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Determining the Reliability of an Early Expository Comprehension Assessment

Tammie A. Harding

A thesis submitted to the faculty of  
Brigham Young University  
in partial fulfillment of the requirements for the degree of  
Master of Arts

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## ABSTRACT

### Determining the Reliability of an Early Expository Comprehension Assessment

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This study investigated the reliability of the revised Early Expository Comprehension Assessment (EECA), a measure that looked at preschoolers' comprehension of expository text. Thirty-seven preschool children between the ages of four and five were administered two comparable versions of the measure by two examiners. Scoring procedures were created and the protocols were scored and compared for reliability. The data was analyzed using a mixed models Analysis of Variance for repeated measures and a maximum likelihood estimate of variance components. Results from the analysis showed that version and order had no significant effect on three of the response task scores (*Purpose of the Text*, *Problem/Solution Retelling*, and *Problem/Solution Mapping*), indicating these tasks were reliable. Results showed that variation due to controlled administration variables (version and order) was larger as compared to variability among the subjects in two of the response task scores (*Graphics* and *Problem/Solution Questions*), indicating these tasks to be unreliable.

Keywords: comprehension assessment, expository text, preschool

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## **Chapter 1**

### **Introduction**

For many years literacy instruction in preschool has focused on narrative texts. Recently, however, researchers and educators have become more aware of the importance of instruction in expository texts for young children (Culatta, Hall-Kenyon, & Black, 2010; Duke, 2000; Yopp & Yopp, 2012). With the advent of the Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010), which requires the use of at least 50% expository texts in science, social studies, and the arts, even greater focus has been placed on the use of expository texts in early childhood classrooms (Greene, 2012; Neuman & Roskos, 2012). As early as kindergarten students are now expected to listen to expository text and then, with prompting and support, ask and answer questions about specific details in the text (Neuman & Roskos, 2012). This shift in focus necessitates that preschool teachers also begin to place appropriate emphasis on expository texts in order to prepare young children for the literacy demands they will now encounter in kindergarten and throughout the rest of their schooling.

#### **Statement of the Problem**

Assessment is needed for preschool teachers to evaluate the efficacy of literacy instruction, support children who are at risk for academic difficulties, and monitor individual growth in early expository comprehension. In addition, since comprehension of expository text is essential to student learning, an assessment that addresses this skill can drive instruction and provide early identification of comprehension problems. Identification of comprehension difficulties can then lead to interventions that will help children attain success (Reese & Cox, 1999). Preschool teachers also need to know what expository comprehension skills (e.g.,

predicting, retelling, questioning, etc.) students possess in order to tailor instruction. For example, in the *Problem/Solution Retelling* task, the student is read an expository text passage and then retells what they remember from the text. The teacher is then able to identify the student's understanding of the content by what information the student recalls from the text. Children reveal their knowledge of the organizational patterns in the text by their use of key vocabulary related to a particular text structure. Text structures within expository text are presented in varying forms; the primary structures are description, sequence, compare/contrast, problem/solution, and cause and effect (Meyer & Freedle, 1984). Additionally, evidence of students' awareness of the relationships among the ideas in the text, either implicit or explicit, is also revealed. As these skills are identified, teachers can provide needed instruction to help build students' content knowledge and/or awareness of text structures.

The availability of an early expository assessment tool is currently extremely limited. Most available measures are designed for elementary and older students. For example, The Concepts of Comprehension Assessment (Billman et al., 2008) was created to address the expository comprehension needs of first and second grade students by measuring factors that contribute to reading comprehension. This assessment was designed for use by teachers, reading specialists, and paraprofessionals to inform instruction. Although this assessment addresses the expository comprehension needs of early primary students, there still is the need for a preschool measure. Identifying expository text knowledge and comprehension of preschoolers will help answer research questions, provide effective instruction, and identify children who experience difficulty with these texts.

In 2005, the Early Expository Comprehension Assessment (EECA) was published by Hall, Markham, and Culatta. This assessment was designed to assess preschool children's

comprehension of well-structured compare/contrast expository texts. Although the assessment was shown to be reliable after testing it on a small number of university lab school students, the authors noted that the assessment was not fully developed and did not fully complete the need for an expository assessment for young children. To date, no other expository text assessment for young children (pre-k) has been developed.

### **Statement of the Purpose**

The purpose of this study is to further develop the EECA by expanding the tasks and to retest its reliability using a different text structure (problem/solution). The additional tasks address a wider variety of expository comprehension skills (i.e., identifying purpose of the text, reading graphics, and assessing the tasks of retelling, mapping, and questions with the additional problem/solution structure).

### **Research Question**

Is the revised and expanded version of the EECA a reliable measure of preschool children's expository skills?

## Chapter 2

### Review of Literature

In the past there has been an emphasis on narrative text as a means for children to learn to read. Due to the importance placed on narrative text, children in the elementary grades have had little experience in reading expository materials (Pappas, 1991). For some time researchers have been calling for more expository materials for younger children (Duke, 2000; Hall, Sabey, & McClellan, 2005; Moss, 1997; Pappas, 1991). Although there seems to be more expository texts available, there still seems to be limited exposure in the early grades. In addition, with the advent of the Common Core State Standards (CCSS) (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) a greater push for expository text in early grades is visible. The adoption of these standards has created a greater shared vision on a national level - a drive toward increased content knowledge for all students (Neuman & Wright, 2013).

One of the more pronounced changes in the new CCSS standards is the shift in elementary curriculum materials to reflect a more equitable mix (50/50) of literary and expository texts (Greene, 2012; Neuman & Roskos, 2012). Similarly, as children move through their elementary school years, expository texts play an ever-increasing role in instruction, particularly in the content areas such as science, math, and social studies (Alvermann & Moore, 1991). Therefore children's ability to navigate and comprehend expository texts becomes increasingly important to their academic success (Duke & Pearson, 2002). Additionally, several researchers have found that early exposure to and/or instruction in using expository texts can increase comprehension and recall of important text information in young children (Duke & Kays, 1998; Kraemer, McCabe, & Sinatra, 2012; Moss, 1997; Pappas, 1993). Without this early

exposure, the skills required in understanding expository texts prove to be a challenge for many developing readers in the third and fourth grades (Duke & Kays, 1998).

Early exposure to expository materials is one aspect that contributes to aiding children in the comprehension of expository text. Moreover, if teachers are to guide students in understanding expository text they need to be familiar with the unique comprehension demands of this text.

### **Comprehension Demands of Expository Text**

The primary purpose of expository text is to teach, explain, and inform with factual information about the natural and social world. Expository text can help readers find answers to personally relevant questions (Duke, 2007; Guillaume, 1998); therefore, readers often come to expository texts in search of particular information or to answer specific questions. As a result, expository texts are accessed in varying ways depending on the needs and intent of the reader (Duke, Caughlan, Juzwik, & Martin, 2012). As preschool children begin to encounter expository texts, teachers should consider the comprehension demands associated with this type of text. These demands include identifying the purpose of the text, connecting pictures to text, identifying varied structural demands, and managing content and vocabulary demands. In the following sections each of these demands will be discussed in more depth.

**Identifying the purpose of the text.** The primary purpose of expository text is to teach, explain, and inform (Guillaume, 1998). Expository text explains and provides detailed and explicit information about a specific topic or topics. Authors who write expository texts research the topic to gain information that informs others. Reading expository texts is authentic and purposeful when students look for answers to real life questions or simply want to know about something (Correia, 2011). Educators can help students identify texts that provide information versus texts that entertain as students seek to learn about the world around them. As educators

engage students in learning from expository text they help children connect to these texts by showing them that they serve a purpose in their everyday lives (Richgels, 2002).

**Connecting pictures to text.** Graphics often play an important role in the comprehension of expository text by helping children make connections, and, if understood, create meaning with written text. Expository texts frequently contain multiple graphics (Norman, 2010). Graphics are usually realistic (e.g., a life-drawing of an insect) or are photographs. They can also include diagrams, tables, charts, maps, and bar-, circle-, and picto-graphs. As students navigate through expository text they must decide which graphics they should attend to and what information they should gather from them.

Graphics have different functions within expository texts (Norman, 2010). A graphic that functions as a *representation* depicts the information that is presented in the text (e.g., a photograph of a frog eating a cricket accompanying the text, “Pet frogs eat crickets”). The function of an *interpretation* graphic explains abstract ideas by depicting them in a more concrete manner (e.g., an illustration of the circulatory system as plumbing). An *extension* graphic provides extra details not directly stated in the text (e.g., a labeled diagram of a spider to accompany the text, “A spider is different from an insect.”). A graphic that provides *organization* supplies a framework for classifying information from the written text (e.g., the lifecycle of a butterfly).

One study examined the comprehension processes prompted by graphics as second graders read expository text (Norman, 2010). Researchers found when students attend to graphics several comprehension processes were observed. Listed here are those processes that apply to children who are not yet able to read text: a *literal description* occurs when a student explicitly describes what is depicted in the graphics, often an action or explanation of the graphic

accompanied the description; a *label* happens when a student names the items in the graphic without discussing any actions or elaborating beyond the names of the objects; *confirm-disconfirm text* happens when a student uses the graphic to substantiate or unsubstantiate what was stated in the text; the *use of running text* occurs when a student refers back to the text to help them understand the graphic; and an *inferential description* may be made by combining information in the text and the graphic.

Many educators and researchers agree that expository graphics can improve learning by requiring deeper processing (Hannus & Hyona, 1999) and may help to clarify confusing material (Levin, 1981). It is important that educators understand young children's comprehension of graphics as they engage in expository text in order that educators aid them in the comprehension of this text.

