The Impact of Direct Instruction and Cooperative Retelling using a Collaborative Podcasting tool on the Narrative Writing Skills of Upper Elementary School Children in the Inclusive Classroom

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A Thesis

In the Department

of

Education

Presented in Partial Fulfillment of the Requirements

For the Degree of Doctor of Philosophy (Educational Technology) at

Concordia University

Montreal, Québec, Canada

December, 2011

CONCORDIA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

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By: **Ofra Aslan**

Entitled: **The Impact of Direct instruction and Cooperative Retelling using a Collaborative Podcasting tool on the Narrative Writing Skills of upper Elementary School Children in the Inclusive Classroom**

and submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY (Educational Technology)

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ABSTRACT

The Impact of Direct Instruction and Cooperative Retelling using a Collaborative Podcasting tool on the Narrative Writing Skills of Upper Elementary School Children in the Inclusive Classroom

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Concordia University, 2011

To address the writing challenges experienced by many Normally Achieving students (NA) and students with learning disabilities (LD) in the inclusive classroom, this quasi-experiment study examined the outcomes of two technology-supported instructional interventions and an untreated control group with pretest and posttests, and posttest only, aimed at improving the narrative writing skills of cycle 3 (Grades 5 and 6) students. The first intervention was focused on the development of oral retelling skills using a direct instruction and a cooperative retelling (CR) method. The second intervention employed a direct instruction (DI) method. Embedded within each intervention was an additional weekly remediation session given to the LD students. Both interventions required participants to listen to podcasts of folktales hosted on the Internet site VoiceThread. The same site was used by the CR group to facilitate the cooperative retelling process.

A total of 131 students, 57 Grade 5 and 74 Grade 6 students participated in the study, which lasted 5 months. While the treatments differed in their theoretical foundations and instructional interventions, both involved four cycles of folktale retelling

written production. To measure the impact of the treatments, participants' pre- and posttest written narratives were analyzed at both the microstructure level (story length and grammatical complexity as measured by the total number of T-units and syntax) and the macrostructure level (total number of episodes in the story as well as overall story coherence).

Two-way ANOVAs conducted on gain score data indicated that students in the CR conditions at both the Grade 5 and Grade 6 levels outperformed students in the DI and the Control groups on most microstructure and macrostructure dependent variables. The impact of the CR intervention was evident for both normally achieving and students with learning disabilities. With the exception of the original story measure for the Grade 6 group, the DI intervention did not have a significant impact on participants' narrative writing skills. The results highlight the importance of oral language skills to narrative writing and demonstrate how cooperative learning instructional methods with feedback and review, supported by technologies, facilitate the development of written narrative competencies.

ACKNOWLEDGEMENT

My research is about narratives or stories. More specifically, I used folktales as the main instructional material. Folktales have a moral lesson and as I have now completed the requirements for my doctorate degree, I must acknowledge that the main lesson of my story is that I would have never been able to complete my degree and my dissertation without the help and support of many individuals along the way.

To my supervisor, Dr. Richard Schmid, for his continuous support, guidance and help throughout my graduate studies and during the completion of my thesis; Dr. Schmid was there till the last moment and I extend my sincere gratitude to you. To Dr. Robert Bernard for his statistical expertise; I can now conduct statistical analyses that I did not know existed and understand what I am doing -in fact, I actually fell in love with statistics and the mental power that it requires. To Dr. Philip Abrami for rejecting my first thesis proposal which used a factorial design; Dr. Abrami, you were right.

To Mr. Douglas Clarke the principal of ABC academy, my research school; Mr. Clarke was supportive throughout the research process, including the writing of the grant proposal, the purchasing of the technologies that were necessary for the research, approaching participating teachers and providing me with the ongoing help as needed. I would have never been able to conduct my research without Mr. Clarke's support. The same goes to my research teachers, Mrs. Hazel Krupp and Mrs. Sherrill Black who opened up their classrooms to me. Mrs. Krupp and Mrs. Black allowed me to use their classroom time to deliver my instructional intervention, collected the consent forms and provided me with guidance when needed. I salute you for your willingness, openness and

support. To my control classrooms teacher Ms. Krista Koscher for being willing to serve as a control teacher which was essential for my research methodology.

To my family, my husband, partner and friend Donald Olds, my Rock of Ages, who has supported me throughout this process and who had to endure an absent wife; words are not enough to express my gratitude to you. And finally to my children, Jasmine, Emanuel and Simone, who listen to many folktales over the years. My children loved listening to audiobooks of folktales and it is their experience that planted the seed for my dissertation topic. My children kept me from being consumed by my studies and gave me a balance that I much needed. You are my pride and joy.

I dedicate this manuscript to

My father

Shmuel Aslan

For his unconditional love, wit, intellect, and humility

My father would have been very proud

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CHAPTER 1: INTRODUCTION

Narrative discourse refers to language units beyond the sentence level and includes the construction of an original story or the retelling of a previously heard story (Brenner, 1997). Narratives, in either oral or written form, share certain fundamental properties. These include the notion of a beginning, middle, and end, as well as the separation of the event structure from the narrative structure and the particular stance of the narrator of the story (Olson, 1990). Oral narratives, unlike written ones, develop through social interaction and collaboration. Through hearing and telling stories, children learn to recall and logically order ideas, to use appropriate linguistic strategies that create cohesiveness, to develop metalinguistic awareness, and to take into account the listener's knowledge and perspective (Cassell, 2004; Schick & Melzi, 2010). Nevertheless, learning how to write narratives requires formal instruction.

Writing is a set of skills that must be taught, practiced, and learned over time through conscious effort. It is a complex process which necessitates the activation and coordination of orthographic, graphomotor, and linguistic skills including, but not limited to, semantics, syntax, spelling, and writing conventions (Singer & Bashir, 2006). In addition, writing is dependent on the demands of the writing task and the learner's motivation to complete it (Grabe & Kaplan, 1996). The complexity of the writing process has contributed to the failure of many North American elementary and high school students to achieve the minimal required writing skills level for their grade (NCES, 2007; Canadian Education Statistics Council, 2006).

