano) (Fry, 1990). T-unit complexity analyses and word counts were performed by two raters when creating each passage. The raters achieved over 90% agreement on these ratings. The passages and sentences were also examined to ensure consistency of vocabulary and meaning

(see Kertoy & Goetz (1995) for further information on passage construction).

Once the passages were developed, 12 test sentences were created for each passage. The sentences were categorized according to 'Originals' (sentences identical to ones in the passage), 'Paraphrases' (sentences with words changed, but the underlying meaning remained the same as in the passage), 'Meaning Changes' (only a few words were changed in order to make the meaning different from the passage sentence), and 'Distractors' (sentences which contained different wording and meaning than the passage but might have been plausible) (Royer, et al., 1990). Three sentences in each category were developed. (See Appendix D and E for an example of a SVT passage and test sentences).

Development of a Read-Aloud Activity

Preparation of a read-aloud activity followed guidelines presented in various articles about the use of read-alouds in the classroom (Freeman, 1992; Moss, 1995; Temple & Gillet, 1996) (see Appendix F). Three read-alouds were created by drawing material from science and language arts textbooks for intermediate grade levels (see Appendix G for references). The read-alouds were based on expository material about dolphins, lightning, and space. A Dale and Chall (1948) readability analysis examined sentence length and word familiarity to yield readability scores of 6.9 for the topic of Space, and 6.8 for both the Lightning and the Dolphin topics. These scores translated into a grade 7-8 reading level for each passage. The passages were 948-954 words in length and took approximately six minutes to read aloud. These lengths were controlled to ensure consistency across topics.

Development of Read-Aloud Comprehension Task

Three multiple choice tests each consisting of 15 questions were developed to test the students' understanding of each of the read-aloud passages. Several criteria were considered when developing the multiple choice questions: (a) the type of cognitive skill required to answer the question, (b) thinking and listening skills frequently assessed in teacher-made tests, and (c) the objectives of the read-aloud (Eby, 1997; Hollingsworth & Hover, 1991; Ornstein, 1989).

The multiple choice questions were created on the basis of cognitive skills required at each of the six levels of Bloom's taxonomy (see Appendix H) (Eby, 1997; Louisell & Descamps, 1992). Bloom's taxonomy (as cited in Eby, 1997) reflects the varying demand on cognitive abilities required to answer questions at both higher (e.g. evaluation) and lower (e.g. knowledge) cognitive levels (Eby, 1997; Ornstein, 1989). Two individuals rated the placement of each question into one of the six levels of the taxonomy. Each multiple choice test included two knowledge questions, three comprehension questions, three application questions, three analysis questions, two synthesis questions, and two evaluation questions. Though there is a lack empirical evidence to determine how many questions at each level should be included in a test, Louisell and Descamps (1992) offered a guide for choosing the percentage of questions to ask from each level of Bloom's taxonomy. They suggested that 30% knowledge, 10% comprehension, 20% application, 20% analysis, 10% synthesis, and 10% evaluation level questions be included in a comprehension task. More comprehension questions were included

in the present study than knowledge questions to reflect the types of cognitive skills typically evaluated by teachers when testing classroom learning (Jarolimek & Foster, 1997).

Teacher-made tests that assess cognitive gain may involve matching cause and effect, arranging events in order or arranging steps in a sequence, selecting the best explanations from a list of options, determining the truth or falsity of statements, and being able to use key terms correctly (Louisell & Descamps, 1992; Ornstein, 1989). Teachers frequently examine students' performance in these ways to determine how well students have learned the material. Therefore, this study incorporated these types of questions into the read-aloud comprehension task to ensure consistency with teacher-made tests.

The objectives of the read-aloud were to introduce a science topic and provide students with information about key vocabulary items, details about the topic, and themes that they could learn and apply. To meet this goal, the test of comprehension tapped various levels of cognition and examined what terms, details, and themes the students had learned from the read-aloud. The multiple choice question format was chosen for ease of administration and scoring.

The read-alouds and corresponding multiple choice questions were piloted with university students. Five graduate students listened to a passage that was read aloud to them and then they answered 15 multiple choice questions based on the material they had just heard. This process was repeated for each of the three read-alouds (i.e. Dolphins, Lightning, and Space). Performance on the piloting of

the read-aloud task is described below.

The percentage of questions answered correctly about each of the three passages and the overall means are outlined on Table 1. The Dolphin read-aloud was the easiest ($M = 83.96\%$), followed by Space ($M = 77.30\%$), and Lightning, which was the most difficult ($M = 73.30\%$). The percentage of questions answered correctly is outlined according to each level of Bloom's taxonomy (see Appendix I). The university students demonstrated consistent performance on the various question types for the "Space" read-aloud (see Appendix I). For example, knowledge level questions were easier than higher level synthesis questions, as one would expect. Furthermore, the "Space" read-aloud was reviewed by grade 7 and 8 classroom teachers who determined that the read-aloud was appropriate in terms of the topic, difficulty level, and fit with the grade 7 and 8 curriculum. Therefore, the read-aloud on "Space" was chosen for the present study (see Appendix J for read-aloud comprehension task).

Familiarity Questionnaire

Four questions were developed into a short questionnaire to serve as an index of the participants' background exposure and interest in the topic of "Space" (see Appendix K). The first two questions asked the participants to rate their familiarity and interest in the topic of "Space" on a five point scale. The questionnaire also asked if the participants had ever received a lesson on the topic and to indicate how long ago this lesson had occurred. The questions were created to examine how prior knowledge may have affected results on the read-aloud

Table 1

Percentage of Multiple Choice Questions Answered Correctly by University Graduate Students on Three Read-Aloud Passages and Overall Means

Participant	Dolphins	Lightning	Space
1	93.30	66.60	73.30
2	80.00	80.00	73.30
3	93.30	73.30	93.30
4	66.60	66.60	66.60
5	86.60	80.00	80.00
Mean	83.96	73.30	77.30

comprehension task since some individuals may have had more exposure to the topic of "Space" than others. Points were assigned to each question and a total score was obtained by tallying the points for all the questions. A high score indicated that a student was very familiar with the topic of "Space". The total score was then used to test the relationship between performance on the read-aloud comprehension task and the familiarity score. Refer to the results section for the outcome of the correlational analysis.

Nelson Reading Skills Test

The Nelson Reading Skills Test is a well known measure of reading comprehension (Hanna, Schell, & Schreiner, 1977). The test includes word meaning, reading comprehension, and reading rate subtests designed to measure various components of reading. Split-half reliability measures for Form 4 of the Nelson Reading Skills Test were reported to be $r = .90$ to $.92$ for the Word Meaning subtest and $r = .86$ to $.89$ for the Reading Comprehension subtest. Level C of the Word Meaning and Reading Comprehension subtests was administered to obtain a Total Reading score for each participant. The split-half reliability of the Total Reading score was $r = .93$ for level C. Additional information about the psychometric properties of the Nelson Reading Skills Test can be found in the teacher's test manual (Hanna, et al., 1977).

Listening Comprehension Scale of the Oral and Written Language

The Listening Comprehension Scale of the Oral and Written Language Scales (OWLS) (Carrow-Woolfolk, 1995) is a measure of comprehension of spoken

language. The test items were designed to test the comprehension of lexical (e.g. nouns, verbs, modifiers), syntactic (e.g. number, gender, and tense modulators) and supralinguistic (e.g. humour, figurative language) components of language. Internal reliabilities for the Listening Comprehension Scale of the QWLS have been calculated using the split-half method and a reliability coefficient of $r = .87$ was reported for students age 12-14 (Carrow-Woolfolk, 1995).

Testing Administration

Each student participated in three separate assessment sessions within three weeks.

Session One

The first session took place in a small room outside of the classroom with groups of four students. First, each student was asked to complete an individual questionnaire on his or her hearing status. Students indicated whether they had a hearing loss or related risk factors. If concerns with hearing acuity were raised, then students were given a hearing screening. The Test of Nonverbal Intelligence (TONI) was then administered to groups of four students according to standardized procedures. This test examined the students' ability to use reasoning and problem solving skills without requiring a verbal response. Students were required to complete patterns on the test template by pointing to the appropriate designs underneath the test stimuli. The TONI took approximately 20 minutes to complete. Results of the hearing questionnaire and the TONI were used to determine if the students exhibited normal hearing and nonverbal intelligence according to the

study's inclusion criteria.

Next, students completed a sentence verification task. Administration of the SVT proceeded as follows. Four passages, each 12 sentences in length, were administered one at a time to groups of four students sitting at a table. Students were seated with a partition separating them from each other. Each student listened to two passages and read two passages. The order of presentation was counterbalanced and randomized to minimize order and presentation effects. The listening passages were presented auditorily through a stereo to participants at a standard listening rate of 160-180 words per minute. The reading passages were typed and presented on a single piece of paper for the students to read through once at their own pace. Following the presentation of each passage, the participants individually reviewed 12 sentences placed on a sheet of paper in front of them and verified whether or not the idea of each sentence had occurred in the original passage. Students circled their answers (yes/no) individually next to each of the 12 test sentences on a score sheet. Correct answers were "yes" for originals and paraphrase type sentences and "no" for meaning change and distractor type sentences. In total, session one took an hour to complete.