**Identifying varied structural demands.** There are multiple text structures in expository text. Narrative text tends to follow the structural pattern of story grammar while expository text follows multiple structural patterns (Duke, Bennett-Armistead, & Roberts, 2003; Hall, Sabey, & McClellan, 2005; Pappas, 1993). The structure or organization of the text is the arrangement of ideas and the relationships among the ideas (Armbruster, 2004). Not only can these structures be unfamiliar to young children there are often one or more structures combined within text. Forms that are primarily used include: compare/contrast, problem/solution, sequence, cause/effect, and description (Blachowicz, 2013; Hall, et al., 2005; Reutzel, Read, & Fawson, 2009; Westby, Culatta, & Hall-Kenyon, 2014). These text structures are found within the content areas (Butler, Bailey, Stevens, Huang, & Lord, 2004). Unlike narrative texts, which operate basically under a single structural framework, expository texts often contain a combination of two or more structures in a given book. This can create texts that do not have clearly recognizable text



structures either because the author may have mixed purposes or the text may be doing a poor job of telling the reader its purpose (Culatta, Horn, & Merrit, 1998). In order for students to be successful in comprehending expository texts it is important that they understand the elements of these structures (Hall et al., 2005).

In compare/contrast structures information is presented by describing how two or more events, concepts, theories, or things are like and/or different. Words that signal a compare/contrast structure are words such as *alike, same, different, similar, although, however, contrasted with, compared to, yet, still, and instead of*. Sentences could be used such as, “Frogs and rabbits are *different* kinds of animals. They live in *different* kinds of places and eat *different* kinds of food.” The key words give clues to the type of structure used within the text.

Problem/solution structures deal with the presentation of a problem and then provides one or more solutions to that problem. Authors use this technique to identify the problem, give possible solutions with possible results and finally, the solution that was chosen. Words and phrases that signal a problem/solution structure are such words as *the problem is, the dilemma is, if/then, because, question/answer, and the puzzle is solved*.

In texts that involve a sequence or procedural structure, the goal of the text is often stated in the title or goal statement (such as “How to Make a Story Quilt”). Included is a list of materials needed in order of use and the steps are organized in an explanation of successive steps. Key words that are found in sequence or procedural texts include some of the following: *first, second, third, later, next, before, then, finally after, when, later, since, now, and previously*.

Cause and effect structures present ideas, events in time, or facts as causes and the resulting effect(s) or facts that happen as a result of an event. Keys words that signal cause and

effect include words or phrases such as *if/then, reasons why, as a result, since, therefore, because, consequently, since, so that, hence, due to, thus, and this led to*.

In the expository text structure known as description, the author describes a topic by listing characteristic, features, attributes, and examples. Key words or phrases that signal a description text structure include *for example, characteristics, for instance, such as, is like, including, and to illustrate*.

**Managing content and vocabulary demands.** The Common Core State Standards expect that young children will learn the big ideas of particular science and social studies concepts (Neuman & Wright, 2013) from expository texts. Each content area has concepts and vocabulary unique to their domain. These texts contain more unfamiliar concepts and vocabulary due to their primary teaching purpose, fewer ideas related to the here and now, and less information directly related to personal experience and background knowledge. Not only do these texts contain more unfamiliar concepts, they tend to contain a heavy concept load that creates increased challenges for comprehension of these texts (Palmer & Stewart, 2003).

Comprehension of expository texts is much more demanding than simply understanding the vocabulary and associations between single words. There are words embedded within each content area that are essential to the understanding of that content area. For example, when learning about insects, students need to understand the vocabulary of common insect body parts (e.g., head, thorax, and abdomen) as they identify bugs that are insects or not insects. These words have less general applicability but are often central to the concepts and ideas in content area instruction. Content words are often related to the structure of the text. In a text that addresses problems and solutions readers would find such words as problem, solution, question, and answer. When comparing words used would be same, different, and alike. In this way

content and structure are closely connected. When children understand these structure related words it provides them access to the content and facilitates understanding.

### **Existing Comprehension Assessment Measures**

Assessments designed solely to examine young children's comprehension of expository text structures have been nonexistent; expository text skills are usually structured in conjunction with other reading or language skills at this age. Some tests measure overall comprehension of passages while others evaluate concepts and key words related to specific structures. Measures that examine preschoolers' knowledge and comprehension of specific structures, along with signals, are lacking. Most available assessments are not designed for preschoolers, but for elementary and older students (Hall, Markham, & Culatta, 2005).

For older elementary students, expository text comprehension is often measured through reading passages within larger reading assessments. The K12 Placement Language Arts/English Tests (K12 Placement Tests, 2005), for example, contain both narrative and expository passages for each grade level followed by multiple-choice questions. The student reads a passage and then answers the up to eight questions. This assessment is usually given to students in the third through sixth grades. It should be noted that this assessment measures the comprehension of expository text in the same way as narrative text and does not attend to the differences in the types of expository text or to its purpose.

Other aspects of expository text comprehension in older students are measured within subtests of formal assessments. Most often, these subtests examine key concepts through general knowledge questions and fail to relate them to comprehension of expository text passages. For example, the Language Processing Test-Revised (LPT-R; Richard & Hanner, 1995) contains a subtest of questions about similarities and differences. Tests like this one attempt to assess concepts related to expository text comprehension without providing the text.

While assessments of expository text comprehension skills in older students are available through formal tests (e.g., Gates-MacGinitie Reading Tests, Iowa Tests of Basic Skills, National Assessment for Educational Progress, and Criterion Referenced Tests based on state curriculum standards) and subtests, in the past informal reading inventories of general expository passages were the only assessments available for students in the primary grades. These inventories are not norm-referenced or standardized, generally use graded word lists and reading passages to assess oral reading, silent reading, and listening comprehension, and often do not include expository passages. One well known reading inventory, the Qualitative Reading Inventory-3 (QRI-3; Leslie & Caldwell, 2001), will be described here as an example since it contains narrative and expository passages for pre-primer through junior high levels. The QRI-3 is given by reading or having the student read a narrative or an expository passage followed by a retelling response task, explicit information questions, and implicit information questions. The retelling is scored by totaling the number of idea units in the student's response. The questions are scored as right or wrong with no partial credit. Reading inventories like the QRI-3 are useful in providing descriptive information on a student's overall comprehension of expository passages through retelling and questions. They do not, however, consider the comprehension of specific expository text structures or structural devices.

Recently more attention has been given to informational text assessments for younger children. One such assessment of reading comprehension is designed for first and second grade students: the Concepts of Comprehension Assessment (Billman et al., 2008). This assessment is designed to measure four contributors to reading comprehension: comprehension strategy use, vocabulary strategy use and knowledge, knowledge of informational text features, and comprehension of graphics in the context of text. Given three times a year the Concepts of

Comprehension Assessment is intended to measure student processes. It is designed for use by classroom teachers, reading specialists, and paraprofessionals to inform instruction, and by researchers to evaluate interventions or examine reading comprehension development. One particular task aimed at assessing a child's ability to comprehend expository text has the teacher read aloud from an expository text. Each page contains questions that ask the child about what is going on and what may be learned from the text. For example, on one page a child may read a sentence and then be asked to point to the picture that best matches what was just read, highlighting picture to text connections. On another page a child may be asked to recall what was learned from that page assessing a child's ability to comprehend expository text. Student answers are scored on a three part scale: inaccurate or no answer given, beginning understanding demonstrated, and correct answer and/or specific examples or details are given. This assessment makes possible the measuring of expository comprehension skills in the beginning primary grades yet it is not designed for kindergarten or prekindergarten students.

The EECA (Hall et al., 2005) was designed to measure the comprehension of expository text in preschool children. The EECA consists of a compare/contrast passage, manipulatives to represent the information given in the paragraph, and three response tasks (Retelling, Mapping, and Comparing). The compare/contrast structure was used because it has few narrative characteristics (i.e., no temporal or casual sequences) and can be represented clearly in a graphic organizer. Two versions of the assessment were given and participants did not score significantly higher on one version than on the other and did not perform significantly better on the second administration of the EECA than on the first. The results of this initial study suggest that the EECA is a reliable tool.

Although the results of the first administration of the EECA proved it to be a reliable tool it was decided by the author, Dr. Kendra Hall-Kenyon, and Dr. Barbara Culatta that a few changes should be made in order to enhance the assessment. First, the inclusion of an additional text structure (problem/solution) would help determine if the assessment is reliable with more than one structure. Preschool teachers need an assessment that can examine student's competencies with a variety of text structures in order to appropriately adjust their instruction and provide children with critical expository text skills. Second, the published version of the EECA does not attend to other elements of expository text comprehension (e.g., text purpose, use of pictures). These items would permit students to identify the purpose of expository and narrative text and identify text and graphics connections within expository texts, both of which are expository text skills included in the Common Core (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). As such, there is a need to expand and retest the EECA in order to increase its usefulness. Third, in addition to expanding the assessment, there remains the need to test the assessment using a more diverse population. The initial study was conducted in two classrooms in a university lab setting where only a few of the students came from diverse backgrounds. Additional reliability data from more diverse settings would help determine the effectiveness of the EECA as a preschool measure.

### **Conclusion**

Comprehension of expository texts is fundamental to learning and academic success. Exposure to expository texts within the preschool years is limited yet research has shown that young children are capable of learning from these texts. Reliable assessments for expository text knowledge and comprehension in preschoolers will help answer research questions, provide effective instruction, and identify children who experience difficulty with these texts (Hall et al., 2005; Skarakis-Doyle, Dempsey, & Lee, 2008). The purpose of this study is to examine the

EECA with a different text structure (problem/solution), add additional comprehension tasks, and retest the reliability of the assessment.

## **Chapter 3**

### **Method**

#### **Participants**

Thirty-seven preschool students between the ages of 4;6 and 5;5 participated in this study (mean chronological age of: 5;1). The students were drawn from four Title 1 Preschool classrooms (two morning and two afternoon sessions) within a large suburban district in the western United States. Students were chosen for the Title 1 Preschool program based on academic need. Thirty-nine students returned signed permission forms to participate in the study. Approximately 16 out of the 39 students were considered English Language Learners. However, the repeated reading assessment given at the middle of the year suggested that 14 of the 16 students had sufficient English language abilities to participate in the assessment. The two students who did not have sufficient English language abilities, as determined by a repeated reading oral assessment, were not included in this study.