When it comes to writing tasks, many students have limited knowledge of what constitutes good writing, utilize an ineffective writing approach, do not engage in advance

planning, and have difficulty identifying problems in their texts (Graham, Harris, & Mason, 2005; Harris & Graham, 1996). Older, more experienced writers set goals and use planning strategies that incorporate content-related information (Bereiter & Scardamalia, 1987; Flower & Hayes, 1984; Hayes, 2006; McCutchen, Teske, & Bankston, 2008). Prior to actually writing, more experienced writers devote a significant amount of time to planning and developing goals that subsequently guide what and how they write. In contrast, younger writers rarely utilize advance planning strategies, even when specifically directed to do so. Instead, their thought processes are spontaneously episodic, with each idea serving as the stimulus for that which follows (Bereiter & Scardamalia, 1987; McCutchen, 2006; MacArthur & Graham, 1987).

Given that the process of writing is difficult for normally achieving children, for children with learning disabilities (LD), it is a daunting task. All aspects of writing are difficult for these children. Their stories include fewer words and ideas (Kaderavek & Sulzby, 2000; Davies, Shanks, & Davis, 2004) and less syntactically complex sentences (Levi, Musatti, Pieredda, & Sechi, 1984; McGrath, Taylor, & Kamen, 2004). In addition, they have difficulties assessing their audience's needs and adapting their discourses to meet these needs (Fey, Catts, Proctor-Williams, Tomblin, & Zhang, 2004). For the most part, children with learning disabilities do not engage in planning, but rather recount what they know about the topic as they remember it (Graham, Harris, & Larsen, 2001). They make little effort to evaluate their ideas, or to consider the constraints imposed by the topic, their audience's needs, or the organization of the text (Graham & Harris, 2003; Hook & Haynes, 2009). Furthermore, many children with learning disabilities cannot fix their writing even if their mistakes are pointed out to them. They focus on surface features, including spelling

and grammar, rather than on making changes in the meaning or the structure of their work (Roth, Spekman, & Fye, 1995).

Purpose of the Study

To address the challenges involved in the acquisition of writing skills as they are experienced by children in the inclusive classroom, my dissertation research[1] measures the effectiveness of two instructional strategies, both of which are focused on the development of narrative writing skills. The first strategy uses a direct instruction and a cooperative learning instructional method, and focuses on the development of oral narrative retelling skills, which in turn assist students with the development of their writing skills (Gjedde, 2004; Ryokai, Vaucelle, & Cassell, 2003; Shanahan, 2008). The second instructional strategy pursues the same goals using teacher-led direct instruction (Stein, Carnine, & Dixon, 1998; Swanson, 2001). Both interventions involve the students' use of "podcasts," which are multimedia files distributed over the Internet and available for playback on mobile devices and personal computers. Both of these educational interventions conform to the Québec Educational Curriculum (QEP), which stresses the importance of cooperative learning, writing as a process, storytelling, and learning by doing (Gouvernement du Québec, 2001). Therefore, both instructional strategies are situated not only in specific theoretical frameworks but are also wholly consistent with the QEP's English Language Arts curriculum. Moreover, in keeping with Québec's inclusive education model, in which LD students are integrated into the regular classroom but receive remediation in a resource

[1] Sponsored by a grant from the Québec Ministry of Education Leisure and Sports (MELS) and written by me in collaboration with my supervisor, Dr. Richard Schmid, and Mr. Doug Clarke, the research school's principal (see Appendix A).

room, the two instructional strategies were designed to be employed in both the inclusive classroom and the school's resource room.

Research Questions

The study was set up to answer the following research questions:

1. Are there differential effects between the two instructional treatments, cooperative retelling and direct instruction, on students' written narrative competencies in the inclusive classroom, and when compared with a control group?
2. Are there differential effects of the two instructional treatments, cooperative retelling and direct instruction, on LD students' written narrative competencies, and when compared with a control group?

Significance of the Study

The most recent findings of the National Assessment of Education Progress (NAEP) suggest that many students perform below grade level in writing. The report indicates that, in the US, only 28 percent of 4th-graders, 31 percent of 8th-graders, and 24 percent of 12th-graders are at or above proficient writing levels. Further, 14 percent of 4th-graders, 15 percent of 8th-graders, and 26 percent of 12th-graders performed below a basic level of achievement in writing tasks (Persky, Dane, & Jin, 2003). In Canada, Report of the Pan-Canadian Education Indicator Program 2005 indicates that, country-wide, 15% of 16-year-old students do not have the minimal requirement writing skills for their age level (Canadian Education Statistics Council, 2006). However, while research findings suggest that there is a need to improve the written performance of North American youth, research looking at instructional interventions to improve writing skills is scarce (Miller & McCardle, 2011). Thus, my research, which examines two

instructional interventions aimed at promoting narrative writing skills in upper elementary school children, provides data in a discipline where research is needed to inform practice.

While research into effective writing interventions are important, given the inclusive education model in Canada and across North America, identifying effective interventions for students with learning disabilities who struggle to gain writing proficiency is equally important (Miller & McCardle, 2011). Different instructional strategies by which educators can develop narrative skills in children with learning disabilities are cited in the literature. These approaches often include the use of pictures (Fey et al., 2004), the use of open-ended questions based on read stories (McGrath et al., 2004), the retelling of stories previously listened to (Montague, Maddux, & Dereshiwsky, 1990), and the use of story grammar development (Brenner, 1997; Davies et al., 2004). These studies are limited in that they attempt to affect only one aspect of narrative use rather than on determining how all aspects interact with one another, and asking how this interaction can be used by teachers to facilitate narrative development.