Session Two

During the second session, the Word Meaning and the Reading Comprehension subtests of the Nelson Reading Skills Test were administered to groups of four students outside of the classroom. The Word Meaning subtest consisted of a multiple choice question format in which students were required to

read a single word and underline an answer that had the same meaning as the test word. For example, "Warm" a. cold b. cool c. high d. hot. There were 36 items in this subtest.

The Reading Comprehension subtest of the Nelson Reading Skills Test required students to read five short passages and answer eight multiple choice questions about each passage they read. Students were given as much time as they needed to complete these subtests. Scores on the Word Meaning and Reading Comprehension subtests were combined to yield a Total Reading score.

The Listening Comprehension Scale of the QWLS was administered following the Nelson Reading Skills Test. The Listening Comprehension Scale examined students' understanding of various language structures presented in a listening task. Students looked at four pictures as a phrase was presented by the examiner. They were then required to point to the picture that represented what the phrase described. For example, students would point to a picture when presented with the phrase "*The young moon rested on the shoulders of the tall tree*". Session two was completed in 45 minutes.

Session Three

Session three was completed in the classroom with the entire class. A six minute read-aloud on "Space" was read to the students by the investigator. Students then completed 15 multiple choice questions designed to tap their comprehension of the read-aloud material. The multiple choice questions were given on three sheets and students circled their answers directly on the test sheets.

The familiarity questionnaire was attached at the back of each multiple choice test and was completed by the students after they finished the read-aloud comprehension task. These questions were designed to probe the amount of previous exposure and interest students had in the topic of the read-aloud. Students were given the time they needed to circle their answers on the question sheets. The read-aloud comprehension task did not exceed 15 minutes. Answers to the read-aloud task were only analyzed for those students with consent to participate in the study. Teachers collected the test forms for students not participating in the study for their own use. A discussion of the read-aloud was conducted with the students following the comprehension test in order to adhere to the typical classroom routine.

Results

The means and standard deviations for each of the study's measures were calculated along with the range of scores and are displayed on Table 2. The mean raw score for the TQNI was 29.23, with a mean Q-score of 109.80 and a standard deviation of 12.88. The standardized Q-score indicated that the participants displayed average nonverbal cognitive ability.

The mean total SVT score was 33.03 out of a possible 48. Therefore, the mean percentage was 68.80%, with a standard deviation of 8.90. The mean performance on the SVT listening task was 16.23 out of 24 (i.e. M = 67.63%, SD = 11.29). The mean performance on the SVT reading task was 16.80 out of 24 (i.e. M = 70%, SD = 11.96).

The grade 7 and 8 students combined obtained a raw score of 10.15 out of 15 on the read-aloud comprehension task. The mean percentage was 67.67% with a standard deviation of 19.80. The performance of the students on the read-aloud comprehension task was well above chance.

Students obtained a raw score of 25.78 out of 36 on the Word Meaning subtest of the Nelson Reading Skills Test. This raw score was converted to a percentile rank of 64 (SD = 19.79). A mean raw score of 16.80 out of 34 was obtained on the Reading Comprehension subtest of the Nelson Reading Skills Test. This raw score translated into a mean percentile of 57 (SD = 22.20). The mean raw score for the Nelson Reading Skills Test Total Reading score was 78.74. This mean score was at the 60th percentile (SD = 20.39). Performance on the Nelson

Table 2

Means, Standard Deviations and Range of Performance on Test Measures for Grade 7 and 8 Students Combined

Measure	Raw (M)	M	SD	Minimum	Maximum
TONI	29.23	109.80 (Q-score)	12.88	89.00 (Q-score)	143.00 (Q-score)
SVT-T	33.03	68.81%	8.90	52.08%	89.58%
SVT-L	16.23	67.63%	11.29	41.67%	87.50%
SVT-R	16.80	70.00%	11.96	37.50%	91.67%
Read-aloud	10.15	67.67%	19.80	20.00%	100.00%
Nelson-WM	25.78	64.25%ile	19.79	15.00%ile	99.00%ile
Nelson-RC	28.19	57.42%ile	22.20	20.00%ile	97.00%ile
Nelson-TR	78.74	60.01%ile	20.39	18.00%ile	95.00%ile
OWLS	89.62	112.58 (standard)	13.16	81.00 (standard)	136.00 (standard)

Note: TONI, Test of Nonverbal Intelligence; SVT-L, SVT-Listening task; SVT-R, SVT-Reading task; SVT-T, SVT-Total score; READ, Read-aloud comprehension task; Nelson-WM, Nelson Reading Skills Test-Word Meaning subtest; Nelson-RC, Nelson Reading Skills Test-Reading Comprehension subtest; Nelson-TR, Nelson Reading Skills Test-Total Reading score; OWLS, Oral and Written Language Scales, Listening Comprehension Scale; %ile, percentile rank; standard, standard score

n = 60

Reading Skills Test was within the average range for both subtests and the Total Reading score.

Grade 7 and 8 students acquired a mean raw score of 89.62 on the Listening Comprehension Scale of the QWLS. The mean raw score was converted to a mean standard score of 112.58 and a standard deviation of 13.16. This standard score in was within one standard deviation of the test's mean, indicating average performance.

Comparison of Performance on the SVT by Grade 7 and 8 Students

Performance on the SVT listening and reading tasks was analyzed to determine whether there was a significant difference between the performance of grade 7 and grade 8 students. The mean percent correct and the standard deviations are displayed on Table 3. Two independent samples t-tests were completed. The performance of the grade 7 students on the SVT listening task ($M = 72\%$, $SD = 10.36$) was not significantly different than the performance of grade 8 students on the SVT listening task ($M = 69\%$, $SD = 12.35$) ($t(58) = -.93$, $p > .10$). Performance on the SVT reading task by grade 7 students ($M = 68\%$, $SD = 11.37$) and grade 8 students ($M = 72\%$, $SD = 12.58$) was also not significantly different ($t(58) = -1.12$, $p > .10$).

Comparison of SVT Listening and Reading Tasks

The means for performance by grade 7 and 8 students combined on the SVT listening and reading tasks were analyzed through a paired t-test to determine if they were significantly different. The analysis revealed that the difference between

Table 3

Mean Percent Correct and Standard Deviations for Performance on the SentenceVerification Task by Grade 7 and Grade 8 Students

Grade	SVT-Task	M	SD
7	SVT-listen	66 %	10.36
7	SVT-read	68 %	12.35
7	SVT-total	67 %	7.85
8	SVT-listen	69 %	12.35
8	SVT-read	72 %	12.58
8	SVT-total	71 %	10.02

n = 33 (grade 7)

n = 27 (grade 8)

the mean performance on the SVT listening task ($M = 67.63\%$, $SD = 11.29$) and the mean performance on the SVT reading task ($M = 70\%$, $SD = 11.96$) was not significant ($t(59) = -1.23$, $p > .10$).

Correlational Analyses

Correlational analyses were performed using a Pearson product-moment coefficient to examine a number of the study's hypotheses (see Table 4 for correlational matrix). Single order correlations are discussed below. Cohen's (1988) classification system was used to describe the magnitude of each correlation. A small or low correlation refers to $r = .10$ or greater, a medium or moderate correlation refers to $r = .30$ or greater, and a large or strong correlation refers to $r = .50$ or greater (Cohen, 1988).

The first hypothesis stated that performance by grade 7 and 8 students on the SVT would be positively associated with their comprehension of classroom materials as measured by performance on the read-aloud comprehension task.

Therefore, a Pearson product-moment correlation was calculated between performance on the SVT and the read-aloud comprehension task. A strong correlation was found between the overall score on the SVT and the read-aloud listening comprehension task ($r = .61$, $p < .01$). The null hypothesis was rejected.

Correlations were also calculated separately between the SVT listening and reading tasks and the read-aloud comprehension task. Moderate to strong, positive correlations were found between the SVT reading task and the read-aloud comprehension task ($r = .53$, $p < .01$) and the SVT listening task and the read-

Table 4

Correlation Matrix for Comprehension Measures

	1	2	3	4	5	6	7	8
1. SVT-L	---							
2. SVT-R	.187	---						
3. SVT-T	.745**	.786**	---					
4. READ	.403**	.526**	.605**	---				
5. Nel-WM	.333**	.342**	.439**	.491**	---			
6. Nel-RC	.279*	.323*	.392**	.360**	.677**	---		
7. Nel-TR	.325*	.370**	.452**	.464**	.867**	.947**	---	
8. OWLS	.280*	.233	.332**	.336**	.670**	.561**	.657**	---

Note: SVT-L: SVT-Listening task; SVT-R: SVT-Reading task; SVT-T: SVT-Total score; READ: Read-aloud comprehension task; Nel-WM, Nelson Reading Skills Test-Word Meaning subtest; Nel-RC, Nelson Reading Skills Test-Reading Comprehension subtest; Nel-TR, Nelson Reading Skills Test-Total Reading score; OWLS, Listening Comprehension Scale of the Oral and Written Language Scales

$n = 60$

* $p < .05$, ** $p < .01$

aloud comprehension task ($r = .40$, $p < .01$).