#### **The EECA-Revised Measure and Subtests**

The EECA measure was first developed in 2005 to evaluate preschool children's comprehension of expository texts (Hall, Markham, & Culatta, 2005). To address some of the suggested changes in the tool based on the initial testing of the EECA and to expand the tasks to address some of the Common Core Standards, the author decided to revise and retest reliability for the EECA for this study. The EECA-Revised or the EECA-R contained two comparable versions (Version A and Version B) (see Appendix A and B). The two versions were similar in all aspects: tasks, questions, and text difficulty. Age-appropriate content was chosen for each of the versions of the assessment, however, the author was also careful to select content that was not too common so that children had to rely on the text and not on their prior knowledge alone.



Both versions of the EECA-R contained the same five tasks: *Identifying the Purpose of the Text*, *Graphics*, *Problem/Solution Retelling*, *Problem/Solution Mapping*, and *Problem/Solution Questions*. Each task and the accompanying materials are described in detail below.

**Purpose of the Text.** The *Purpose of the Text* task was designed to permit students to identify the purpose of the text. Students were asked to choose between two texts; one that was a narrative/fictional story and one that was an expository text. In each version, the covers of two, different, but equivalent narrative and expository books were presented to students. In Version A the narrative story was *Giraffes Can't Dance* (Andreae, 2001) and the expository text was *Giraffes* (Riggs, 2012). In Version B the narrative story was *Goldilocks and the Three Bears* (Buehner, 2009) and the expository text was *Bears: Polar Bears, Black Bears, and Grizzly Bears*, (Hodge, 1996). The students were asked first to identify the book that would tell them a pretend, make-believe story about animals (e.g., “What book should I choose if I want to read a pretend, make-believe story?”). They were then asked to explain their response (e.g., “Why?”). Next the students were asked to identify the book they would read to find out about a real animal- where they live, what they eat, and what they look like (e.g., “What book should I read to find out about where real giraffes live and what they eat?”) and then again to explain their response (e.g., “Why?”). Questions were repeated if no response was given. If students did not respond after the question was repeated, the administrator moved on to the next question.

**Graphics.** The *Graphics* task contained two subcomponents, *Picture to Text* and *Labeling*, that were designed to permit students to identify text and graphics connections in two ways: by connecting a picture to text and by providing verbal labels to pictures.

**Picture-to-Text.** In this task, the administrator read a short passage on a page in the expository text (e.g., Giraffes or Bears). The students were asked to find a picture on the page

that matched or went with what was just read. This task was repeated by reading another passage from a different page and the students were asked to again point to the picture that matched the text. The administrator recorded whether or not the child pointed to the correct picture.

**Labeling.** The *Labeling* task asked students to identify what the labels were pointing to in a picture. The administrator showed the students a picture that had words connected to lines that were pointing to different body parts of an animal (e.g., horn of a giraffe or claws of a bear). The administrator marked the correct response(s) on the protocol sheet and additional notes were made of any incorrect responses.

**Problem/Solution Retelling.** The *Problem/Solution Retelling* task involved the retelling of a problem/solution passage. In this task, the administrator read a short,  $\frac{3}{4}$  page expository passage to the students. Version A contained 200 words with a readability level of below 1<sup>st</sup> grade and Version B contained 193 words with a readability level of below 1<sup>st</sup> grade. Each passage began with an introductory paragraph that presented the problem. In Version A, Mary had a problem with a sick dog and she tried to fix the problem by giving the dog water. When the dog wouldn't drink the water and was still sick, Mary called the animal doctor and the doctor gave her medicine. This fixed Mary's problem. In Version B, Matt had a problem with a bird that flew into his house and he tried to fix the problem by catching the bird in a box. When the bird flew away, Matt and his brother got a blanket and guided the bird out of the house. This solved Matt's problem. As each passage was read, visual representations were used to illustrate the problems (e.g., a picture of a dog with a red X over a bowl of water to visually demonstrate that the dog would not drink the water; a picture of the bird flying over Matt's head and into the house) and to illustrate the solutions (e.g., a picture of Mary giving her dog some medicine; a

small box). After the oral presentation of the passage the visual representations were placed out of sight and a puppet was introduced to the student. The puppet asked the students what happened in the story (e.g., “Can you tell me what happened to Matt?”). No visual or verbal support was provided during the retelling and no attention was drawn to the structure of the passage. If the students failed to respond to the puppet’s invitation to retell the information, a verbal prompt was given stating a fact learned in the passage (e.g., “Mary came home from work one day and found her dog sick on the floor.”). As students were retelling, the administrator used one additional prompt if needed (e.g., “Great. Is there anything else that you can remember about \_\_\_\_\_?”) to elicit more information. The administrator recorded the student’s responses, as close to verbatim as possible. Audio recordings were used to help fill in any missing or incomplete information.

**Problem/Solution Mapping.** Following the retelling, the students were reintroduced to the manipulatives used in the retelling task. The administrator asked students to help complete a graphic organizer using the manipulatives. The graphic organizer consisted of two columns in a t-chart labeled *problem* on one side and *solution* on the other. The student was asked to identify the problems and solutions from the text (e.g. “What was Mary’s problem?” and “How did she solve that problem?”). The t-chart was filled out by identifying the initial problem with a proposed solution. This led to an additional problem and the final solution. The administrator helped the student find the appropriate place to put the visual representations within the graphic organizer to illustrate the relationships among the ideas.

**Problem/Solution Questions.** When the graphic organizer was completed the examiner asked students two summary questions (e.g. “What was \_\_\_\_\_ [the character’s] problem?” and “How did \_\_\_\_\_ fix the problem?”). First students answered the first question and their

response was recorded. Then students were asked the second question and their response was recorded.

### **Design**

A test-retest design was used for this study. In the test-retest design, reliability was measured by administering a test twice at two different points in time. This type of reliability assumed that there was no change in the quality or construct being measured. In most cases, reliability will be higher when little time has passed between tests (Hausknecht, Halpert, DiPaolo, & Moriarty Gerrard, 2007). Two versions of the instrument were administered to each student within one week of each other. Content in both Version A and Version B were kept as similar as possible in order to create comparable assessments.

### **Procedures**

**Pilot test.** A pilot test was administered to four children in order to determine if refinements needed to be made in any of the tasks. Two examiners administered the assessment to two children each. After the pilot, changes were made to the protocol in order to clarify questions and adjust manipulatives used in the retelling and mapping tasks. Changes also specified what prompts would be given to students if no answer was given and further clarification of procedures during the mapping task were specified to remove the manipulatives or pictures following the questions task.

**Examiner training.** The examiner administered both versions of the assessment while being video recorded. The examiner (the author, a preschool teacher) trained the co-examiner (a preschool classroom aide) by discussing and demonstrating the administration of the measure while viewing the video of the assessment. In addition, the examiner reviewed the use of protocols and method of recording responses. The protocols for the EECA-R gave the examiners specific administration guidelines, including prompts and phrases for redirecting the child's

attention. The protocols were designed to be administered using a moderate speech rate and engaging intonation. Specific directions for the order of the visual representations and gestures were included in the protocols to ensure similar administration across examiners.

In order to ensure consistency of administration, the examiner administered one version of the assessment to a student while the co-examiner watched, and then the co-examiner administered the other version while the examiner watched. While the examiner administered the first version, the co-examiner observed the process and noted any deviations from the protocol. This same process was repeated with two additional children. Following each administration the examiner and co-examiner discussed the discrepancies between their administrations and made decisions in order to clarify the administration procedure. Slight changes were made in order to increase the consistency of the administration and solidify all administration and recording procedures.

### **Administration and Data Collection**

Upon completion of the pilot testing, the examiner and co-examiner administered the EECA-R measure to thirty-seven students in the Title 1 Preschool program. During this time, data was collected on the reliability of the EECA-R. Prior to test administration, a parent of each participant read and signed an Informed Consent Document approved by the Brigham Young University Human Subjects Research Committee and the Alpine School District Research and Evaluation Department.

**Test administration.** Each child was pulled out of the classroom two different times and was invited to read some texts with the test administrator. Each assessment session lasted approximately 20 minutes and was audiotaped. The administrators recorded responses and, if needed, went back and transcribed any items that were missing or unclear. Students were randomly selected and rotated through the eight possible administration combinations (see Table

1). By doing this the administration of the tasks were systematized to include all combinations of version and examiner while still being randomized. Prior to data collection all possible examiner and version order combinations were delineated.

Table 1

*Possible Administration Orders*

Possibilities	First		Second	
	Version	Examiner	Version	Examiner
1	A	1	B	2
2	A	1	B	1
3	A	2	B	1
4	A	2	B	2
5	B	1	A	2
6	B	1	A	1
7	B	2	A	1
8	B	2	A	2

**Inter-examiner reliability.** The examiner and the co-examiner administered all of the tests in order to control examiner effect. During data collection, seven test administrations (seven administrations by the examiner and seven administrations by the co-examiner) were video recorded to monitor consistency in administration within and between examiners. Following data collection an undergraduate student evaluated each administration on how well the examiners presented the assessment.

The undergraduate student, an education major who had no involvement in the study, used a rating scale involving five areas of administration to evaluate the inter-examiner reliability (see Appendix C for an explanation of the five areas of administration). A comparison of the scores for each examiner (the examiner and co-examiner) found that one examiner

averaged 94% of the possible points on each protocol while the other examiner averaged 88% of the possible points on each protocol on the seven administrations.

### **Scoring**

Following administration of the measure to all participants scoring guidelines were developed based on student responses. These standard scoring guidelines were used to score all of the data. The examiner trained a preschool teacher (not the co-examiner) on the scoring guidelines for each task and their subcomponents.

**Development of the scoring.** Scoring guidelines were developed based on student responses from 16 randomly selected protocols. The examiner reviewed the student responses for each task and determined possible scoring guidelines. The guidelines were revised and adapted during several discussions with the examiner and Dr. Kendra Hall-Kenyon. All of the guidelines included specific examples of student responses to help the scorers see the range of possible responses within each task (See Appendix D).

**Scoring for Purpose of the Text.** The *Purpose of the Text* task was divided into two subcomponents. One subcomponent looked at the narrative/fictional text and the second subcomponent looked at the expository text. Each subcomponent was scored the same way. A score of 1 point was given for choosing the correct text and a score of 0 point was given for choosing the incorrect text or for no response. A score of 2, 1, or 0 points was given for verbalizing why the student chose the text. A score of 2 points was given if the student responded with a correct verbalization, a score of 1 point was given if the student responded with a partially correct verbalization, and a score of 0 was given for an incorrect verbalization or for no response.