The application of a cooperative learning approach on the use of technologies for the development of narrative skills in children has been investigated by Ananny (2002), Cassell (2004), Fusai, Saudelli, Marti, Decortis, & Rizzo, (2003), Ryokai et al. (2003), Druin et al. (1999), and Umaschi and Cassell (1997). However, these studies are limited to technologies designed for specific research purposes and do not describe tools that are readily available for teachers interested in promoting narrative development in their students. VoiceThread, the podcasting on-line site used in this study, is currently available for educators interested in using ICT for narrative development. Thus, findings

from this study are applicable for researchers and educators alike. Additionally, research into which technologies have been used for narrative development has previously been limited to normally achieving children. Given the difficulties children with learning disabilities have with narrative discourse, this research takes the important step of identifying how technology can be used as a cognitive tool to support the development of these skills for all children learning in the inclusive classroom.

Definition of Terms

The following terms are central to the design and discussion of this research, and are thus defined based on the literature.

- *Story grammar*: The structure of narratives, including their constituent parts and the rules for generating and understanding them. Story grammar components are categories of information, typically provided in a certain order within episodes of folktales and fables (Stein & Glenn, 1979).
- *Retelling*: The process of post-listening recall, in which listeners recount what they remember, either orally or in writing (Kalmbach, 1986).
- *Inclusive classroom*: The classroom in which students with special needs are educated alongside students without special needs (O'Donnell, D'Amico, Schmid, Reeve, & Smith, 2007).
- *Learning disabilities*: A number of disorders, which may affect the acquisition, organization, retention, understanding, or use of verbal or nonverbal information. These disorders affect learning in individuals who otherwise demonstrate at least average abilities essential for thinking and/or reasoning (Learning Disabilities Association of Canada, 2002).

- *Cooperative retelling*: An instructional strategy whereby small groups of students work together to recount a story.
- *Direct instruction*: An explicit teacher-directed instructional approach based on task analysis and scripted lessons. The strategy focuses on breaking down major skills into smaller sub-skills, providing frequent opportunities for student response, and delivering sequenced instructional steps from one level of mastery to the next (Stein et al., 1998).

Overview

The interventions investigated by my dissertation are founded in several theories. I begin with an examination of those theories related to narrative construction and story grammar, while highlighting research that shows the effectiveness of these elements in the development of written narrative. I then continue with a conceptual model of the writing process, as this forms the foundation of the instructional interventions I employ, namely direct instruction in combination with cooperative retelling (CR), and direct instruction (DI). In the section that follows, I highlight research related to cooperative learning and outline the cooperative instructional strategies that I use in my study. As ICT was an integral part of both instructional interventions, this section also discusses the literature related to these tools and their impact on learning. The literature review concludes with an exposition of theories regarding the use of technologies as cognitive tools within a technology-enhanced learning environment (TELE). I then outline my research questions and methodology, which are followed by results and discussion sections. In the conclusion, I summarize the educational pertinence of the results, detail the limitations of the study, and make recommendations for further research in this area.

CHAPTER 2: LITERATURE REVIEW

Narratives and Cognition

> A narrative is an account of events occurring over time. It is irreducibly durative…the time involved is "human time" rather than abstract or clock time. It is time whose significance is given by the meaning assigned to events within its compass… (Bruner, 1991, p. 1)

Bruner (1991) proposes that narratives have specific properties. They include a sequence of events occurring over time. These events may be real or imaginary, wherein the message or the story is derived from the sequence of events rather than their inherent truth. Stories are told so that the audience can extract meaning from them. The telling of a story and our comprehension of it depends on our capacity to process knowledge in an interpretive way. Stories are also told in a particular context, thus relying on the background knowledge of the teller and the listener or reader. Therefore, the narrative mode is a form of thinking, and at its core are human intentions. Labov (1997) coins the term *reportability* in order to highlight how important it is for narratives to be interesting and/or meaningful for the audience. According to Labov, narrative discourse is the ability to make meaning for others across time and space. Through meaning, the narrative gains permanency and can be used for reflection, memory, and sharing, both with those who are present and those who are not (Cassell, 2004). Narratives are an important mode of thinking, by which humans build and shape experiences (Van Dongen & Westby, 1986).

The idea that narratives are related to human thinking and thus human cognition has been one of the central themes in the study of children's narrative development. Applebee (1978) describes the ability of children to develop narratives as being related to children's

development of concepts. To tell or write a story, children must have knowledge of the following concepts: temporal relationships, cause and effect relationships, and theory of the mind (i.e., knowing that others can think or feel differently from oneself). According to Applebee, the use of these concepts by children indicates that they possess the internalized representation of a story or "sense of a story," which in turn guides their understanding and production of narratives. This internalized representation also aids in comprehension and allows children to make predictions, based on previously occurring experiences, about possible meaning (Brenner, 1997).

Similarly, Shank and Abelson (1995) argue that stories about one's experiences, and the experiences of others, are fundamental elements of human memory, knowledge, and social communication. Humans have been telling stories for millions of years, and thus stories play a major role in human interaction. All of our knowledge is contained in stories, as are the mechanisms for constructing and retrieving it. In their essay "Knowledge and Memory: The Real Story," Shank and Abelson (1995) suggest that human memory is a collection of stories as they are experienced, told, heard, and retold. Memory is memory for stories, and the major processes of memory involve the creation, storage, and retrieval of stories. Because stories are an element of human cognitive function, they serve as scripts or a "set of expectations about what will happen next in a well-understood situation" (Shank & Abelson, 1995, p. 2). Other researchers have suggested the existence of a story schema, described as hierarchically-related story grammar components or episodes (Brown, 2001; Merritt & Liles, 1987; Reutzel & Cooter, 1996).

The fundamental assumption of schema theories is related to narrative comprehension and production. Schemas allow the reader or the listener to construct meaning. Therefore, both adults and children use knowledge of story organization to understand and remember stories (Fitzgerald & Teasley, 1986), to anticipate forthcoming information in written texts (Applebee, 1978; Whaley, 1981), and to generate stories (Bereiter & Scardamalia, 1982).