It was hypothesized that performance on the SVT would also be associated with well known standardized tests of comprehension, thus providing support for the SVT as a valid measure of students' listening and reading comprehension abilities. Correlational analyses were employed to determine whether student performance on the SVT was related to performance the Nelson Reading Skills Test and the Listening Comprehension Scale of the QWLS. A Pearson product-moment correlational analysis revealed significant, moderate correlations between the total score on the SVT and the Total Reading score on the Nelson Reading Skills Test ($r = .45$, $p < .01$). Significant correlations were also found between the SVT and the Word Meaning subtest of the Nelson Reading Skills Test ($r = .44$, $p < .01$) and the SVT and the Reading Comprehension subtest of the Nelson Reading Skills Test ($r = .39$, $p < .01$). In addition, a significant moderate correlation was found between the overall SVT score and the Listening Comprehension Scale of the QWLS ($r = .33$, $p < .01$). The correlations between the SVT and both standardized measures of reading and listening comprehension were significant, therefore, the second and third null hypotheses were rejected.

Correlations were conducted between performance on the SVT listening task and reading tasks with the Listening Comprehension Scale of the QWLS, and revealed different outcomes. The SVT listening score was significantly correlated with the Listening Comprehension Scale of the QWLS ($r = .28$, $p < .05$), however, the SVT reading score did not correlate significantly with the Listening

Comprehension Scale of the OWLS ($r = .23, p > .10$). The finding that the two listening tasks correlated better than a listening and a reading task was expected.

In summary, significant correlations were found between the SVT and other standardized and nonstandardized comprehension measures. The SVT reading task was not significantly correlated the SVT listening task and the Listening Comprehension Scale of the OWLS.

Psychometric Properties of Read-aloud Comprehension Task

Construct Validity of the Read-aloud Comprehension Task

Analysis of the relationship between the read-aloud comprehension task and the standardized measures was also performed to examine the validity of a classroom test as a measure of comprehension. A Pearson product-moment correlation was calculated between the read-aloud comprehension task and the Nelson Reading Skills Test and the Listening Comprehension Scale of the OWLS. The classroom read-aloud comprehension task was significantly correlated with both the Nelson Reading Skills Test ($r = .46, p < .01$) and the Listening Comprehension Scale of the OWLS ($r = .34, p < .01$).

Internal Consistency of the Read-aloud Comprehension Task

The internal consistency of the read-aloud comprehension task was calculated using Cronbach's alpha for the 15 multiple choice questions. This analysis yielded a coefficient alpha of .71. Generally, reliability coefficients of .50 and greater are considered acceptable in the early stages of research (Pedhazur & Schmelkin, 1991).

Item Analysis for the Read-aloud Comprehension Task

An item analysis of the multiple choice questions revealed that 14 out of the 15 test items were answered correctly by at least 50% of the participants. Two questions demonstrated low variability across participants. Question #4, a synthesis question as defined by Bloom's taxonomy, was answered correctly by only 20% of the participants. Question #9, an analysis question as defined by Bloom's taxonomy, was answered correctly by 91% of the participants. These two test questions may be of concern due to the high failure/success rate, which may reflect the items' construction rather than the students' ability to answer the questions.

The read-aloud comprehension task was also examined with respect to each level of Bloom's taxonomy. The hierarchy of cognitive abilities begins with knowledge and moves through comprehension, application, analysis, synthesis, and finally, evaluation levels. Students performed well on the two knowledge questions ($M = 72.00$, $SD = 4.6$). The three comprehension questions were slightly more difficult, as was expected ($M = 68.67$, $SD = 4.3$). A pattern of increasing difficulty was supported by performance on application questions ($M = 65.67$, $SD = 4.8$). Although analysis is the next level, performance on the analysis questions was higher than the previous level ($M = 71.33$, $SD = 4.3$). The mean for the application questions may have been inflated by the high number of correct responses for question #9, and the mean would have been 61.50% if question #9 was excluded. Performance on the synthesis questions was very poor ($M = 46.00$,

SD = 4.4). However, the mean may also been affected by poor performance on question #4. If this question was excluded the mean would have been 72%. In contrast, students performed well on the evaluation questions (M = 80.50, SD = 3.9) which are at the highest level of Bloom's taxonomy.

Familiarity Scores

The potential influence of prior knowledge on performance on the comprehension task was examined. The familiarity questionnaire was scored by summing the points for each question. The scores ranged from 3 - 12 out of a total possible score of 14. The mean familiarity score was 7.6. The total familiarity scores were not significantly correlated ($r = .24$, $p > .10$) with scores on the read-aloud comprehension test. The familiarity of grade 7 and 8 students with the topic of Space did not appear to significantly influence their responses to questions on the read-aloud comprehension task.

Psychometric Properties of the SVT

Internal Consistency of the SVT

The internal consistency of the SVT was examined in a similar manner as the read-aloud comprehension task. Cronbach's alpha was used to compute the internal consistency for the SVT. A coefficient alpha of .54 was obtained for all responses on the SVT. Separate reliabilities were calculated for the SVT listening and reading tasks. A coefficient alpha of .23 was obtained for the SVT listening task. A coefficient alpha of .36 was obtained for the SVT reading task. The SVT listening and reading tasks contained half the number of items of the SVT total

score (i.e. 120 items each versus 240 for the total score). The smaller number of items used to calculate the reliability for the SVT listening and SVT reading tasks may have contributed to the lower coefficient alphas that were obtained in the separate analyses.

Internal Structure of the SVT

The means and standard deviations for each SVT passage are presented in Table 5. Performance was the highest on the Microbes passage ($M = 79\%$, $SD = 12.92$), followed by performance on the Blizzards passage ($M = 70.85$, $SD = 14.33$). Participants had more difficulty with the Solar passage ($M = 64.41$, $SD = 11.17$) and the Volcano passage ($M = 61.25$, $SD = 15.75$).

Correlations between performance on each of the four passages were calculated to determine how well performance on each of the passages was related (see Table 6). Performance on Microbes and Blizzards was significantly correlated ($r = .40$, $p < .01$), as was performance on Solar and Blizzards ($r = .28$, $p < .05$) and Solar and Volcano ($r = .52$, $p < .01$). The relationship between performance on Microbes and Blizzards with performance on Volcano was not significant. The significant correlations that were obtained appeared to be influenced by the overall difficulty of the passages. Performance on Solar and Volcano, the two more challenging passages were positively correlated. In addition, performance on Microbes and Blizzards, the two easier passages, were also correlated.

Multiple Regression Analysis

A stepwise regression analysis was performed to examine the best

Table 5

Means and Standard Deviations for SVT Passages

Passage	Mean (%)	Standard Deviation
Microbes	79.00	12.92
Blizzards	70.58	14.33
Solar	64.41	11.17
Volcano	61.25	15.75

Table 6

Correlation Matrix for the Four SVT Passages

	MICROBES	BLIZZARDS	SOLAR	VOLCANO
MICROBES	---			
BLIZZARDS	.398**	---		
SOLAR	.129	.275*	---	
VOLCANO	.011	.184	.521**	---

* $p < .05$, ** $p < .01$

predictors of classroom performance on a comprehension task. The read-aloud comprehension task was used as the criterion variable. The SVT reading score, SVT listening score, and the Word Meaning subtest of the Nelson Reading Skills Test were significant predictors of performance on the read-aloud comprehension task ($R = .66$, $F(3, 56) = 14.43$, $p < .001$) and accounted for 44% of the variance. The Nelson Reading Skills Test Reading Comprehension score and the Listening Comprehension Scale of the QWLS did not significantly contribute to the variance.

In order to determine the degree to which a well known standardized test of comprehension, the Nelson Reading Skills Test, would be predicted by performance on the other tests of comprehension, a stepwise regression analysis was performed. The Listening Comprehension Scale of the QWLS and the read-aloud comprehension task, accounted for 50% of the variance in performance on the Nelson Reading Skills Test ($R = .71$, $F(2, 57) = 28.30$, $p < .001$). The SVT Total score did not significantly contribute to the variance in performance on the Nelson Reading Skills Test.

Discussion

The study's results revealed several interesting points and allowed comments to be made concerning the hypotheses.

Establishing Validity for the SVT and the Read-Aloud Comprehension Task

When examining the construct validity of a measure, several questions are generally posed. These questions include what construct, or trait, does a test measure (Brown, 1983) and to what extent does the test actually measure the construct being studied (Brown, et al., 1982; Dunn & Dunn, 1997). The construct of interest in this study was comprehension, which was defined as the process of gathering meaning from an input signal and the context in which it is presented (Montgomery, et al., 1990; Samuels, 1987). The SVT and read-aloud comprehension tasks were investigated to determine the extent to which they are measures of comprehension. A single quantitative index of construct validity is not available to researchers. Therefore, determining the degree to which a test is measuring a specific construct is accomplished by obtaining information on the test's construction and psychometric properties to demonstrate what the test does and does not measure (Brown, 1983). The method in which the construct validity for the SVT and read-aloud comprehension task was studied included: (a) an examination of the tests' internal structures (i.e. internal consistency and item analysis) and (b) measurement of congruent validity by calculating correlations between the two tests and other standardized measures of comprehension. The findings are outlined for both measures.