**Scoring for Graphics.** The *Graphics* task was divided into two subcomponents. The first subcomponent (*Picture to Text*) was scored for correctly matching text with a picture. There

were two items for this task and a score of 1 point was given for each correct item for a total of 2 points. A score of 1 point was given if only one of the items was responded to correctly. A score of 0 point was given for an incorrect response or no response. The second subcomponent (*Labeling*) was scored for verbalizing the correct label to a picture. This item was scored 2, 1, or 0 points. A score of 2 points was given for correctly labeling all or the majority of the picture (Version A: 4 -7 pictures and Version B: 6-11 pictures), 1 point for correctly labeling some of the picture (Version A: 1-3 pictures and Version B: 1-5 pictures), and 0 points for incorrect labeling of the picture or no response.

***Scoring for Problem/Solution Retelling.*** The *Problem/Solution Retelling* task was divided into two subcomponents. The first subcomponent (*Key Details*) was scored by counting the number of key details included in the retelling of the text. A score of 1 point was given for each detail for a total of 7 points for Version A and 5 points for Version B. The second component (*Key Words*) was scored by counting the number of key words related to problems and solutions that were included in the retelling. Any words that related to problem and solution were given a point (i.e., problem, solution, solve/d, and/or fix/ed).

***Scoring for Problem/Solution Mapping.*** The *Problem/Solution Mapping* task consisted of four questions (two problem questions and two solution questions). The answer to each question received a score of 2, 1, or 0 and made for a total possible score of 8 points for the task. A score of 2 was given for a correct verbalization and pointing to the correct visual representation, a score of 1 for an incomplete or partially correct verbalization and/or pointing to the correct picture, and a score of 0 for pointing to the incorrect visual representation, incorrect verbalization, “I don’t know”, or no response.



**Scoring for Problem/Solution Questions.** The *Problem/Solution Questions* task was comprised of two questions (e.g., “What was \_\_\_\_\_’s problem?” and “How did \_\_\_\_\_ fix that problem?”). There were 2 problems and 2 solutions. A score of 1 point was given for each correct problem verbalized for a maximum score of 2 points. A score of 1 point was given for each correct solution verbalized for a maximum score of 2 points. A score of 0 was given if the students verbalized an incorrect problem or solution, “I don’t know” or no response was given. The combined questions had a maximum score of 4 points.

**Inter-rater training and reliability.** Once the scoring guidelines were complete, the examiner trained a preschool teacher, not involved in the study, on the scoring guidelines for each task and their subcomponents. Specific examples of student responses were discussed and clarifications were made between raters. Following the discussions the protocols of eight students (Version A and Version B) were scored by each rater. This was done to examine how closely the rater and co-rater scored each protocol (target 85% agreement). The first round of scoring between the raters yielded 67.50% agreement. Differences in scoring were discussed and agreements were made as to the expectations for scoring. Another round of eight students’ protocols were scored. The raters were closer in agreement to their scoring with 75% agreement. Further discussion clarified areas of scoring differences and a third round of eight students’ protocols were scored with 87.50% agreement. Additional rounds of scoring would have taken place until the targeted 85% (or better) agreement had been met.

### **Data Analysis**

Reliability of the EECA-R was determined through two different analyses based on analysis of variance. First, the within subject variation for the students’ performances on the two versions of the test (Version A and Version B) and for the two orders (First and Second) was

estimated using a mixed models Analysis of Variance for repeated measures (ANOVA). This analysis examined the effects of the independent variables (version and order) on the dependent variables (five response tasks) and determined if any of the dependent variables were significantly different based on version or order. There were five main dependent variables used for the analysis (five main response tasks). Three of the dependent variables (performance on the three tasks: *Purpose of the Text*, *Graphics*, and *Problem/Solution Retelling*) had subcomponents that were included as secondary variables. (See Table 2 for a list of all scoring subcomponents used in the analysis.)

Table 2

*Tasks and Scoring Subcomponents for the EECA-R*

Tasks	Scoring Subcomponents
Purpose of the Text	Narrative/Fictional Expository
Graphics	Picture to Text Connection Labeling
Problem/Solution Retelling	Key words Key details
Problem/Solution Mapping	
Problem/Solution Questions	Problems (What problem did _____ have?) Solutions (How did _____ fix the problem?)

When a measure is reliable the within subject variation (e.g., variation between Version A and Version B) revealed in a variance analysis will be small. Additionally, when a measure is reliable the within subject variation based on order of administration (first administration and

second administration) revealed in a variance analysis will be small. Second, a maximum likelihood estimate of variance components was done. When an assessment is reliable, the variation due to a controlled administration (version and order) will be small when compared to larger variation due to differences between among subjects.

## Chapter 4

### Findings

As stated above, the ANOVA was used to examine the effects of the independent variables (version and order) on the dependent variables (five response tasks) and the maximum likelihood estimate of variance components was used to examine the variation due to controlled administration variables as compared to the variability among the subjects. Both analyses provide information regarding the reliability of the assessment.

#### Mixed Models Analysis of Variance

A mixed models Analysis of Variance for repeated measures was used to examine the effects of the independent variables (version and order) on the dependent variables (response tasks). If the assessment is reliable, the independent variables will not have a significant effect on the dependent variables. The estimates (equivalent to the Least Squares Means) and standard errors (computed using pooled standard deviations) of students' performance on the EECA-R were calculated with the mixed-models Analysis of Variance. The estimates and standard errors for the response tasks and subcomponents scores appear in Table 3. The estimates and standard-errors for each administration order appear in Table 4.

The mixed models Analysis of Variance determined the significance of the effect of each independent variable on each dependent variable. An alpha level of 0.05 was chosen, with  $p$ -values greater than 0.05 indicating that an independent variable did not have a significant effect on a dependent variable. Summaries of the mixed models Analysis of Variance results based on Version are included in Table 3. The analysis failed to find significant differences between the response tasks and secondary subcomponents based on Version; Version did not have a significant effect on any of the dependent variables (*Purpose of the Text*  $F = 1.27, p = 0.27$ ;

*Narrative/Fictional* Subcomponent  $F = 1.00, p = 0.32$ ; *Expository* Subcomponent  $F = 1.10, p = 0.30$ ; *Graphics*  $F = 1.39, p = 0.25$ ; *Picture to Text* Subcomponent  $F = 0.97, p = 0.33$ ; *Labeling* Subcomponent  $F = 0.76, p = 0.39$ ; *Problem/Solution Retelling*  $F = 0.30, p = 0.59$ ; *Verbalization of Key Details* Subcomponent  $F = 2.22, p = 0.15$ ; *Verbalization of Key Words* Subcomponent  $F = 3.46, p = 0.07$ ; *Problem/Solution Mapping*  $F = 0.67, p = 0.42$ ; *Problem/Solution Questions*  $F = 0.02, p = 0.90$ ).

Table 3

*Summary of Mixed Models Analysis of Variance Results for Version*

Scoring	Version A		Version B		F value	p-value
	Estimate	SE	Estimate	SE		
Purpose of the Text	3.16	0.34	2.85	0.34	1.27	0.27
Narrative/Fictional	1.44	0.21	1.29	0.21	1.00	0.32
Expository	1.72	0.18	1.55	0.18	1.10	0.30
Graphics	3.12	0.12	3.27	0.12	1.39	0.25
Picture to Text	1.93	0.04	1.99	0.04	0.97	0.33
Labeling	1.18	0.11	1.28	0.11	0.76	0.39
Problem/Solution Retelling	2.38	0.30	2.23	0.30	0.30	0.59
Key Details	2.16	0.25	1.74	0.25	2.22	0.15
Key Words	0.22	0.13	0.49	0.13	3.46	0.07
Problem/Solution Mapping	6.06	0.27	5.84	0.27	0.67	0.42
Problem/Solution Questions	1.80	0.17	1.82	0.17	0.02	0.90

The mixed models Analysis of Variance also failed to find any significant differences between the response tasks and secondary subcomponents based on Order; Order did not have a significant effect on any of the dependent variables (*Purpose of the Text*:  $F = 2.90, p = 0.10$ ; *Narrative/Fictional* Subcomponent  $F = 3.03, p = 0.09$ ; *Expository* Subcomponent  $F = 1.90, p = 0.18$ ; *Graphics*;  $F = 4.09, p = 0.05$ ; *Picture to Text* Subcomponent  $F = 0.97, p = 0.33$ ; *Labeling* Subcomponent  $F = 3.30, p = 0.08$ ; *Problem/Solution Retelling*  $F = 1.82, p = 0.19$ ; *Verbalization of*

*Key Details* Subcomponent  $F=3.47, p=0.07$ ; *Verbalization of Key Words* Subcomponent  $F=1.32, p=0.26$ ; *Problem/Solution Mapping*  $F=1.94, p=0.17$ ; *Problem/Solution Questions*  $F=1.22, p=0.28$ ).

Table 4

*Summary of Mixed Models Analysis of Variance Results for Order*

Scoring	First		Second		F value	p-value
	Estimate	SE	Estimate	SE		
Purpose of the Text	2.77	0.34	3.23	0.34	2.90	0.10
Narrative/Fictional	1.24	0.21	1.49	0.21	3.03	0.09
Expository	1.52	0.18	1.75	0.18	1.90	0.18
Graphics	3.06	0.12	3.33	0.12	4.09	0.05
Picture to Text	1.94	0.04	1.99	0.04	0.97	0.33
Labeling	1.13	0.11	1.34	0.11	3.30	0.08
Problem/Solution Retelling	2.12	0.30	2.48	0.30	1.82	0.19
Key Details	1.69	0.25	2.21	0.25	3.47	0.07
Key Words	0.44	0.13	0.27	0.13	1.32	0.26
Problem/Solution Mapping	5.76	0.27	6.14	0.27	1.94	0.17
Problem/Solution Questions	1.72	0.17	1.90	0.17	1.22	0.28

### Maximum Likelihood of Estimate of Variance Components

Analysis of the variation due to controlled administration variables versus differences among subjects was done using a maximum likelihood estimate of variance components. If the assessment is reliable, the variation due to controlled administration variables (version and order) will be small in comparison to the variability among the subjects. See Table 5 for a summary of the sources of error for the response tasks. This analysis found that variation due to controlled administration variables (version and order) was small as compared to variability among the subjects in the following tasks: *Purpose of the Text*, *Problem/Solution Retelling*, and *Problem/Solution Mapping*.