Story Grammar

Story grammar, also referred to as narrative structure and story schema, describes what is known about the grammar or the structure of narratives, including their constituent parts and rules for generating and understanding them (Kwiat, 2008). The inclusion of story grammar elements in narratives makes them coherent to the reader or the listener so that he or she can construct an "overall sense" of the events being conveyed (Murfett, Powel, & Snow, 2008). Rumelhart (1975) was one of the first theorists to put forth a story grammar model based on his analysis of folktales, fables, and myths. Rumelhart's story grammar consisted of a setting followed by one or more episodes. The setting included the introduction of the main characters, the time and place in which events occurred, and other information that illuminated upcoming episodes to follow. In this story grammar model, an episode consisted of an initiating event, the main character's reaction to that event, and a consequence that was a direct result of the reaction. Rumelhart's story grammar is based on separate systems that describe semantic and syntactic relations occurring in the story. A simple narrative consists of a setting and an episode. The setting contains the time and place of the story and introduces the character(s). Syntactically, the setting appears before the episode, but semantically it can be situated within that episode.

In an attempt to test Rumelhart's theory, Stein and Glenn (1975, cited in Stein & Glenn, 1979) analyzed elementary school children's story recall of folktales and fables. Stein and Glenn (1979) subsequently outlined their own story grammar model. Their model consists of seven events that occur in most folktales and fables. These include a setting, which introduces the main character(s) and describes the social, physical, or temporal context in which the story occurs, and also an episode system. In this model, however, an episode is an entire behavioral structure with six defined events. The defined events include an internal or external event which influences the character(s) and that character's response. Specifically, Stein and Glenn's six events are:

1. *Initiating event*: that which leads the main character to formulate his or her goals and start the sequence of actions and events;
2. *Internal response*: the main character's perceptions of the initiating event;
3. *Plan*: the character's outline of the sequence of events that will help him or her achieve his or her goal;
4. *Attempts*: the action of the characters;
5. *Consequences*: the attainment or non-attainment of the character's goals; and
6. *Reaction*: thoughts and feelings produced by the outcome of the action.

According to this model, a simple story contains one episode. However, most stories are more complex, including two or more episodes that can be related to each other in several ways. Adults' and children's narratives do not always include episodes that contain all of these components, for different reasons. Events can be omitted because of the narrator's lack of storytelling skills, or they must be inferred through explicit statements in

the story or through the application of world knowledge by the listener (Hughes, McGillivray, & Schmidek, 1997).

Researchers have determined that some story grammar elements are structurally more important than others (Soodla & Kikas, 2010). Definitions of a good, coherent story relate explicitly to the goal-directed action of a protagonist. Liles, Duffy, Merritt, and Purcell (1995) define a goal-based episode as containing some reference to three components: (a) an initiating event or an internal response, (b) an attempt, and (c) a direct consequence. Thus, an episode is not complete if one or more of these essential elements are missing (Hughes et al., 1997). The setting, information, and reactions provide additional information in stories, but are not crucial to an episode's structure (Merritt & Liles, 1987).

As children develop their narrative skills, they move from simple, non-goal-based sequences of sentences towards coherent episode structures. By the age of 5, children are able to tell stories organized in terms of the goals and plans outlined by story grammar models (Applebee, 1978). Therefore, a prominent analytic approach to children's narratives examines them for the inclusion of story grammar elements. Studies have demonstrated that 7- to 8-year-old children are capable producing complete episodes (Hughes et al., 1997; Soodla & Kikas, 2010). As children mature, they more frequently use the complete range of story grammar components in their writing (Schneider, Hayward, & Dube, 2006; Shonna, Lui, & Tannock, 2003; Stein & Glenn, 1979). The components most often used by elementary school children, both in self-generated narratives (Merritt & Liles, 1987) and in retold stories (John, Lui, & Tannock, 2005), are Stein and Glenn's categories of *initiating events*, *actions*, and *consequences*. These categories represent concrete events, which may be relatively easy for children to understand and thus include in their story retellings (Lorch

et al., 1999). Conversely, children were least likely to recall the characters' emotional responses, desires, and thoughts (Stein and Glenn's *internal responses* and *reactions*). When retelling stories, internal states may be more difficult to express and are likely implied to the listener, since they are internal intentions and not concrete events (Lorch et al., 1999). As well, since *reactions* occur at the end of stories and tend to refer to internal states, children commonly omit them.

While analyzing the levels of narrative's episodic structure as defined by an *initiating event*, *attempt*, and *consequence* has been a common scholarly approach to differentiating between the narrative abilities of individual children (Merritt & Liles, 1987; Muñoz, Gillam, Peña, & Gulley-Faehnle, 2003), Norbury and Bishop (2003) found that, by measuring children's narratives in terms of episodic structure levels (complete vs. incomplete), they were unable to obtain a clear differentiation of the varying language abilities of children. This is because such a measurement does not take into account all story grammar components (i.e., the setting component and the protagonists' thoughts and feelings) (Soodla & Kikas, 2010). Thus, research that attempts to measure the episode structure in children's narratives needs to consider the quality of the complete episodes in the story.

Stein and Glenn's (1979) story grammar model has been widely applied to research on story comprehension and written instruction (Harris, Graham, & Mason, 2006). However, most of this research is focused on children with learning disabilities. For example, Dimino, Gersten, Carnine, and Blake (1990) investigated explicit instruction in story grammar with ninth-grade students who were identified as having poor reading comprehension. Results showed that the treatment group performed significantly better on measures of narrative

reading comprehension and narrative written retelling than a control group that did not receive explicit story grammar instruction. Paris (2003) examined the impact of explicit instruction in story grammar on first-grade students' comprehension of narrative text. The intervention used picture books to illustrate story grammar components and also taught an oral retelling strategy. Significant improvements were found in the treatment group's oral narrative retelling ability and narrative reading comprehension (with picture books) when compared to a control poetry instruction condition. However, this treatment did not measure writing abilities. Fitzgerald and Teasley (1986) investigated the impact of direct instruction in narrative structure on quality, coherence, use of temporal and causal relations, and creativity in the stories of fourth-grade children who scored at a low level on measures of knowledge of narrative structure. Results demonstrated that instruction in narrative structure had a strong positive effect on organization in story writing, as well as on the quality of writing, as measured by a rubric which looked at text dimensions such as sequence of events, organization, word choice, details and sentence structure. While the results of the study suggest a positive outcome resulting from narrative structure instruction and treatment, the authors conclude that the results may not be solely due to their intervention; it is possible that the abundant use of special activities during the intensive 7-week session was primarily responsible for the positive findings.