Evidence for the Validity of the SVT

Examining the internal structure of the SVT required gathering information about the development of the SVT passages and the test sentences (Brown, 1983). The passages were created by Kertoy and Goetz (1995) in a previous study that investigated the use of the SVT as a measure of listening comprehension. The researchers performed several analyses (e.g. T-unit complexity analysis and reading level) to ensure consistency across passages. Kertoy and Goetz (1995) also investigated the internal consistency of the SVT and obtained a coefficient alpha of .68. Other researchers using SVT passages to test comprehension have obtained reliability coefficients of .54 (Marchant, et al., 1988) and coefficients ranging from .84 to .98 (Royer & Hambleton, 1983).

An investigation into the internal consistency for the SVT passages (listening and reading responses combined) in the present study yielded an acceptable coefficient alpha (.54) for this stage of research (Pedhazur & Schmelkin, 1991). This reliability coefficient was lower than that obtained by Kertoy and Goetz (1995). The magnitude of the correlation coefficient may have been influenced by the inclusion of both listening and reading responses in the total SVT score that was analyzed. Kertoy and Goetz (1995) employed only SVT listening passages. When the reliability of the SVT listening and reading passages was examined individually, a coefficient alpha of .23 for the SVT listening task was lower than the reliability for the SVT reading task (.36). These reliabilities were also somewhat lower than the reliability obtained by Kertoy and Goetz (1995). In addition, the present study

employed passages that were 12 sentences in length. In contrast, the Royer and Hambleton (1983) study used passages with 16 test sentences to assess over 1000 students. The larger number of test items administered to a greater number of participants may have contributed to the higher reliability coefficients Royer and his colleagues (1983) obtained.

Congruent validity provides further evidence of construct validity and is generally measured by performing correlations between several tests. Strong correlations between the measures indicate that the tests are likely measuring the same construct (Brown, 1983). A test of the SVT's congruent validity yielded positive results. Correlational analysis revealed significant moderate correlations between the SVT and the Nelson Reading Skills Test ($r = .45$) and between the SVT and the Listening Comprehension Scale of the QWLS ($r = .33$). The Nelson Reading Skills Test and the QWLS are both well constructed measures of comprehension that have demonstrated good reliability and validity. A split-half reliability of .87 has been reported for the Listening Comprehension Scale of the QWLS (Carrow-Woolfolk, 1995). The split-half reliability of the Nelson Reading Skills Test Total Reading score was reported to be .92 (Hanna, et al., 1977). The significant positive correlations between these measures and the SVT supported the claim that the SVT is a valid measure of comprehension. The correlations obtained between the SVT and the standardized measures were notable considering that the low reliability coefficient found for the SVT items may have limited the magnitude of the correlations. Further refinement of the SVT passages

and test sentences used in this study should be conducted to help improve the internal consistency of the SVT.

Previous studies have also revealed significant positive associations between the SVT and both listening and reading comprehension tests. Royer (et al., 1979) and Carlisle (1989) compared the SVT to standardized reading comprehension measures and obtained correlations ranging from .50 to .55. The correlation obtained in this study between the SVT and the Nelson Reading Skills Test ($r = .45$) was comparable to the correlations obtained in previous studies. The SVT also demonstrated validity as a test of listening comprehension. The moderate correlation ($r = .33$) obtained between the SVT and the Listening Comprehension Scale of the QWLS in this study was lower than the significant correlation ($r = .45$) obtained by Kertoy and Goetz (1995) between the SVT and the Listening Grammar subtest of the Test of Adolescent Language (Hammil, et al., 1987). Once again, these correlations in this study may have been even higher if the SVT had demonstrated stronger internal reliability.

In summary, congruent validity was supported by obtaining significant correlations between the SVT and other known measures of comprehension. This, in turn, provided further evidence for the construct validity of the SVT as a measure of comprehension.

Evidence for the Validity of the Read-aloud Comprehension Task

The internal consistency of the read-aloud comprehension task was examined. A coefficient alpha of .71 was calculated and suggested that the

multiple choice test of the read-aloud was a reliable measure of comprehension. Moreover, the students' performance was not felt to be unduly biased by previous exposure or familiarity with the topic of "Space". The familiarity scale was not significantly correlated with performance on the read-aloud comprehension task ($r = .24, p > .10$).

Examination of the internal structure of the read-aloud comprehension task also involved analyzing students' performance on the multiple choice questions with respect to each level of Bloom's taxonomy. A pattern of increasing difficulty was shown as the questions increased in cognitive demand. As expected, students performed well on lower cognitive level questions (i.e. knowledge and comprehension levels). This pattern was supported by poorer performance on application questions. However, students performed better on the next level of questions (i.e. analysis questions). This superior performance on a higher level question may have been due to the high number of correct responses for one of the application questions. Performance on the synthesis questions was much lower than expected, which may also have been due to the high number of incorrect responses for one of the synthesis questions. In contrast, students performed well on the evaluation questions which are at the highest level on Bloom's taxonomy. Higher scores on the evaluation questions may be attributed to the difficulty in creating a multiple choice form of this question type. These results provided information about how students comprehend and respond to different types of questions. The pattern of decreasing performance as the cognitive demand

increased was generally supported by the results. This pattern yielded support for the construction and internal structure of the read-aloud comprehension task in that it matched the cognitive demands outlined by Bloom's taxonomy.

An investigation into the congruent validity of the read-aloud comprehension task showed that performance on the read-aloud comprehension task was significantly correlated with the Nelson Reading Skills Test ($r = .46$) and the Listening Comprehension Scale of the QWLS ($r = .34$).

These significant, positive associations provided support for the read-aloud comprehension task as a valid measure of a student's comprehension abilities. Educators should feel confident in using tasks similar to the read-aloud comprehension task in this study to reflect their students' comprehension of orally presented classroom material.

Comparison of Performance on the SVT and the Read-aloud Comprehension Task

The SVT and the read-aloud comprehension task were significantly correlated ($r = .60$). This association supported the ecological validity of the SVT as a measure of comprehension of classroom material. The strong correlation found between these two measures was higher than the correlations between the read-aloud comprehension task and the standardized comprehension measures (r values ranging from .34 to .46) was expected. The SVT and the read-aloud comprehension task both employed expository passages based on similar content (i.e. science topics). In contrast, the content of the standardized test items tended to be unrelated to the content of the classroom curriculum. In addition, as Carlisle

(1991) pointed out, most standardized tests of listening comprehension (such as the Listening Comprehension Scale used in this study) use only sentences or short passages and do not test extended discourse.

The strong correlation obtained between the SVT and the read-aloud comprehension task also served as an indicator of criterion-related validity of the SVT. Evidence for the ability of the SVT to predict comprehension of a read-aloud was supported by the results of the multiple regression analysis. This analysis revealed that both the SVT listening and reading tasks, along with the Word Meaning subtest of the Nelson Reading Skills Test, accounted for a significant amount (44%) of the variance in performance on the read-aloud comprehension task. Therefore, knowledge of scores on the SVT and the Word Meaning subtest of the Nelson Reading Skills Test would allow confidence in making an accurate prediction of performance on the read-aloud comprehension task.

Relationship between the SVT and the Read-aloud Comprehension Task

The advantages of the SVT procedure and the read-aloud comprehension task are apparent. They both have demonstrated adequate reliability and validity as measures of comprehension based on this preliminary study. Additional analysis of the construction of the read-aloud and multiple choice questions is needed to verify the present findings. Other advantages of the SVT and read-aloud procedures are that they can be developed for passage length discourse based on classroom materials and can be administered in less than an hour to groups of students.

The present study helped to establish a new link between students' performance on a comprehension task as measured by an SVT and their comprehension of classroom discourse. Since both measures exhibited adequate validity in measuring comprehension, the question arises whether the SVT or the read-aloud comprehension task should be used to determine a student's comprehension skills in the classroom. The answer may depend upon the nature of the educator's or researcher's purpose. The SVT may be a useful test for speech-language pathologists since it can be developed for many students in different classes. The SVT is also designed to measure both listening and reading comprehension and, therefore, allows direct comparison of these skills. A comparison between listening and reading performance is important when diagnosing reading difficulties (Carlisle, 1989). Furthermore, the SVT places a minimal load on memory and may allow students, especially those with processing limitations, to perform at their best. In this manner, the results of an SVT assessment are not confounded by the memory abilities of the students. In contrast, teachers may prefer to develop a read-aloud comprehension task that would assess comprehension of topic areas and new vocabulary presented through the read-aloud. Teachers also need information about students' ability to understand different types of text in general, which multiple choice tests are capable of doing (Royer, et al., 1987).