The analysis also found that variation due to controlled administration variables (version and order) was *larger* as compared to variability among the subjects in the following tasks: *Graphics* and *Problem/Solution Questions*. Possible reasons that can account for the larger administration variables as compared to the smaller variability due to the differences between subjects are (a) the subjects were similar in age and/or intellectual ability answering about the same, (b) the small number of subjects means that there is less variability, and (c) order can appear unreliable due to the practice effect that takes place as students take one assessment the first time and then tend to do better on the second assessment. In order to address these issues, additional data is needed with a larger and more diverse sample.

Table 5

*Estimates of Error for EECA-R*

Scoring Area	Version and Order	Subjects
Purpose of the Text	1.39	1.88
Narrative/Fictional	0.37	0.85
Expository	0.47	0.50
Graphics	0.32	0.13
Picture to Text	0.05	0
Labeling	0.26	0.11
Problem/Solution Retelling	1.28	1.37
Key Details	1.47	0.46
Key Words	0.40	0.11
Problem/Solution Mapping	1.41	0.80
Problem/Solution Questions	0.54	0.28

## Chapter 5

### Discussion

The results of this study indicate that the EECA-R is a reliable tool, overall. The results of the mixed models Analysis of Variance showed that version and order did not have a significant effect on primary response tasks and their secondary subcomponents. Children did not score significantly higher on one version than the other and did not perform significantly better on the second administration of the EECA-R, although the *Graphics* task was borderline (order almost significant;  $p=.05$ ). Additionally, variability in version and order was found to be smaller than the variability among subjects on the following response tasks: *Purpose of the Text*, *Problem/Solution Retelling*, and *Problem/Solution Mapping*. However, this was not the case for the *Graphics* and *Problem/Solution Questions* tasks (variability for version and order was larger than variability among subjects).

The EECA-R can assess preschool children's understanding of the purpose of expository text and the skills of retelling, and mapping related to the problem/solution text structure. This is an important finding that may help preschool teachers meet the new and increasing demands of teaching expository text comprehension to young children (Duke, 2000; Hall et al., 2005; Moss, 1997; Pappas, 1991). Because of the nature of the tasks, the EECA-R can help teachers plan and adjust their instruction based upon children's abilities to meet the specific demands associated with expository texts (Blachowicz, 2013; Hall et al., 2005; Neuman & Wright, 2013; Norman, 2010; Reutzel et al., 2009; Richgels, 2002; Westby et al., 2014).

Although the EECA-R appears to be a reliable tool based upon the statistical analysis, it is also important to consider the practical significance of the results, the differences among the examiners (even though they were slight) and the children's interest in each of the tasks. These



are important to examine in relation to possible changes to the tool. In the following sections the practical significance of the results, inter-examiner reliability, children's interest in the response tasks, and suggested changes to the tool will be discussed.

### **Practical Significance of Results**

When drawing conclusions about the reliability of a measure, it is important to consider the practical significance of the results in addition to results of the statistical analyses. Following statistical analysis, possible practical differences were considered for all of the dependent variables. The practical significance for two of the tasks (*Graphics* and *Problem/Solution Retelling*) seemed particularly important. The *Graphics* task was chosen because it was one of the tasks that was not found to be reliable (order almost significant;  $p=.05$ ; variability for version and order larger than variability among subjects). The *Problem/Solution Retelling* task was reliable for both independent variables Version and Order yet proved to be a challenging task for students. Perhaps administering the EECA-R with a larger and more diverse sample would provide additional data to address these issues.

**The *Graphics* task.** The largest discrepancy between estimates for a response task was seen in the *Graphics* task. Students tended to do better on the second administration than on the first administration which is likely the result of the practice effect. One reason for this may be related to the fact that children are familiar with looking at pictures in books and connecting them to text, but may not be as familiar with labeling pictures within expository text. So, the children could have been a bit confused with the task initially, but then caught on quickly because of their wealth of experience connecting pictures to text in other contexts. When students sat down for the first administration of the EECA-R, it appeared they did not understand what to do when asked, "Can you tell me what the lines are pointing to?" In the second administration more students responded to the task confidently and successfully. Perhaps a trial

item before the first administration would help with this phenomenon so that the first time students are assessed they would have some familiarity with the nature of the task. The use of a trial item would provide students instruction on how to do the task as well as give them an opportunity to practice it. This may even out their performance between the first and second formal administrations of the task.

**The *Problem/Solution Retelling* task.** This task was perhaps the most challenging for the students, requiring increased memory and retrieval skills while providing the least amount of support. This task used an open-ended question to elicit information from the students about the text (e.g., “Could you tell me what happened to Matt [or Mary]?”). Of all the tasks, this one elicited the widest variety of responses from the students, making it more difficult to score than other items on the EECA-R. For example, in Version B of the EECA-R the problem/solution passage involved Matt who had a problem with a bird that flew into his house. He made several failed attempts to get the bird out of the house and on the final attempt was able to get the bird out. When students were asked to retell the story after hearing the passage they responded in a variety of ways from the simplest (e.g., “I don’t remember”, “Bird”, “He helped the bird”) to very detailed responses that included all of the details of the text. Many students were able to state the problem more often than the solution. This may be due to the fact that the introduction to the problem/solution text began with “This is a story about my friend Matt and the problem he had with a bird in his house”. Still other students stated the initial problem and final solution (e.g., “A bird flew into his house, and he called his brother, and they stretched out a blanket and guided it, and it flew outside”). A few students retold the initial problem while mixing up the order of the solutions (e.g., “A bird flew in the house and he held up the blanket, and he tried to catch the bird with a box”). Additionally, there were students who provided little or no details

from the text when responding but did offer a concise summary based on some awareness of the problem/solution structure (e.g., “He had a *problem*”, “His brother helped him, and he *solved* the *problem*”, and “He didn’t know how to catch the bird. Then he had an idea. Then he still had a *problem*. Then his brother helped him and he *solved* the *problem*”). It is important to recognize the variability in the students’ retellings since it illustrates the large variability among the subjects (as compared to the small variation between version and order) that contributed to the reliability of the task. Although responses varied in length and the amount of details retold from the passages, the EECA-R was still reliable on the retelling task.

### **Inter-examiner Reliability**

The EECA-R was designed with very specific administration guidelines. This helps to explain the high reliability between the examiners. In addition, the great care taken in training the co-examiner in her respective responsibilities likely contributed to the inter-rater reliability. Overall, the examiner and co-examiner received similar scores in all of the administration areas (see Appendix C for the five areas of administration), however, they did differ slightly in two areas. In the first area, presenting in an engaging manner with a possibility of 21 points, one examiner scored an average of 17.75 points, while the other examiner scored an average of 19.75 points. The examiner with the highest points tended to speak with greater intonation while the other examiner used less intonation and stress in her presentation of the assessment. The examiner with 21 points has had experience in drama and is practiced in using intonation and stress in telling stories. This may explain the use of greater intonation and stress in administering the EECA-R. In the second area, handling environmental distractions, there was a possibility of 21 points. One examiner scored an average of 21 points while the other examiner scored an average of 18.25 points. The difference in the points between the examiners is likely due to the different roles they play in the classroom. The examiner with 21 points is a lead teacher within a

preschool classroom while the other examiner is in a support role as an assistant teacher. The lead teacher may have more training and experience in managing students and therefore responded earlier to guide students back on task when faced with environmental distractions.

It is important to note these differences of “presenting in an engaging manner” and “handling environmental distractions” in administration in case they could be helpful in interpreting the results. However, in this case, all of the differences were minor and did not occur frequently. Thus these differences in administration were not considered to be significant differences in reliability between the two examiners.

### **Children’s Engagement and Responses to the Tasks**

In general children’s engagement was high with tasks at an appropriate level. It is important to note that the majority of students were successful in negotiating the expository comprehension tasks presented in the EECA-R, even if they did not all receive high scores. This suggests that the task was age-appropriate and engaging. When children were pulled out of their classrooms for the second administration of the EECA-R, it was observed that most children appeared excited to engage in another version of the assessment. A few general observations about children’s involvement and responses during the EECA-R were noted. These observations will be grouped together by response tasks since the children tended to show similar behaviors within the task.

**The *Problem/Solution Mapping* task.** In this task there was a high level of interest in the visual representations and students’ responses were more consistent when compared to the *Problem/Solution Retelling* task. Perhaps this could be attributed to the visuals that accompanied the task. The visuals provided greater support to the students as they helped the teacher to place them in the correct place on the problem/solution t-chart. A greater amount of students were successful in providing more of the problems and solutions from the passages in both versions of

the EECA-R. Most students were able to identify the correct visual that matched the problem or solution. The structure provided in the task may have also helped students to recall the information from the passage when filling out the t-chart.

**The *Problem/Solution Questions* task.** This was the last response task and probably the least engaging or interesting to the students. However it did provide a direct question about the structure of the information (e.g., “What was \_\_\_\_\_ [the character’s] problem?” and “How did he/she \_\_\_\_\_ fix the problem?”). Surprisingly few children actively referred to the t-chart in front of them when answering the questions, although the majority of the children were at least able to state the beginning problem and ending solution. A few students were able to state all of the problems and solutions from the text (2 problems and 2 solutions), and a few were not able to respond with either a problem or solution. It was observed that many of the students were frustrated with these questions since they immediately followed the mapping and students may have felt that these questions were too repetitive (e.g., they had just answered these questions during the mapping task).