The goal of instructional interventions based on story grammar is to facilitate knowledge representation in students' long-term memory and to create a shared language between students and teachers, so that teachers can provide students with readily understood feedback when they experience difficulties comprehending or writing stories (Dimino, Taylor, & Gersten, 1995). If children can identify a story as being an example of a general,

previously learned organizational framework, they can use this framework when necessary for story comprehension as well as for oral and written narrative production (Pino, 1997).

While existing research suggests that instruction in story grammar facilitates written production, Graham and Perin (2007), in their meta-analysis of writing pointed out that to date, studies in which text structure has been used as an instructional strategy are relatively few. In addition, these studies utilize a variety of conditions so that it is difficult to assert which aspects of the instructional strategies have a causal impact on the development of knowledge and skills in the application of story grammar to writing tasks. Thus, my study, which involves an intervention including either direct instruction on story grammar *with* cooperative retelling or direct instruction only, provides relevant information regarding the impact of story grammar instruction on narrative writing.

Oral Versus Written Narratives

Olson (1990) suggests that both oral and written narrative is a construction, a linguistic artifice which shares the notion of beginning, middle, and end, as well as the particular stance of the narrator of the story. From a linguistics perspective, oral and written language share the use of causal and temporal subordinating conjunctions, coordinating conjunctions, adverbs, and so forth (Strong, 1998). However, oral narrative serves a social function by creating stories that can be retold, and that become the genesis of further stories. As such, the metalanguage of oral narratives is focused on the content rather than on the form. In contrast, writing serves to fix the text and as such, its memorability becomes secondary. Bruner (1966) proposes that, when writing, one must detach himself or herself from social interaction and conjure up in his or her mind the story to be written.

Both oral and written narratives require the use of decontextualized language, in which background knowledge must often be provided to the listener or the reader. In telling stories, children must be able to manipulate linguistic devices in order to create cohesion in their stories. This is achieved through the proper use of tense and temporal connectives (e.g. but, there, so), adverbs (e.g. when, where), and so on (Nelson, 1996). Therefore, while written narratives require expertise specific to writing, including the knowledge of how to form letters, phonological awareness, and the kind of punctuation required for written text, they are similar to oral narratives in that they necessitate the use of decontextualized language. School children's narrative development is the result of co-occurring competencies in both forms of language, which suggests that the best approach for improvement in this area is to provide students with opportunities to develop both aspects of narration concurrently (Cassell, 2004).

From a theoretical perspective, programs that target oral language skills would have a positive impact on writing achievement. However, there has been very little research investigating instructional interventions that focus on oral language development and their effects on writing skills (Shanahan, 2008). Shanahan suggests that this lack of research may be due to the fact that school curriculum in North America does not focus on oral language development. In addition, it is likely that developing oral language skills in the inclusive classroom might also be encumbered by the inability to observe them. If so, the Internet site VoiceThread provides a platform for both teachers and researchers to facilitate and monitor oral language composition allowing for a close examination of oral language development and its impact on writing skills.

Interventions to enhance oral and written narrative performance can be conducted at two levels: (a) macrostructure and (b) microstructure (Hughes et al., 1997). The macrostructure level targets the narrative the child produces. This level of intervention may include developing the child's ability to understand and apply story grammar elements; it may also address the narrative's overall coherence. At the microstructure level, teaching emphasis is placed on the linguistic structures used to create a narrative, such as grammatical complexity, vocabulary and story length (Westerveld, Gillon, & Moran, 2008). Although macro- and microstructure measures of oral and written narrative performance tap different underlying language skills (Liles et al., 1995), competence or difficulty in one area may affect performance in another.

Retelling

Retelling describes the process of post-listening recall in which listeners recount what they remember, orally or in writing (Kalmbach, 1986). Studies have demonstrated that retelling significantly improves children's story comprehension, recollection of story information, sense of story structure, and oral language complexity (Gambrell, Koskinen, & Kapinus, 1991; Lipson & Wixson, 1997; Morrow, 1985). While studies in which retelling was used as an instructional strategy to improve writing skills are scarce (Geist & Boydston, 2002), existing studies which use retelling to improve children's writing have demonstrated retelling to be an effective instructional strategy (Morrow, 1985). Geist and Boydston (2002) examine the effects of teaching narrative structure using written retelling on students' test performances on the Test of Written Language (TOFEL-2). One hundred and eighteen students from Grade 2 participated in the study. Participants were randomly assigned to one of four conditions: (a) written retelling in a

traditional teacher-directed classroom; (b) a traditional classroom which is teacher-based; (c) a written process classroom; and (d) a written processes with retelling classroom. No differences were found between the two teacher-directed classrooms. Over 12 weeks, the experimental group completed 12 written retellings of folktales they read. The written process retelling classroom showed statistically significant gain in syntactic maturity, thematic maturity, contextual vocabulary, and contextual style. The study illustrates that for a retelling instructional strategy to be effective, it should be accompanied by a process-based instructional strategy. However, given the young age of the participants, it is possible that older, more mature students may benefit from a retelling instructional strategy in a teacher-directed classroom.