As Neville (1988) suggested, both tests could contribute to a better understanding of a student's overall comprehension abilities. Speech-language

pathologists can share the information they gain about students' performance on both SVT listening and reading tasks with classroom teachers. Teachers would then be aware of the range of listening and reading abilities in their classrooms and could modify their instruction accordingly. For example, teachers could help students to use their prior knowledge to aid comprehension of new material. The use of feedback and discussion opportunities could also improve comprehension (Mehan, 1979; Pasch, et al., 1995).

Comprehension of Expository Information

The study offered new information about school-age students' comprehension of expository text. Performance on both the SVT and read-aloud comprehension tasks indicated that most students were able to comprehend a significant portion of the expository passages. The mean performance on the SVT ($M = 68.8\%$, $SD = 8.9$) and mean performance on the read-aloud ($M = 67.7\%$, $SD = 19.8$) indicated that nearly 70% of the material presented in the passages was comprehended. Royer and colleagues (1989) suggested that average performance on the SVT passages is generally around 75%. They felt that performance above or below 65% to 85% was an indication that the passages were too easy or too challenging (Royer, et al., 1989). The average performance on the SVT used in this study was at the lower end. Difficulty with the passages may have been due to difficulty comprehending expository text.

Testing more students on read-aloud comprehension tasks similar to the one presented in this study would help to determine whether this general level of

performance is replicated. Performance below 70% on subsequent read-aloud testing would provide teachers with guidelines for the amount of material that is being retained by the students. In the present study, the students' comprehension of the read-aloud material was tested in a more contrived manner than in most classrooms. The reader did not stop to check for understanding nor allow discussion during the read-aloud. These common practices may serve to facilitate comprehension in daily situations and improve performance on comprehension tests (Ornstein, 1989).

Previous authors have suggested that expository texts pose challenges for students when trying to comprehend (Leal, 1994; Neville, 1988). In general, students seem to have more difficulty recalling and understanding expository text as compared to narrative text (Neville, 1988). Yet students need to master the skill of understanding expository text since it comprises a large proportion of classroom discourse and academic texts. The difficulties with expository text indicate a need for instruction in this type of discourse structure. In providing this instruction, educators may improve overall comprehension abilities. For example, increasing a student's knowledge of text structure allows them to use this information when presented with this type of structure in the future. Increasing exposure to different types of text will in turn allow the student to modify their expectations and interpretations (Leal, 1992). Using read-alouds to introduce expository text and new information is an effective method of facilitating comprehension (Moss, 1995; Oyler, 1996).

Comparison of Listening and Reading Comprehension

Information about performance on listening and reading tasks was obtained from the study's results. The Nelson Reading Skills Test and the Listening Comprehension Scale of the QWLS were significantly correlated ($r = .66$). This result was expected and replicated the findings of previous studies reporting strong correlations between listening and reading performance by the time students reach grade 4 to 6 (Sticht & James, 1984). The moderate correlation found between the Nelson Reading Skills Test and the read-aloud comprehension task ($r = .46$) also supported this finding.

The results were mixed when listening and reading measures were correlated with the SVT tasks. In keeping with the above findings, the SVT listening task was significantly correlated with the Nelson Reading Skills Test ($r = .33$), and the SVT reading task was significantly correlated with the read-aloud comprehension task ($r = .53$). However, the SVT reading task was not significantly correlated with the SVT listening task nor the Listening Comprehension Scale of the QWLS. The lack of a significant correlation between the SVT reading task and two of the listening comprehension tests may reflect the limited number of test items for the SVT reading task used to calculate the correlations. The lack of a significant correlation in the present study between the SVT listening and reading tasks may also indicate that the tasks were tapping different components of general comprehension ability. As Townsend and colleagues (1987) indicated, differences between the two modalities do exist. Beyond the differences in the stimulus, there

are skills unique to the processing of oral and written information. Reading involves recognizing words printed on the page. When listening, the individual must process the prosodic cues the speaker delivers (Townsend, et al., 1987). These differences may have contributed to the lack of a significant correlation between the SVT listening and reading tasks.

The means for performance of students on the SVT listening and reading tasks were compared. The mean performance on the SVT listening task ($M = 70.0\%$) was not significantly different than the mean performance on the SVT reading task ($M = 67.6\%$). This finding is consistent with the literature that suggested that reading performance approaches the level of listening performance by grade 6 (Sticht & James, 1984). In contrast, this result was different from the findings of Holstein (1995). Holstein (1995) used passages that were at an average reading level of grade 12 to compare the performance of adults on SVT listening and reading tasks. Adult performance on the SVT listening task was significantly poorer than performance on the SVT reading task. The difference between the findings of the present study and the Holstein (1995) study may point to age differences in the processing of oral and written material. This impression would need further investigation.

Future Research and Clinical Implications

The present study provided support for the use of the SVT and the read-aloud comprehension tasks as reliable and valid measures of comprehension. Speech-language pathologists and educators should feel confident in using either

measure to assess students' comprehension abilities. The results of the study also presented a preliminary guideline with respect to the level of students' comprehension of expository material. Teachers may use this information in evaluating students' comprehension abilities.

There are many aspects of classroom comprehension that need to be studied further. For example, it would be important to examine how performance on the SVT compares to students' performance on other classroom assessments, including tests measuring students' understanding of several lessons in a unit or information from textbooks. In addition, students' performance on other comprehension tests used by speech-language pathologists should be compared to performance on a read-aloud comprehension task in order to determine which tests are the best predictors of classroom comprehension. As the multiple regression analysis revealed, the Listening Comprehension Scale of the QWLS did not significantly predict performance on the read-aloud comprehension task when the SVT and the Word Meaning subtest of the Nelson Reading Skills Test were used in the analysis. Obtaining an accurate picture of classroom comprehension is an important step in providing appropriate instruction or intervention. Using a battery of tests which are quick and easy to administer and score may be the most effective way of obtaining accurate assessment information. Future studies could examine which tests possess the most predictive power in terms of both listening and reading comprehension. The SVT has already shown some promise in this area.

A larger scale study could also provide normative data for the SVT. The strongest evidence of a test's construct validity is its diagnostic usefulness (Brown, et al., 1982). There is an indication that the SVT was useful in detecting differences in performance as a result of age and ability (Carlisle, 1991b; Royer, et al., 1990). Norming the expository passages and test sentences used in this study on a larger population sample would allow identification of students who are experiencing difficulty with expository discourse.

The study also highlighted the need for continued research into classroom comprehension of activities such as the read-aloud. Proponents of the read-aloud procedure suggested it provides many educational benefits (Richardson, 1994; Trelease, 1989). Further research could determine which aspects of a read-aloud are most beneficial in enhancing comprehension. For example, questioning and discussion techniques used by teachers during read-alouds could be examined to determine the subsequent effect on students' listening comprehension. The strategies teachers employ to support students' comprehension of material presented daily in classrooms are worthy of study. Furthermore, testing more students in a study with different science topics would allow one to examine whether the results of the present study could be replicated. Finally, the read-aloud comprehension task could be used to contrast the comprehension of narrative and expository text structures to determine why expository text is more difficult to comprehend.

References

- Aaron, P. G. (1991). Can reading disability be diagnosed without using intelligence tests? Journal of Learning Disabilities, 24(8), 178-186.
- Adams, M. J. (1994). Beginning to Read: Thinking and Learning about Print. Cambridge, MA: The MIT Press.
- Anderson, R. C., Hiebert, E. H., Scott, J. A., & Wilkinson, I. A. (1985). Becoming a Nation of Readers: The Report of the Commission on Reading. Champaign, IL: Center for the Study of Reading.
- Barron, R. W. (1991). Proto-literacy, literacy, and the acquisition of phonological awareness. Learning and Individual Differences, 3(3), 243-255.
- Berko Gleason, J. (1993). The Development of Language. New York: MacMillan Publishing Company.
- Bishop, D. V. (1997). Uncommon Understanding: Development and Disorders of Language Comprehension in Children. Cambridge, MA: Psychology Press.
- Bloome, D. & Knott, G. (1985). Teacher student discourse. In D. F. Spinelli & D. N. Ripich (Eds.), School Discourse Problems (pp.53 - 78). San Diego, CA: College-Hill Press.
- Brown, F. G. (1983). Principles of Educational Psychology Testing, (3rd ed.). New York: Harcourt Brace Jovanich College Publishers.
- Brown, L., Sherbenou, R. J., & Dollar, S. J. (1982). TQNI: Test of Nonverbal Intelligence. Austin, TX: Services for Professional Educators.
- Butler, K. (1986). Language processing: Halfway up the down staircase. In G. Wallach & K. Butler (Eds.), Language Learning Disabilities in School-Age Children (pp. 60-81). Baltimore, MD: Williams & Wilkins.
- Carlisle, J. F. (1989). The use of the sentence verification technique in diagnostic assessment of listening and reading comprehension. Learning Disabilities Research, 5(1), 33-44.
- Carlisle, J. F. (1991a). Language comprehension and text structure. In J. F. Kavanagh (Ed.), The Language Continuum (pp. 115-146). Parkton, NJ: York Press.