### **Suggested Changes in the Tool**

A few minor changes relating to the visual representations/manipulatives, and the passages would enhance the EECA-R. These suggested changes are based upon the researchers concerns with the clarity of some of the pictures that were used in the *Problem/Solution Retelling* and *Problem/Solution Mapping* tasks and the student’s difficult in identifying the second solution in the retelling.

**Visual representations and manipulatives.** The visual representations/manipulatives used in the problem/solution mapping were difficult to represent. It was difficult to visually show the dog getting sick or a bird flying in the house. Therefore, ideas may not have always been clearly represented to the students. Perhaps digitizing the assessment might allow for use

of photographs, videos, etc. to visually represent ideas and thereby make them clearer to the students.

**Problem/Solution Passages.** A change in the problem/solution passages could include moving away from “personal narratives” to more expository form. The texts included in the EECA-R were written in the form of a personal narrative. The overall problem and solution were clear, however, there were many details in the middle of the text that contained failed attempts at solving the problem. For example, Matt’s problem was that a bird flew into his house. To solve the problem he needed to get the bird out. Matt first tries to catch the bird in a box. He waits for the bird to land somewhere, the bird lands on a chair and when he tries to scoop up the bird the bird flies off. Then Matt gets his brother and they hold up a blanket and follow the bird around the house to guide the bird out. This did not follow a simple problem and solution sequence (i.e., here is a problem and here is the solution). There were many details to remember surrounding the two attempts to solve the problem. It was challenging for the majority of students to retell this information clearly, most focused on the beginning problem and ending solution. Texts in an expository form (not personal narrative) could possibly eliminate this problem. Suggestions for passages might include firefighters and recycling that could present different problems with different solutions. For example, a passage on firefighters might follow,

“Firefighters help solve different problems. Here is a problem (a house on fire) and here is how they solve the problem (spray water on the fire). Here is another problem (a person is trapped inside a building) and here is how they solve it| (they put a ladder up to the window to get the person out).”

This would eliminate the middle of the text containing “failed attempts”, which seemed to be difficult for the preschool children in this study. Thus, while a few refinements are suggested in

order to give the measure added strength, the tasks of the EECA-R are reliable and can be used to effectively evaluate comprehension of purpose of the text and problem/solution text structure in preschoolers.

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## Appendix A

### Version A protocol

#### Purpose of Text

Show cover of two books (*Giraffes and Giraffe's Can't Dance*)

#### 1. What book should I choose if I want to read a pretend, make-believe story?

Giraffes  Giraffe's Can't Dance  NR

Why?

*If no response, ask:*

**Would I read this book if I wanted to read a pretend, make-believe story?** (*point to the correct book*)

Yes  No  NR

Why?

#### 2. What book should I read to find out about where real giraffes live and what they eat?

Giraffes  Giraffe's Can't Dance  NR

Why?

*If no response, ask:*

**Would I read this book if I wanted to find out about where real giraffes live and what they eat?** (*point to the correct book*)

Yes  No  NR

Why?

#### Graphics: Picture/Text Match

**I am going to read this page and I want to see if you can find a picture that matches or goes with what I am reading.**

#### 1. (Pg 12) *Giraffes use their long necks to reach leaves at the top of tall trees.*

##### a. **Point to the picture that goes with what I just read.**

Child points to giraffe reaching to top of tree

Child point to other picture

Other \_\_\_\_\_

If no/incorrect response:

*Read the text again. And ask, Do you see the giraffe eating the leaves at the top of the tall tree? Point to the picture.*

Child points to giraffe reaching to top of tree

Child point to other picture

Other \_\_\_\_\_

2. (Pg. 16) ***Giraffes do not need much sleep. They spend most of their time eating.***

a. **Point to the picture that goes with what I just read.**

Child points to giraffe eating

Child point to other picture

Other \_\_\_\_\_

*If no/incorrect response:*

*Read the text again. And ask, Do you see the giraffe eating the leaves at the top of the tall tree? Point to the picture.*

Child points to giraffe eating

Child point to other picture

Other \_\_\_\_\_

### **Graphics: Labeling**

**Here are some pictures on these pages. There are some words with lines that are pointing to the giraffes.**

3. (Pg. 20, 21) **Can you tell me what the lines are pointing to? Touch the picture as you say what it is.**

Child points to horn

Child points to knees

Child points to ear

Child points to neck

Child points to eye

Child points to hoof (foot)

Child points to nose

Child points to legs

Child points to mouth (teeth)

Child points to tail

Child points to fur (hair)

Other \_\_\_\_\_

**Retelling: Problem/Solution****Mary and the sick dog**

**I am going to tell you a story about my friend Mary.**

*\*\*Use the props to help illustrate the story. There is one prop/picture for each problem and solution. As you're telling the story move the props around according to what is happening.*

**“This is a story about my friend Mary and a problem she had with her sick dog.”**

One day, my friend Mary came home and found her dog lying on the floor. She went to say hello to her dog, and she saw that he was very sick. So, Mary looked around to see what could have made her dog sick. She found a box of poisonous mothballs on the floor (*Poison can be used to kill bugs*). The dog had eaten the mothballs! Mary had a problem!

Mary tried to fix the problem by having the dog drink some water. She thought it would make the dog feel better.

But, the dog wouldn't drink any water. Mary still had a problem; her dog was still really sick.

So, Mary called the animal doctor. She thought he could help her solve the problem. The doctor said, “You need to give your dog some medicine. It will make your dog throw up and all of the poison will get out of his stomach. That should fix the problem.”

Mary went to the store to buy some medicine to help her dog feel better. She gave her dog the medicine and the dog felt better. The problem was solved.

*After you tell the story use the puppet and say:*

**“I just woke up and I didn't hear what you learned. Could you tell me what happened to Mary?”**

*If necessary, get them started by saying:* **Mary came home from work one day and found her dog sick on the floor.**

*Check if used prompt*

*Prompt after they've started:* **“Great. Is there anything else you can remember about what happened to Mary?”**

*Check if used prompt*

Record Retelling:

**Mapping: Problem/Solution**

**Mary and the sick dog**

*Get out the chart and say: I need you to help me put these pictures/items in the boxes to tell the story about Mary's problems and how she fixed those problems.*

**What was Mary's problem when she came home from work?**

Dog ate poison

Other: \_\_\_\_\_

*After child gives response put the box of poison in the correct box and say:*

**Mary's dog had eaten some poison. How did Mary try to fix that problem?**

Tried to get dog to drink water

Other: \_\_\_\_\_

*After child gives response put the bowl of water in the box and say:*

**Mary tried to get her dog to drink some water. What problem did Mary have next?**

Dog wouldn't drink water

Other: \_\_\_\_\_

*After child gives response put the picture of the bowl of water with an X and say:*

**The dog wouldn't drink the water. So what did Mary do next to try to fix the problem?**

Gave dog medicine

Other: \_\_\_\_\_

*After child gives response put the medicine in the box and say:*

**Mary gave her dog some medicine and the dog felt better. Her problem was solved.**

**Questions: Problem/Solution****Talking about Problems and Solutions from the Map**

**What problem did Mary have?**

**How did she fix that problem?**



## Appendix B

### Version B protocol

#### Purpose of the Text

Show cover of two books (*Bears and Goldilocks and the Three Bears*)

#### 1. What book should I choose if I want to read a pretend, make-believe story?

Bears  Goldilocks and the Three Bears  NR

Why?

*If no response, ask:*

**Would I read this book if I wanted to read a pretend, make-believe story?** (*point to the correct book*)

Yes  No  NR

Why?

#### 2. What book should I read to find out about where real bears live and what they eat?

Bears  Goldilocks and the Three Bears  NR

Why?

*If no response, ask:*

**Would I read this book if I wanted to find out about where real bears live and what they eat?** (*point to the correct book*)

Yes  No  NR

Why?

#### Graphics: Picture/Text Match

I am going to read this page and I want to see if you can find a picture that matches or goes with what I am reading.

#### 3. (Pg. 10, 11) *Bears climb trees to eat honey.*

##### a. Point to the picture that goes with what I just read.

Child points to bear in tree

Child point to other picture

Other \_\_\_\_\_

*If no/incorrect response:*

*Read the text again. And ask, **Do you see the bear eating the honey? Point to the picture.***

Child points to bear eating honey

Child point to other picture

Other \_\_\_\_\_

4. (Pg. 22,23) ***Bear cubs like to play. Sometimes they will wrestle with each other.***  
 a. **Point to the picture that goes with what I just read.**

Child points to the bear cubs wrestling

Child point to other picture

Other \_\_\_\_\_

*If no/incorrect response:*

*Read the text again. And ask, **Do you see the bear cubs wrestling on the ground? Point to the picture.***

Child points to bear cubs wrestling

Child point to other picture

Other \_\_\_\_\_

### **Graphics: Labeling**

**Here are some pictures on these pages. There are some words with lines that are pointing to the bear.**

3. (Pg. 12, 13) **Can you tell me what the lines are pointing to? Touch the picture as you say what it is.**

Child points to snout (nose)

Child points to body fat

Child points to teeth (mouth)

Child point to fur (hair)

Child point to claws (hands)

Child point to muscles

Child points to bones

Other \_\_\_\_\_

**Retelling: Problem/Solution****Matt and the bird in the house**

**I am going to tell you a story about my friend Matt.**

*\*\*Use the props to help illustrate the story. There is one prop/picture for each problem and solution. As you're telling the story move the props around according to what is happening.*

**“This is a story about my friend Matt and the problem he had with a bird in his house.”**

One day my friend Matt opened the door to go outside. A bird flew over his head and into the house. The bird was inside the house! Matt had a problem.

Matt needed to fix the problem. He tried to catch the bird in a box. Matt stood very still so the bird would land somewhere in the house. The bird finally landed on a chair. Matt got a box and slowly moved towards the bird to try to scoop it up. But when Matt got close to the bird, the bird got scared and flew away. Matt still had a problem.

To try to fix the problem, Matt and his brother got a blanket and stretched it out as far as they could. They held it up high and followed the bird around the house. They used the blanket to guide the bird towards the door. The blanket made it so the bird could not fly away in different directions. The bird got to the door and flew out. The problem was solved.