Retelling has often been used as an assessment tool for oral and written language performance. Schneider (1996) used 5 picture books and asked students to retell the stories. The four conditions were picture only, oral story only, oral and picture, and oral mode with picture for retelling. Retelling from the picture only conditions contained fewer episodes, but the stories did not differ in length. The most complex stories were produced when the children listened to the stories without pictures, as they tended to repeat story grammar units in the model story. Schneider's study demonstrated that listening to retellings is an effective strategy for evaluating children's oral language use. Listening to a story focuses the listener's attention on the language and the content of the story. It also provides the child with a model of the language used in the story, thus facilitating the retelling process.

Cognitive Models of the Writing Process

The cognitive approach to the writing process emerged in the late 1970s with the growth of the field of cognitive psychology (Hayes, 2006). Researchers developed cognitive models of the writing process by examining protocol transcripts and videotapes of students talking aloud about writing (Grabe & Kaplan, 1996). This research, as well as research in the field of Artificial Intelligence, resulted in the process model of writing, developed by Flower and Hayes (1984). Flower and Hayes proposed a model of writing that described phases of mature or expert writing through three processes: (a) planning or formulating ideas; (b) translating or encoding thoughts and ideas into meaningful words, phrases, clauses, and sentences; and (c) reviewing or revising one's writing. The Flower and Hayes model, depicted in Figure 1, emphasizes the hierarchical planning process that is essential for writing.

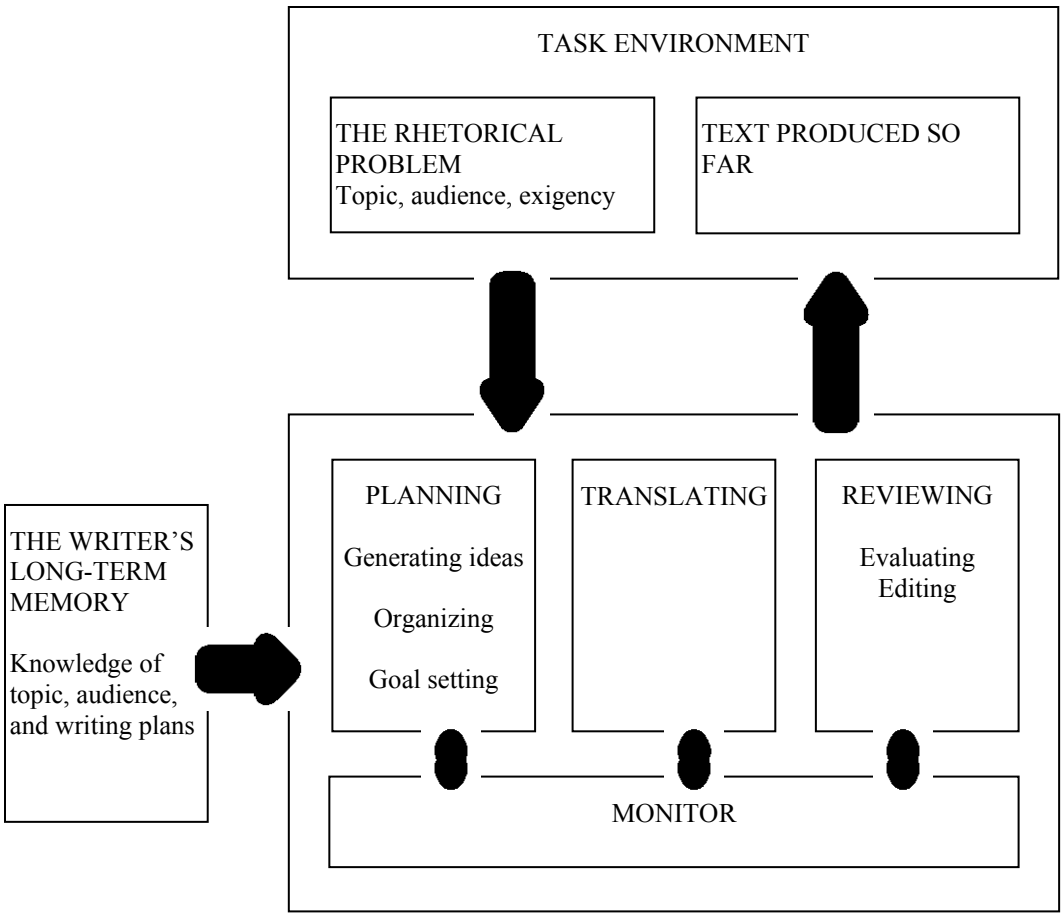

Figure 1. Flower and Hayes' (1984) process model of writing

This model divides the composition processes of writing into the following three components: (a) the composing processor, (b) the task environment, and (c) the writer's long-term memory. Within the composing processor, three operational processors generate the written text: (a) *planning*, (b) *translating*, and (c) *reviewing*. These three processors are managed by an executive control system called the *monitor*. Finally, within the *planning* process, there are three subcomponents: (a) generating ideas, (b) organizing information, and (c) setting goals. When text is generated, the ideas in *planning* are translated into language on the page, which in turn is reviewed and revised.

The Flower and Hayes (1984) model has been widely used to explain the writing process. However, with continued research on the subject, which examined writing from both social and cognitive perspectives, Hayes (1986) modified the writing process model to that which is depicted in Figure 2. In the revised model, *planning* was subsumed under the broader label *reflection*, which encompasses problem solving, decision-making and inferences. *Translating* was re-labeled *text production*. *Reviewing* was expanded to include *text interpretation*.