- Carlisle, J. F. (1991b). Planning an assessment of listening and reading comprehension. Topics in Language Disorders, 12(1), 17-31.
- Carlisle, J. F., & Felbinger, L. (1991). Profiles of listening and reading. Journal of Educational Research, 84(6), 345-354.
- Carrow-Woolfolk, E. (1995). Oral and Written Language Scales: Manual. Circle Pines, MN: American Guidance Service.
- Catts, H. W. (1991). Facilitating phonological awareness: role of speech-language pathologists. Language, Speech, and Hearing Services in School, 22, 196-203.
- Chapman, R. S. (1978). Comprehension strategies in children. In J. F. Kavanagh & W. Strange, (Eds.), Speech and Language in Laboratory, School, and Clinic. Cambridge, MA: MIT Press.
- Cohen, J. (1988). Statistical Power Analysis. Hillsdale, NJ: Erlbaum.
- Corno, L. (1989). What it means to be literate about classrooms. In D. Bloome (Ed.), Classrooms and Literacy (pp.29-52). Norwood, NJ: Ablex Publishing Corporation.
- Dale, E., & Chall, J. S. (1948). A formula for predicting readability. Educational Research Bulletin, 27(11), 37-54.
- Danks, J. H. (1980). Comprehension in listening and reading: Same or different? In J. H. Danks & K. Pezdek (Eds.), Reading and Understanding. Newark: International Reading Association.
- Doiron, R. (1994). Using nonfiction in a read-aloud program: letting the facts speak for themselves. The Reading Teacher, 47, 616-624.
- Dunn, L. M., & Dunn, L. M. (1997). Examiner's Manual for the Peabody Picture Vocabulary Test (3rd ed.). Circle Pines, CA: American Guidance Service.
- Eby, J. W. (1997). Reflective Planning, Teaching, and Evaluation for the Elementary School. Upper Saddle River, NJ: Merrill.
- Freeman, J. (1992). Reading aloud; a few tricks of the trade. School Library Journal, 38(7), 26-29.
- Fry, E. (1990). A readability formula for short passages. Journal of Reading,

30(8), 594-597.

Hammil, D. D., Brown, V. L., Larsen, S. C., & Wiederholt, J. L. (1987). Test of Adolescent Language-2. Austin, TX: Pro-Ed.

Hanna, G., Schell, L. M., & Schreiner, R. (1977). Nelson Reading Skills Test: Teacher's Manual. Boston: Houghton Mifflin Company.

Hoffman, J. V., Roser, N. L. & Battle, J. (1993). Reading aloud in classrooms: from the modal toward the a "model". The Reading Teacher, 46(6), 496-503.

Hollingsworth, P. M., & Hover, K. H. (1991). Elementary Teaching Methods. Needham Heights, MA: Allyn & Bacon.

Holstein, J. (1995). Listening and Reading Comprehension Abilities of Undergraduate Students: Use of the Sentence Verification Technique. Unpublished master's thesis, The University of Western Ontario, London, ON.

Jarolimek, J., & Foster, C. D. (1997). Teaching and Learning in the Elementary School. New York: Maxwell MacMillan International.

Juel, C., Griffith, P. L., & Gough, P. B. (1986). Acquisition of literacy: a longitudinal study of children in first and second grade. Journal of Educational Psychology, 78(4), 243-255.

Kertoy, M. K., & Goetz, K. M. (1995). The Relationship between listening performance on the sentence verification technique and other measures of listening comprehension. Contemporary Educational Psychology, 20, 320-339.

Kletzien, S. B. (1992). Proficient and less proficient comprehender's strategy use for different top-level structures. Journal of Reading Behaviour, 24(2), 191-215.

Leal, D. J. (1992). The nature of talk about three types of text during peer group discussions. Journal of Reading Behaviour, 24(3), 313-338.

Louisell, R., & Descamps, J. (1992). Developing a Teaching Style. New York: Harper Collins.

Marchant, H. G., Royer, J. M., & Greene, B. A. (1988). Superior reliability and validity for a new form of the sentence verification technique for measuring comprehension. Educational and Psychological Measurement, 48, 827-834.

- Massaro, D. (1975). Understanding Language. New York: Academic Press.
- Mehan, H. (1979). Learning Lessons: Social Organization in the Classroom. Cambridge, MA: Harvard University Press.
- Montgomery, J., Scudder, R., & Moore, C. (1990). Language-impaired children's real-time comprehension of spoken language. Applied Psycholinguistics, 11, 273-290.
- Moss, B. (1995). Using children's nonfiction tradebooks as read-alouds. Language Arts, 72, 122-126.
- Nelson, N. W. (1993). Childhood Language Disorders in Context: Infancy through Adolescence. New York: MacMillan Publishing Company.
- Neville, M. (1988). Assessing and Teaching Language: Literacy and Oracy in the Schools. London: MacMillan Education Ltd.
- Ornstein, A. C. (1989). Strategies for Effective Teaching. Dubuque, IA: Wm C. Brown Communications, Inc.
- Oyler, C. (1996). Sharing authority: student initiations during teacher-lead read-alouds of information books. Teaching and Teacher Education, 12(2), 149-160.
- Palmer, J., McLeod, C. M., Hunt, E., & Davidson, J. (1985). Information processing correlates of reading. Journal of Memory and Language, 24, 59-88.
- Pappas, C. C., Kiefer, B. Z., & Levistik, L. S. (1995). An Integrated Language Perspective in the Elementary School. White Plains, NY: Longman.
- Pasch, M., Langer, Gardner, Starko, & Moody. (1995). Teaching as Decision Making: Successful Practices for the Elementary Teacher. White Plains, NY: Longman Publishers.
- Pearson, P. D., & Fielding, L. (1989). Listening Comprehension. Language Arts, 59, 617-629.
- Pedhauzer, E. J., & Schmelkin, L. P. (1991). Measurement, Design, and Analysis: An Integrated Approach. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.
- Richardson, J. S. (1994). Great read-alouds for prospective teachers and

secondary students. Journal of Reading, 38(2), 98-103.

Richardson, J. S., & Breen, M. (1996). A read-aloud for science. Journal of Adolescent and Adult Literacy, 39(6), 504-505.

Royer, J. M., Greene, B., & Sinatra, G. (1987, February). The sentence verification technique: A practical procedure for testing comprehension. Journal of Reading, 414-422.

Royer, J. M., & Hambleton, R. K. (1983). Normative study of 50 reading comprehension passages that use the sentence verification technique. Unpublished paper, University of Massachusetts.

Royer, J. M., Hastings, C., & Hook, C. (1979). A sentence verification technique for measuring reading comprehension. Journal of Speech and Hearing Disorders, 55(4), 101-117.

Royer, J. M., Kulhavy, R. W., Lee, S., & Peterson, S. E. (1986). The relationship between reading and listening comprehension. Educational and Psychological Research, 6(4), 299-314.

Royer, J. M., Lynch, D. J., Hambleton, R. K., & Bulgareli, C. (1984). Using the sentence verification technique to assess the comprehension of technical text as a function of subject matter expertise. American Educational Research Journal, 21(4), 839-869.

Royer, J. M., Marchant, H. G., Sinatra, G. M., & Lovejoy, D. A. (1990). The prediction of college performance from reading comprehension performance: evidence for general and specific prediction factors. American Educational Research Journal, 27(1), 158-179.

Royer, J., Sinatra, G., & Schumer, H. (1990). Patterns of individual differences in the development of listening and reading comprehension. Contemporary Educational Psychology, 15, 183-196.

Samuels, S. J. (1987). Factors that influence listening and reading comprehension. In R. Horowitz & S. J. Samuels (Eds.) Comprehending Oral and Written Language (pp.161-196). San Diego: Academic Press Inc.

Shapiro, H. R. (1992). Debatable issues underlying whole-language philosophy: A speech-language pathologists' perspective. Language, Speech and Hearing Services in Schools, 23, 308-311.

Sinclair, J. & Coulthard, R. (1975). Towards an Analysis of Discourse: The English used by Teachers and Pupils. Oxford: Oxford University Press.

Spinelli, D. F., & Ripich, D. N. (1985). School Discourse Problems. San Diego, CA: College-Hill Press.

Sticht, T. G., & James, J. H. (1984). Listening and reading. In P. D. Pearson (Ed.), Handbook of reading research (pp. 293-317). New York: Longman Press.

Swanson, H. L. (1987). Information processing theory and learning disabilities: a commentary and future perspective. Journal of Learning Disabilities, 20(3), 155-166.

Tattershall, S. & Craghead, N. (1985). A comparison of communication at home and school. In D. F. Spinelli & D. N. Ripich (Eds.), School Discourse Problems. San Diego, CA: College-Hill Press.

Temple, C., & Gillet, J. W. (1996). Language and Literacy: A Lively Approach. New York: Harper Collins College Publishers.

Terrell, B. Y. (1985). Learning the rules of the game: discourse skills in early childhood. In D. F. Spinelli, & D. N. Ripich (1985). School Discourse Problems (pp. 13 - 28). San Diego, CA: College-Hill Press.