*After you tell the story use the puppet and say:*

**“I just woke up and I didn't hear what you learned. Could you tell me what happened to Matt?”**

*If necessary, get them started by saying: **Matt opened the door to go outside and a bird flew into the house.***

*Check if used prompt* ○

*Prompt after they've started: **“Great. Is there anything else you can remember about what happened to Matt?”***

*Check if used prompt* ○

Record Retelling:

**Mapping: Problem/Solution****Matt and the bird in the house***Get out the chart and say:***I need you to help me put these pictures/items in the boxes to tell the story about Matt's problems and how he fixed those problems.****What was Matt's problem when he opened the door?**Bird flew into the house 

Other \_\_\_\_\_

*After the child responds put the picture of the bird in the house in the box and say:***A bird flew into Matt's house. What did Matt do first to try to fix the problem?**Tried to catch it in a box 

Other \_\_\_\_\_

*After the child responds, put the box in the correct place and say:***Matt waited until the bird landed on the chair and he tried to catch it in a box. What was the next problem Matt had?**Bird flew away when Matt got close 

Other \_\_\_\_\_

*After the child responds, put the picture of the bird flying off the chair and say:***The bird flew away when Matt got too close. He could not catch him. What did Matt do next to solve the problem and get the bird out of the house?**Matt and brother used blanket to guide bird out 

Other \_\_\_\_\_

*After the child responds, put picture of brother and matt holding blanket and say:***Matt and his brother held a blanket up high and guided the bird safely out of the house. The problem was solved.****Questions: Problem/Solution****Talking about Problems and Solutions from the Map****What was Matt's problem?****How did he fix his problem?**

## Appendix C

### Scoring Areas for Administration

#### Purpose of the Text

Area to score	3	2	1
Following the protocol	Followed the protocol to ask questions and gave additional prompt when there was no response	Followed the protocol to ask questions but did not give an additional prompt when there was no response	Did not follow the protocol to ask questions
Presenting in engaging manner	Varying the intonation and stress to make the telling engaging. Encouraged the student throughout the task and kept the student's attention through intonation and stress. Asked questions with rising intonation.	Varied intonation and stress slightly during the telling. Engaged the child with minimal intonation and stress. Did not have rising intonation on questions.	Used a monotone throughout the assessment. Asked questions with flat intonation and even stress.
Controlling the rate of presentation	Varied the rate according to needs of student. did not speak inappropriately fast while telling about the animals. Allowed time for a response, but moved through the assessment quickly if the student did not know the answer.	Did not vary the rate at all or went at an inappropriate rate. Allowed short amounts of time for responses.	Went inappropriately fast or slow. Gave the student too long to respond to tasks when it was clear the student did not know the answer.
Modifying the presentation appropriately	Modified the presentation by altering the rate or explaining directions as needed. Did not modify the presentation to give the child extra information or help with the task.	Modified the presentation moderately, but should have done more or less. Gave the extra information and help that gave the child an unfair advantage on the task.	Modified the presentation too much- i.e., gave the child hints on answers- or too little- i.e., did not respond when the child asked simple questions or did not understand the <i>task</i> (different from not knowing the answer).
Handling environmental distractions	Quickly redirected the student to the task. Provided repetition on task if needed due to distraction. Handled distractions well.	Took a moderate amount of time to redirect the child to the task. Struggled to handle distractions.	Paid attention to distraction for inappropriate amount of time. Did not or could not redirect the student to the task.

**Graphics**

Area to score	3	2	1
Following the protocol	<p><u>Picture/Text match</u>- Followed the protocol word for word and used prompt when needed</p> <p><u>Literal Description</u>- Followed the protocol word for word and prompted when needed</p> <p><u>Labeling</u>- read the instructions word for word, gave an additional prompt when needed</p>	<p><u>Picture/Text match</u>- Followed the protocol mostly and used prompts inconsistently</p> <p><u>Literal Description</u>- Followed the protocol mostly and did not give a prompt when needed</p> <p><u>Labeling</u>- read the instructions mostly, gave an additional prompt when needed</p>	<p><u>Picture/Text match</u>- Did not follow the protocol word for word and did not use prompts inconsistently</p> <p><u>Literal Description</u>- Did not follow the protocol word for word or give prompts when needed</p> <p><u>Labeling</u>- did not read instructions word for word and did not give an additional prompt when needed</p>
Presenting in engaging manner	Varying the intonation and stress to make the telling engaging. Encouraged the student throughout the task and kept the student's attention through intonation and stress. Asked questions with rising intonation.	Varied intonation and stress slightly during the telling. Engaged the child with minimal intonation and stress. Did not have rising intonation on questions.	Used a monotone throughout the assessment. Asked questions with flat intonation and even stress.
Controlling the rate of presentation	Varied the rate according to needs of student. did not speak inappropriately fast while telling about the animals. Allowed time for a response, but moved through the assessment quickly if the student did not know the answer.	Did not vary the rate at all or went at an inappropriate rate. Allowed short amounts of time for responses.	Went inappropriately fast or slow. Gave the student too long to respond to tasks when it was clear the student did not know the answer.
Modifying the presentation appropriately	Modified the presentation by altering the rate or explaining directions as needed. Did not modify the presentation to give the child extra information or help with the task.	Modified the presentation moderately, but should have done more or less. Gave the extra information and help that gave the child an unfair advantage on the task.	Modified the presentation too much- i.e., gave the child hints on answers- or too little- i.e., did not respond when the child asked simple questions or did not understand the <i>task</i> (different from not knowing the answer).

Handling environmental distractions	Quickly redirected the student to the task. Provided repetition on task if needed due to distraction. Handled distractions well.	Took a moderate amount of time to redirect the child to the task. Struggled to handle distractions.	Paid attention to distraction for inappropriate amount of time. Did not or could not redirect the student to the task.
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### Problem/Solution

Area to score	3	2	1
Following the protocol	<p><u>P/S Telling</u>- read the information word for word</p> <p><u>Retelling</u>- used the written prompt when needed</p> <p><u>Mapping</u>- followed the protocol to explain the task. Asked the questions and provided the answers according to the protocol.</p> <p><u>Talking about P/S</u>- Followed the protocol word for word when asking questions</p>	<p><u>P/S Telling</u>- read the information but missed several words.</p> <p><u>Retelling</u>- used the written prompt inconsistently</p> <p><u>Mapping</u>- followed the protocol inconsistently</p> <p>Asked questions inconsistently or provided answers in own words</p> <p><u>Talking about P/S</u>- Followed the protocol mostly when asking questions</p>	<p><u>P/S Telling</u>- did not follow the written information. Added or deleted pieces of information</p> <p><u>Retelling</u>- did not use the written prompt</p> <p><u>Mapping</u>- did not follow the protocol on explanations or questions</p> <p><u>Talking about P/S</u>- Did not follow the protocol when asking questions</p>
Use of visual representations	<p><u>P/S Telling</u>- set out visual representations at appropriate times</p> <p><u>Retelling</u>- removed visual representations from sight.</p> <p><u>Mapping</u> - set out manipulatives along with pictures, placed them within reach of child, corrected them following the student's responses.</p>	<p><u>P/S Telling</u>- set out visual representations, but at inappropriate times.</p> <p><u>Retelling</u>- removed visual representations from sight.</p> <p><u>Mapping</u>- set out manipulatives along with pictures, put out of reach of child, corrected them following the student's responses</p>	<p><u>P/S Telling</u>- set out props at inappropriate times or not at all.</p> <p><u>Retelling</u>- left visuals within sight.</p> <p><u>Mapping</u>- did not put out all the manipulatives or pictures or put out some late. Put out of student's reach. Did not correct following the student's responses.</p>

Presenting in engaging manner	Varying the intonation and stress to make the telling engaging. Encouraged the student throughout the task and kept the student's attention through intonation and stress. Asked questions with rising intonation.	Varied intonation and stress slightly during the telling. Engaged the child with minimal intonation and stress. Did not have rising intonation on questions.	Used a monotone throughout the assessment. Asked questions with flat intonation and even stress.
Controlling the rate of presentation	Varied the rate according to needs of student. did not speak inappropriately fast while telling about the animals. Allowed time for a response, but moved through the assessment quickly if the student did not know the answer.	Did not vary the rate at all or went at an inappropriate rate. Allowed short amounts of time for responses.	Went inappropriately fast or slow. Gave the student too long to respond to tasks when it was clear the student did not know the answer.
Modifying the presentation appropriately	Modified the presentation by altering the rate or explaining directions as needed. Did not modify the presentation to give the child extra information or help with the task.	Modified the presentation moderately, but should have done more or less. Gave the extra information and help that gave the child an unfair advantage on the task.	Modified the presentation too much- i.e., gave the child hints on answers- or too little- i.e., did not respond when the child asked simple questions or did not understand the <i>task</i> (different from not knowing the answer).
Handling environmental distractions	Quickly redirected the student to the task. Provided repetition on task if needed due to distraction. Handled distractions well.	Took a moderate amount of time to redirect the child to the task. Struggled to handle distractions.	Paid attention to distraction for inappropriate amount of time. Did not or could not redirect the student to the task.



## Appendix D

### Scoring procedures for the EECA-R

#### Version A

#### Purpose of the Text

##### Narrative/Fictional Subcomponent

**1 point** for choosing the correct book (e.g., *Giraffes Can't Dance*)

**0 point** for choosing the incorrect book (e.g., *Giraffes*), "I don't know", or no response

Verbalization if correct book is chosen, "Why?":

**2 point** for verbalizing a correct response (e.g., "It's a make-believe story", "It's a pretend story", "It's not real.")