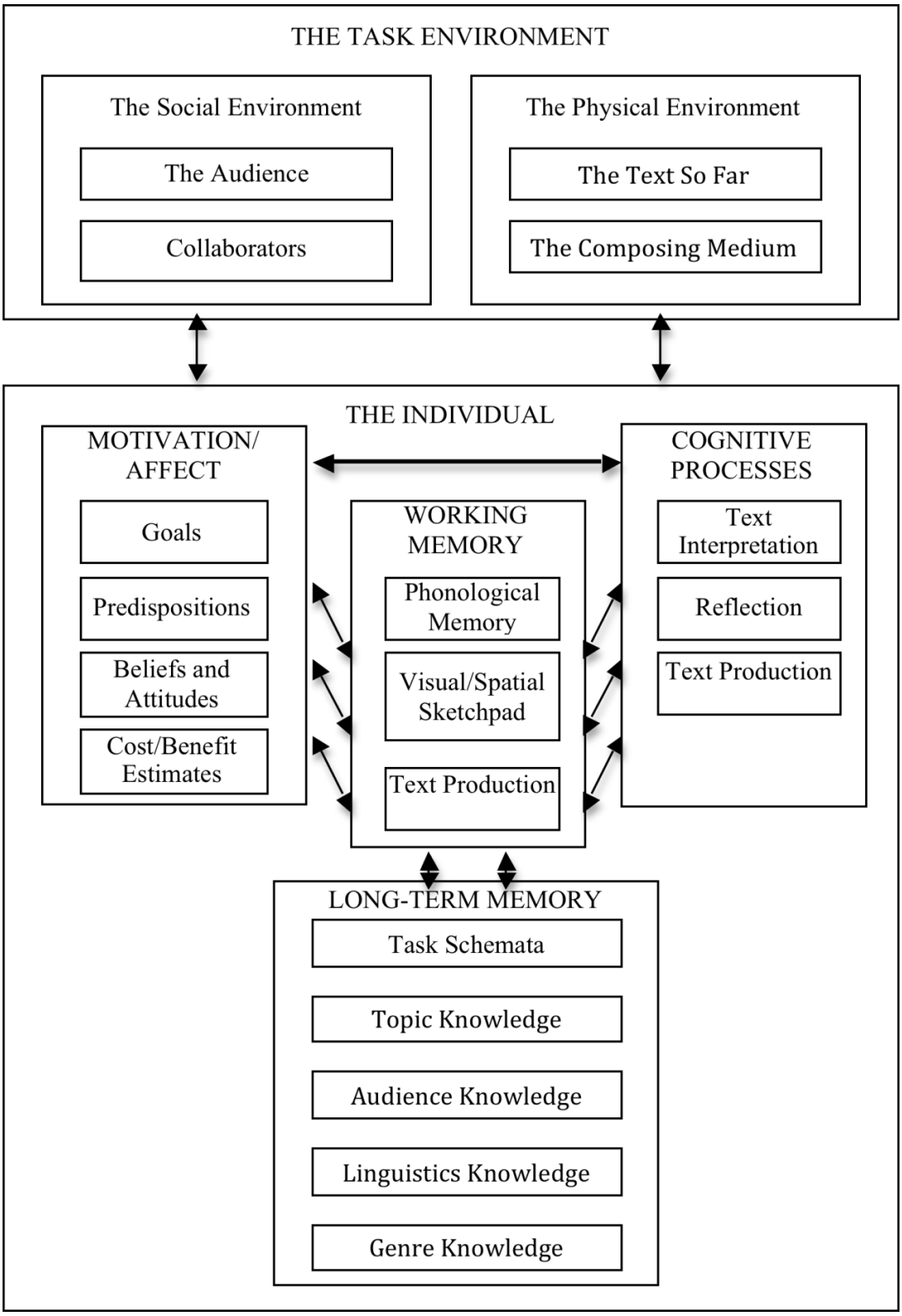

Figure 2. Hayes' (1996, depicted in Hayes, 2006, p. 30) process model of writing

According to Hayes (2006), there are three main areas of the writer's domain that relate to the writing process. The *task environment* refers to everything that influences the writing task, including the demands of the task itself (often beyond the control of the writer), as well as the writer's cognitive and affective competencies. The *task environment* interacts with an individual's *long-term memory*, *working memory*, *cognitive processes*, and *motivation*.

Working memory (WM) is a limited-duration system, in which the processing of incoming visual and/or auditory information from the environment occurs. From WM, the information is either transferred to *long-term memory* (LTM), a permanent, retrievable storage system, or is lost. Hayes identifies three components to WM: (a) *phonological memory*—a temporary verbal acoustic storage system; (b) a *visuospatial sketchpad*—a system for storing and manipulating visual information; and (c) the *central executive*—a system assumed to be responsible for the attention control of working memory (Baddeley, 2003). In the Hayes (1996) model, WM is a resource used by the writer and available throughout the writing process.

Information, such as the writer's knowledge about the genre and writing plans, are stored in the LTM. *Genre knowledge* includes narrative structure or story grammar. The *task schemata* are data structures in the LTM for representing knowledge as related to writing. The *task schemata* constitute the key difference between expert and novice writers. *Task schemata* play a role in the cognitive processes essential to writing, including planning, production, and revising, which are labeled *text production*. *Planning* involves retrieving the relevant information from the LTM and the *task environment*. This information is used to set goals and to develop the text that will satisfy the goals.

Production is taking material from the LTM in accordance with the writer's plans and goals, and formulating sentences with it. Lastly, in the *reviewing* operation, the goal is to improve the quality of the text produced during the *production* process.

The revised model proposed by Hayes (1996) is designed to account for expert writers (McCutchen, 2006). The writing model proposed by Bereiter and Scardamalia (1987), as opposed to the Flower and Hayes model (1984) or the Hayes model (1996), explicitly distinguishes between novice and expert writers. Based on their analysis of the differences between novice and skilled writers, Bereiter and Scardamalia propose that writing cannot assume a single processing model but rather multiple models that are relevant to different developmental stages of writing. According to these scholars, because children's initial experience with discourse is largely conversational, their schema for text generation may be shaped by their oral skills. Therefore, they developed two models, a *knowledge-telling* model performed by less skilled writers and a *knowledge-transforming* model which represents the reflective problem-solving approach of experienced writers.