Trelease, J. (1989). The New Read-Aloud Handbook. New York: Penguin Books.

Townsend, D. J., Carrithers, C. & Bever, T. G. (1987). Listening and reading processes in college and middle school-age readers. In R. Horowitz & S. J. Samuels (Eds.), Comprehending oral and written language (pp. 217-242). San Diego, CA: Academic Press, Inc.

Appendix A

Information Letter

Assessing Listening Comprehension in the Classroom: Comparing performance on sentence verification and classroom read-aloud tasks

We are conducting a research project that assesses the way students understand information when their teachers read aloud to them. We are contacting you as a parent of a seventh/eighth grader enrolled at your child's school.

The purpose of this study is to investigate the use of different listening comprehension tasks in assessing comprehension in the classroom. Students are asked to understand spoken, expository information everyday in the classroom, yet there are few good ways to measure comprehension. This study will determine if an easy to administer passage comprehension task predicts the comprehension of students when listening to science material read by the investigator.

Participation in the study will take two hours over three sessions. Three group sessions will be conducted in order to reduce the amount of time spent outside of the classroom.

In session 1, a hearing checklist will be completed to ensure that each participant has average hearing ability. Groups of students will also complete various cognitive tasks that require them to match items or complete designs or patterns. Next, the students will read or listen to four different passages. Following each passage, they will be asked to verify information in the passage. This session will take place in a quiet area outside the classroom and last fifty minutes.

During session 2, students will listen to a read-aloud activity as part of a classroom science lesson. A science story will be read to the class. Students participating in the study will complete a comprehension task immediately following the read-aloud activity. The types of questions asked will be similar to those commonly asked by the classroom teacher. After the comprehension task, all class members will discuss the read-aloud material. This session will last twenty-five minutes.

Session 3 involves completion of a reading and listening comprehension task. Students will read words and underline answers that have the same word meaning. They will then read or listen to several short passages and answer multiple choice questions on the material they have read or heard. This task will take forty-five minutes to complete outside the classroom.

Appendix A**Information Letter****Page 2**

There are no known risks involved in any of the testing procedures included in this study and all testing will be done by a trained examiner. Your child's name will not appear in any report of the findings; information about your child's performance will be destroyed immediately following the completion of the project. However, if you wish, you may obtain general information concerning your child's performance. Participation in the study is voluntary. You may refuse for your child to participate, or your child may also withdraw from the study at any time and this will in no way affect the services your child receives at school.

If you are interested in having your child participate in this study, please return the signed consent form to your child's classroom teacher. If you have any questions about the project, please call Dr. Kertoy at 679-2111, ext. 8955.

Thank you,

Marilyn K. Kertoy, PhD.; CCC-SLP
Research Advisor

Deirdre Gibbons, B.A. (Hons)
Graduate Student

Appendix B

Consent Form

Assessing Listening Comprehension in the Classroom: Comparing performance on sentence verification and classroom read-aloud tasks

I have read the Information Letter, have had the nature of the study explained to me and I agree to have my child participate. All questions have been answered to my satisfaction.

Parent's Signature

Date

Parent's name (please print)

Child's name and birth date

Child's school

Please return to: Your child's classroom teacher

Appendix C

Hearing Questionnaire

PARTICIPANT # _____

1. Do you have a history of chronic ear infections? YES _____ NO _____
2. Is there a history of hearing impairments in your family? YES _____ NO _____
3. At the present time, do you have any difficulties with your hearing?

If YES, please explain:

4. Have you experienced any moments of hearing loss or ringing in your ears (for example, after being exposed to loud noise, following a head injury, or while on medications, etc.)?

YES _____ NO _____

If YES, please explain:

***Please let the investigator know if, at any time during this study, you have difficulty hearing or understanding the recorded materials.**

Appendix D

Sample Sentence Verification Passage

VOLCANO

The fury of Mount St. Helens is not over because further eruptions will continue to rock the volcano for years. Because information is not yet available or accurate enough it cannot be used by experts to predict the volcano's future. Some experts suggest that Mount St. Helens will begin to repair itself. The first explosion of the volcano increased the size of the original crater and it ripped off a portion of the mountain's top. The volcano is expected to rebuild its cone since it will dump out numerous layers of volcanic ash and cinders. Because the volcano could seal itself off with a cone of lava another explosion could be delayed for several hundred years after the cone is rebuilt. However since the pressure of the solidified lava can become very intense another major eruption could be sparked. Lava however is only one of the hazards of an active volcano. When the eruption of Mount St. Helens created super-heated gas and ash they melted the snow on the mountain top. Rivers overflowed their banks because they swelled from the runoff of ash and melted snow. When thick volcanic mud poured downstream it snapped off trees. Then the broken trees smashed anything in their path as they flowed down the river.

Appendix E

Sample Answer Sheet for the Sentence Verification Task

Page 1

Volcano

Carefully read each of the 12 sentences on the following two pages. Is the **IDEA** of the sentence found in the **passage**? If it is, circle **YES**. If it is not, circle **NO**. Use as much time as you need to circle the answers.

- | | | | |
|-----|----|----|--|
| YES | NO | 1. | From volcanos scientists can learn how molten material is changed into solid rock. |
| YES | NO | 2. | Because information is available and very accurate it can be used by experts to predict the volcano's future. |
| YES | NO | 3. | The wrath of Mount St. Helens will continue because additional eruptions will keep on stirring up the volcano for some time. |
| YES | NO | 4. | The volcano is expected to rebuild its cone since it will dump out a single layer of volcanic ash and cinders. |
| YES | NO | 5. | The first explosion of the volcano reduced the size of the original crater and it ripped off a portion of the mountain's top. |
| YES | NO | 6. | Because the volcano could seal itself off with a cone of lava another explosion could be delayed for severalhundred years after the cone is rebuilt. |

PLEASE GO ON TO THE NEXT PAGE

Appendix E

Sample Answer Sheet for the Sentence Verification Task

Page 2

VOLCANO

CODE: _____

- YES NO 7. Volcanos create very fertile soil because they bring many valuable minerals to the surface.
- YES NO 8. When fire is started by hot fragments from the volcanic eruption it can cause buildings and forests to burn.
- YES NO 9. Since the build up of the hardened lava can become extremely powerful another significant eruption could be ignited.
- YES NO 10. Rivers overflowed their banks because they swelled from the runoff of ash and melted snow.
- YES NO 11. Lava however is only one of the hazards of an active volcano.
- YES NO 12. When dense volcanic sludge gushed downstream it ripped off trees.

Appendix F

Guidelines for Preparing a Read-aloud

Various authors have offered guidelines for the selection, preparation, and presentation of read-alouds. Selection of a text for any read-aloud should involve attention to genre, language, and topic (Oyler, 1996). Moss (1996, p.123) presents the "five A's" to follow when selecting nonfiction (a) authority of the author, (b) accuracy of text content, (c) appropriateness of the book for children, (d) literary artistry (ie. use of literary devices), and (e) appearance of the book.

Investigators appear to concur with respect to suggestions for adults reading aloud (Freeman, 1992; Moss, 1995; Temple & Gillet, 1996). Temple & Gillet (1996) present a list of suggestions for reading aloud in their book Language and Literacy, A Lively Approach: a) read the book to yourself first, b) have children sit in front of you in quiet area, c) preview the book and practice reading slowly, using an animated voice, d) highlight illustrations, e) ask children to predict events, f) then ask them if their predictions were correct, g) re-read the book, h) follow up (with a discussion), i) let the children have access to the book afterwards.

Appendix G

Material Sources for the "Space" Read-Aloud Passage

Clugston, M. (1993). Twice Struck. In P. Drapeau, J. Terpening, & A. White (Eds.), Discoveries in Non-Fiction (pp. 101-103). Toronto: Oxford University Press.

Harrar, G., & Harrar, L. (1989). Sings of the Apes, Songs of the Whales. New York: Simon & Schuster.

Ride, S., & O'Shaughnessy, S. (1994). The Third Planet: Exploring the Earth from Space. New York: Crown Publishers, Inc.

Wolk, L. (1985). Satellites: World Informants. In J. McInners, M. Garry, E. Hearn, & M. Hughes (Eds.), Sky Striders. Toronto: Nelson Canada.

Appendix H

Bloom's Taxonomy

Lower Level

Knowledge: The level at which one is asked to remember information through recognition or recall. Students may be asked to remember facts, key terms, and/or details.

Comprehension: Involves understanding a spoken or written message. At this level, students would be asked to describe, summarize, and paraphrase lesson material.

Application: This level requires the ability to use their understanding of material in other situations.

A student may use their own life experiences and apply them to a novel situation.

Analysis: Involves discovering relationships between components of a lesson. Terms used at this level include: compare and contrast, describe patterns, cause-effect.

Synthesis: Requires one to assemble materials in such a way as to create something greater. Students are asked to use their own ideas to expand on the lesson.

Evaluation: The highest level of questioning demands the ability to make value judgments. Students may be asked to present their opinions on a specific issue.