**1 point** for verbalizing an incomplete response (e.g., "It's like a kid story"), or no response.

**0 point** for verbalizing an irrelevant response, "I don't know", or no response

##### Expository Subcomponent

**1 point** for choosing the correct book (e.g., *Giraffes*)

**0 point** for choosing the incorrect book (e.g., *Giraffes Can't Dance*), "I don't know", or no response

Verbalization if correct book is chosen, "Why?":

**2 point** for verbalizing a correct response (i.e., "Because it's about real giraffes", "Because you could learn a lot about giraffes", "Because it's a real book")

**1 point** for verbalizing an incomplete response (e.g., "It has pictures", "It's about giraffes")

**0 point** for verbalizing an irrelevant response, "I don't know", or no response

#### Graphics

##### Picture to Text Subcomponent

**2 point** for matching the two texts to the correct pictures

**1 point** for matching one text to the correct picture

**0 point** for not matching either text to the correct picture, an irrelevant response, "I don't know", or no response.

##### Labeling Subcomponent

This task has 11 pictures with lines pointing to the giraffe that are to be labeled (e.g., horns, ear, eye, nose, mouth, neck, knees [legs], hoof [feet, foot], legs, tail, and fur)

**2 point** for correctly verbalizing the correct label to the picture (6-11)

**1 point** for correctly verbalizing the correct label to the picture (1-5)

**0 point** for incorrectly verbalizing label/s to pictures, an irrelevant response, or no response

### Problem/Solution Retelling

This task consists of the student retelling the p/s passage and points are given for key words (related to the structure) and key details from the text.

#### Key word

**1 point** for each key word verbalized (e.g., problem, solution, solve/d, and/or fix/ed)

**0 point** for verbalizing an irrelevant response, “I don’t know”, or no response

#### Key details

**1 point** for each key detail verbalized from the text

Examples of key details

1. The dog ate poison that made him sick.
2. Mary tried to give the dog some water to help him feel better.
3. The dog wouldn’t drink the water.
4. Mary called the animal doctor.
5. The doctor told Mary to give him some medicine so the dog would throw up the poison.
6. Mary went to the store and bought some medicine.
7. Mary gave the dog the medicine and he felt better.

**0 point** for verbalizing an irrelevant response, “I don’t know”, or no response

### Problem/Solution Mapping

This task consists of four questions (two problem questions and two solution questions). Each question is scored separately and then added together for a total of 8 points.

Question 1: “What was Mary’s problem when she came home from work?”

**2 point** for pointing to the correct visual representation and verbalizing a correct response (i.e., “The dog ate poison”, “Her dog got sick”)

**1 point** for verbalizing an incomplete response (e.g., “The dog was lying on the floor”) and/or pointing to the correct visual representation

**0 point** for verbalizing an incorrect response (i.e., “She gave the dog some medicine”, “She gave her dog some water”), and/or pointing to the incorrect visual representation, an irrelevant response, “I don’t know”, or no response

Question 2: “How did Mary try to fix the problem?”

**2 point** for pointing to the correct visual representation and verbalizing a correct response (i.e., “Gave the dog some medicine”)

**1 point** for verbalizing an incomplete response (e.g., “Water”, “Gave some medicine”) and/or pointing to the correct visual representation

**0 point** for verbalizing an incorrect response (e.g., “Dog poison”, “Dog without water”), and/or pointing to the incorrect visual representation, an irrelevant response, “I don’t know”, or no response

Question 3: What problem did Mary have next?

**2 point** for pointing to the correct visual representation and verbalizing a correct response (i.e., “The dog wouldn’t drink water”)

**1 point** for verbalizing an incomplete response (e.g., “The dog was still sick”, “Water”, “No water”) and/or pointing to the correct visual representation

**0 point** for verbalizing an incorrect response, (e.g., “Called the doctor”, “Called the pet store”, “Gave the dog medicine”), and/or pointing to the incorrect visual representation, an irrelevant response, “I don’t know”, or no response

Question 4: So what did Mary do to try to fix the problem?

**2 point** for pointing to the correct visual representation and verbalizing a correct response (e.g., “She gave the dog some medicine”, “She called the animal doctor”)

**1 point** for verbalizing an incomplete response (e.g., “She call the nurse”, “She went to the store”, “No water”) and/or pointing to the correct visual representation

**0 point** for verbalizing an incorrect response, (e.g., “The dog was sick”, “Called the pet store”), and/or pointing to the incorrect visual representation, an irrelevant response, “I don’t know”, or no response

Problem/Solution Questions

This task is comprised of two questions. Each question has a possible score of 2 points giving the task a maximum score of 4 points.

Question 1: What problem did Mary have?

**1 point** for each problem verbalized (e.g., “The dog ate poison”, “The dog got sick.” “The dog wouldn’t drink the water”)

**0 point** for verbalizing an incorrect response, (e.g., “She called the nurse”, “Called the pet store”), an irrelevant response, “I don’t know”, or no response

Question 2: How did she fix that problem?

**1 point** for each solution verbalized (e.g., “She gave the dog water”, “She called the doctor”, “She gave the dog medicine”)

**0 point** for verbalizing an incorrect response, (i.e., “The dog ate poison”, “Called the pet store”), an irrelevant response, “I don’t know”, or no response

Version B

Purpose of the Text

Narrative/Fictional Subcomponent

**1 point** for choosing the correct book (e.g., *Goldilocks and the Three Bears*)

**0 point** for choosing the incorrect book (e.g., *Bears*), “I don’t know”, or no response

Verbalization if correct book is chosen, “Why?”:

**2 point** for verbalizing a correct response (e.g., “It’s a make-believe story”, “It’s a pretend story”, “It’s not real.”)

**1 point** for verbalizing an incomplete response (e.g., “It’s like a kid story”, “Bears don’t wear hats and wear glasses or pants or shirts”), or no response.

**0 point** for verbalizing an irrelevant response, “I don’t know”, or no response

Expository Subcomponent

**1 point** for choosing the correct book (e.g., *Bears*)

**0 point** for choosing the incorrect book (e.g., *Goldilocks and the Three Bears*), “I don’t know”, or no response

Verbalization if correct book is chosen, “Why?”:

**2 point** for verbalizing a correct response (i.e., “Because it’s about real bears”, “Because you could learn a lot about bears”, “Because it’s a real book”)

**1 point** for verbalizing an incomplete response (e.g., “It has pictures”, “It’s about bears”)

**0 point** for verbalizing an irrelevant response, “I don’t know”, or no response

Graphics

Picture to Text Subcomponent

**2 point** for matching the two texts to the correct pictures

**1 point** for matching one text to the correct picture

**0 point** for not matching either text to the correct picture, an irrelevant response, “I don’t know”, or no response.

Labeling Subcomponent

This task has 7 pictures with lines pointing to a bear that are to be labeled (snout [nose], teeth [mouth], claws [hands], body fat, fur [hair], muscles and bones)

**2 point** for correctly verbalizing the correct label to the picture (5-7)

**1 point** for correctly verbalizing the correct label to the picture (1-4)

**0 point** for incorrectly verbalizing label/s to pictures, an irrelevant response, or no response

Problem/Solution Retelling

This task consists of the student retelling the p/s passage and points are given for key words (related to the structure) and key details from the text.

Key word

**1 point** for each key word verbalized (e.g., problem, solution, solve/d, and/or fix/ed)

**0 point** for verbalizing an irrelevant response, “I don’t know”, or no response

Key details

**1 point** for each key detail verbalized from the text

Examples of key details

1. Matt opened the door and a bird flew over his head and into the house.

2. Matt tried to catch the bird in a box.
  3. Matt stood very still and waited for the bird to land on a chair.
  4. When Matt got close the bird flew away.
  5. Matt and his brother got a blanket and used the blanket to guide the bird out of the house.
- 0 point** for verbalizing an irrelevant response, “I don’t know”, or no response

#### Problem/Solution Mapping

This task consists of four questions (two problem questions and two solution questions). Each question is scored separately and then added together for a total of 8 points.

Question 1: “What was Matt’s problem?”

**2 point** for pointing to the correct visual representation and verbalizing a correct response (i.e., “A bird flew into his house”, “The bird got inside”)

**1 point** for verbalizing an incomplete response (e.g., “A bird”, “House”) and/or pointing to the correct visual representation

**0 point** for verbalizing an incorrect response (i.e., “The bird flew on the chair), and/or pointing to the incorrect visual representation, an irrelevant response, “I don’t know”, or no response

Question 2: “How did Matt try to fix the problem?”

**2 point** for pointing to the correct visual representation and verbalizing a correct response (i.e., “Tried to catch it in a box”)

**1 point** for verbalizing an incomplete response (e.g., “The bird landed on a chair”, “A box”, “With a bucket”) and/or pointing to the correct visual representation

**0 point** for verbalizing an incorrect response (e.g., “He got help”) and/or pointing to the incorrect visual representation, an irrelevant response, “I don’t know”, or no response

Question 3: What problem did Matt have next?

**2 point** for pointing to the correct visual representation and verbalizing a correct response (i.e., “The bird flew away when Matt/he got close”)

**1 point** for verbalizing an incomplete response (e.g., “A chair”, “The bird was going”) and/or pointing to the correct visual representation

**0 point** for verbalizing an incorrect response, (e.g., “He shut the door”), and/or pointing to the incorrect visual representation, an irrelevant response, “I don’t know”, or no response

Question 4: So what did Matt do to try to fix the problem?

**2 point** for pointing to the correct visual representation and verbalizing a correct response (e.g., “Matt and his brother used a blanket to guide the bird out”)

**1 point** for verbalizing an incomplete response (e.g., “The bird flew away”, “Got a blanket”, “His brother helped him”) and/or pointing to the correct visual representation

**0 point** for verbalizing an incorrect response, (e.g., “Got a box”, “He said bye”), and/or pointing to the incorrect visual representation, an irrelevant response, “I don’t know”, or no response

### Problem/Solution Questions

This task is comprised of two questions. Each question has a possible score of 2 points giving the task a maximum score of 4 points.

Question 1: What problem did Matt have?

**1 point** for each problem verbalized (e.g., “The bird flew into the house”, “The bird flew away when Matt got close.”)

**0 point** for verbalizing an incorrect response, (e.g., “Bird”, “Used a blanket”), an irrelevant response, “I don’t know”, or no response

Question 2: How did he fix that problem?

**1 point** for each solution verbalized (e.g., “Matt tried to catch the bird in a box”, “Matt and his brother used a blanket to guide the bird out of the house”)

**0 point** for verbalizing an incorrect response, (i.e., “Blanket”, “He got a box”, “He called his brother”), an irrelevant response, “I don’t know”, or no response