Higher Level

Appendix I

Mean Percent Correct on Pilot of Read-aloud Questions According to Bloom'sLevels

Question Type	Dolphin Passage	Lightning Passage	Space Passage
knowledge	100	100	100
knowledge	60	40	100
comprehension	80	20	40
comprehension	100	60	100
comprehension	80	100	100
application	100	60	100
application	80	60	60
application	40	100	80
analysis	100	100	80
analysis	60	0	80
analysis	100	100	60
synthesis	100	80	80
synthesis	60	80	20
evaluation	100	100	80
evaluation	100	100	80
MEAN	83.9	73.3	77.3

n = 5

Appendix J

Read-aloud Comprehension Task

Page 1

Read each question carefully. Answer the questions by using the information you just heard in the lesson presented to you. Choose the BEST answer by circling the corresponding letter.

1. Which satellite was the first to orbit the Earth?
 - a. NASA
 - b. Voyager I
 - c. Sputnik Zemli

2. What do you think would be the most important contribution of space exploration?
 - a. The improvements in technology as a result of information from space research.
 - b. The competition between countries to enter space.
 - c. The ability to put people into space.

3. According to what you heard in the story, what does the term "satellite" mean?
 - a. An artificial device that orbits the planet Earth.
 - b. An object that is launched into space.
 - c. Any object that circles a planet.

4. Another use for "landers" could be:
 - a. to explore the inside of a dormant volcano on Earth.
 - b. to explore the bottom of oceans.
 - c. to explore stars in other galaxies.

5. The advantages of unmanned spacecraft versus piloted spacecraft are:
 - a. Unmanned spacecraft are less expensive and do not risk human life.
 - b. Unmanned spacecraft are always smaller and faster than piloted crafts.
 - c. Unmanned spacecraft are less costly and lighter than piloted crafts.

Appendix J

Read-aloud Comprehension Task

Page 2

6. How might scientists improve on the use of satellites in the future?
 - a. Have satellites launch themselves instead of having to use rockets.
 - b. Use satellites to predict weather conditions on Earth.
 - c. Have satellites orbit around the Earth to cover a lot of the planet.

7. If you were orbiting Venus, why wouldn't you want to land on the planet?
 - a. The temperature on Venus is too cold for a human.
 - b. The surface of Venus is too hot for you to land.
 - c. The planet Venus is too sandy to land on without sinking.

8. Earth-observing satellites are like the Space Shuttle because:
 - a. They both have humans inside piloting them.
 - b. They both orbit a few hundred miles above the Earth's surface.
 - c. They both are used to track information from other planets.

9. What is the difference between a satellite and a space probe?
 - a. A satellite orbits the Earth but a probe travels to other planets.
 - b. Only a space probe sends information back to Earth.
 - c. Only satellites can carry people.

10. Why don't satellites crash into the Earth?
 - a. A satellite is pulled away from the Earth by gravity so that it can spin around the Earth.
 - b. A satellite is equipped with monitors that adjust the orbit of the satellite to avoid hitting the Earth.
 - c. A satellite travels so fast towards the Earth's horizon that it always misses hitting the Earth and instead falls around the planet.

Appendix J**Read-aloud Comprehension Task****Page 3**

11. If there was another planet like Earth in a far off galaxy, what might the planet's atmosphere look like from space?
- The atmosphere would be a bright ring around the planet.
 - The atmosphere would be a blue cover over the planet.
 - The atmosphere would be a thin, blue band above the horizon.
12. An example of the impact of communication satellites might be:
- These satellites can communicate with each other over long distances.
 - Communication satellites can send messages to far away planets.
 - You can call a friend in Australia and it sounds like they are just down the street.
13. What kinds of information do space probes send us?
- Probes send samples of materials from other planets.
 - Probes send photographs and readings of other planets.
 - Probes send information about conditions on Earth.
14. In what year did the space age begin?
- 1940
 - 1957
 - 1962
15. The next goal of space exploration should be:
- to find a black hole.
 - to build colonies in space.
 - to land on the moon.

Appendix K

Familiarity Questionnaire

1. How familiar were you with the information just presented? Circle one:

1-----2-----3-----4-----5

Not at all Only a bit Familiar Very Extremely
familiar familiar familiar familiar

2. How interested are you in the topic of space? Circle one:

1-----2-----3-----4-----5

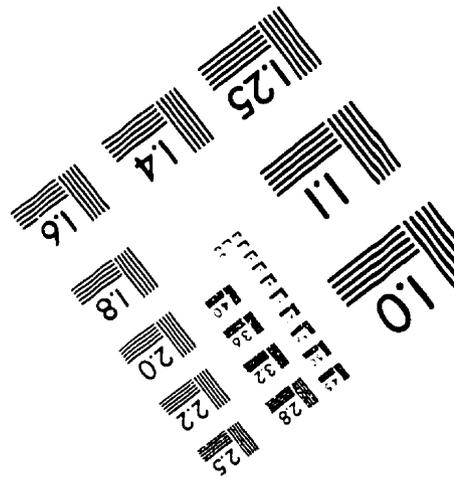
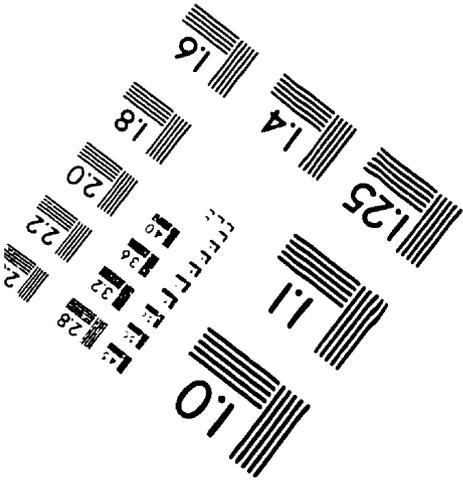
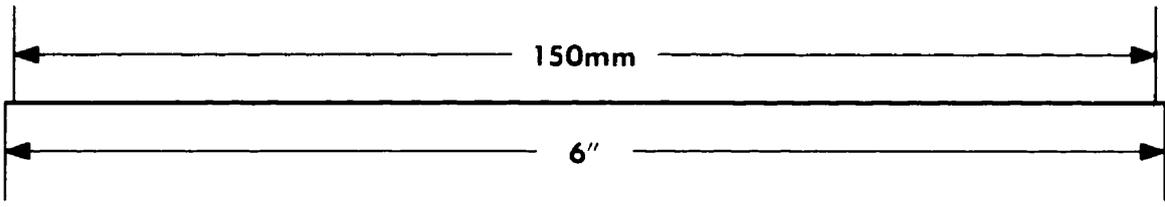
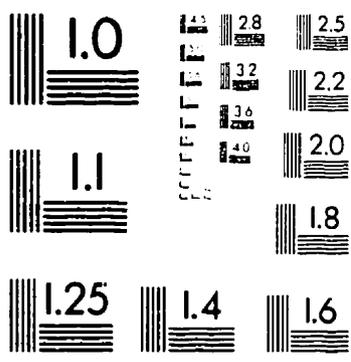
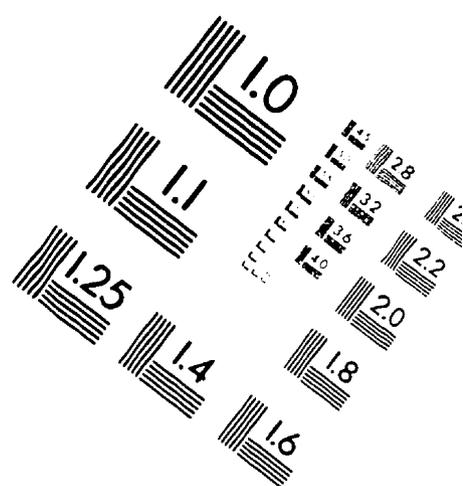
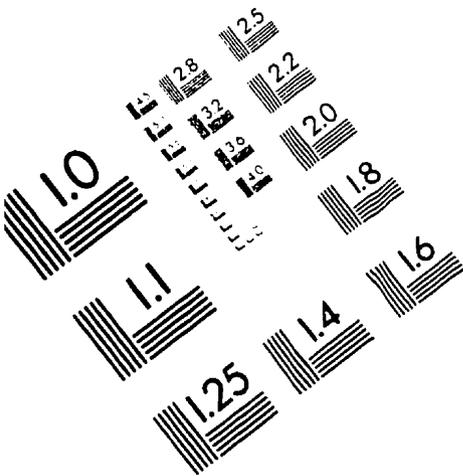
Not at all Only a bit Interested Very Extremely
interested interested interested interested

3. Have you ever had a lesson on the topic of space or satellites? YES NO

4. How long ago was this lesson?

- a. More than 2 years ago.
- b. Between 1 and 2 years ago.
- c. Less than 1 year ago.

TEST TARGET (QA-3)



APPLIED IMAGE, Inc
1653 East Main Street
Rochester, NY 14609 USA
Phone: 716/482-0300
Fax: 716/288-5989

© 1993, Applied Image, Inc. All Rights Reserved