The *knowledge-telling* model proposes a linear set of procedures. When children and less experienced writers begin to compose text, they need to convert oral language into written text. They need to shift from engaging in a dialogue with a partner to the monologue that is used in writing (Grabe & Kaplan, 1996). For that reason, their primary problem is with generating enough useful information. Consequently, they rely on a few specific strategies: they (a) consider the topic of the assignment, (b) consider the genre, and (c) read what is already written and use it to generate additional information. Figure 3

illustrates Bereiter and Scardamalia's (1987) representation of the *knowledge-telling* process.

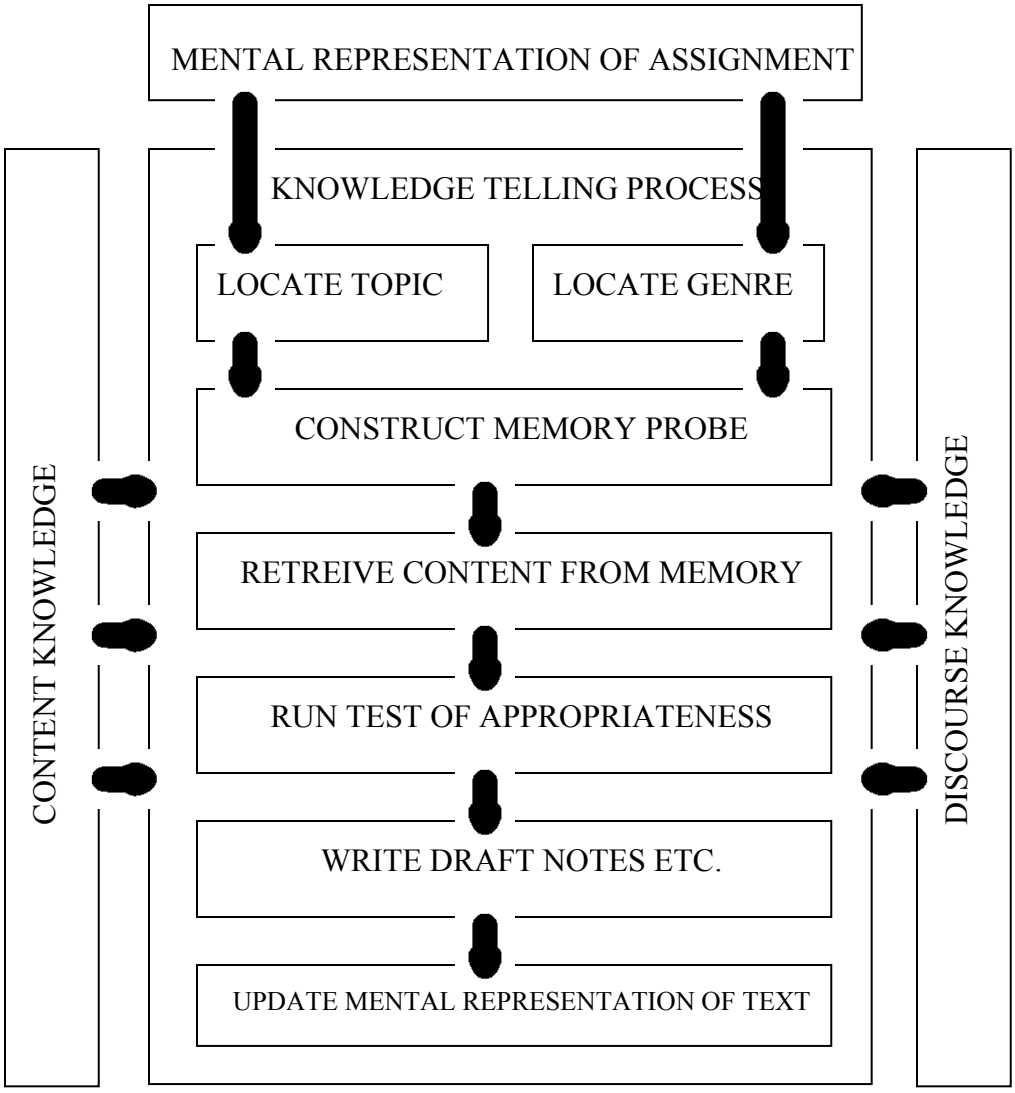

Figure 3. Bereiter and Scardamalia's (1987) knowledge-telling process model

In the *knowledge-telling* model, information is generated from the assignment, the topic, and the genre. Ideas are retrieved from memory and are used if deemed appropriate by the writer. The processing demands are simple, as are the retrieval and evaluation demands.

Information from memory becomes available through the use of *spreading activation* (Anderson, 1983), in which related topics are activated in memory. Therefore, as related topics are activated, writers tend to stay on those topics. Once a unit of text has been generated, it serves as a probe for related topics, resulting in additional text. The appropriateness of the information retrieved depends on the availability of information in memory. Bereiter and Scardamalia suggest that the retrieval process takes place without the writer having to monitor or plan for coherence. Discourse knowledge is accessed in the same way. *Discourse knowledge* involves schemata of various discourse forms, procedures, and strategies for instantiation of these schemata, as well as sentence-generating procedures that include grammatical knowledge (McCutchen, 1986). Discourse elements function as cues for retrieval of content from memory. This content is combined with topic cues to ensure that what is retrieved will not only be relevant to the topic but also contribute to the appropriate structure of the composition.

The *knowledge-transformation* model employed by more expert writers first elaborates the writing problem to be solved and then uses the goals derived from this representation to guide the generation and evaluation of content during writing. Therefore, more expert writers show evidence of reflective thought during writing: they develop more complex plans before writing, modify and expand upon these more radically during writing, and revise their initial drafts more extensively. Therefore, although the *knowledge-transformation* model retains some of the characteristics of the *knowledge-telling* model where content is derived from memory, it is embedded between content and rhetorical problem spaces so that ideas are not just a representation of the writer's knowledge. Writing is not simply a matter of adapting content to the rhetorical context, but is an emergent

process in which content is formulated as the text develops. The Bereiter and Scardamalia (1987) *knowledge-transformation* model is presented in Figure 4.

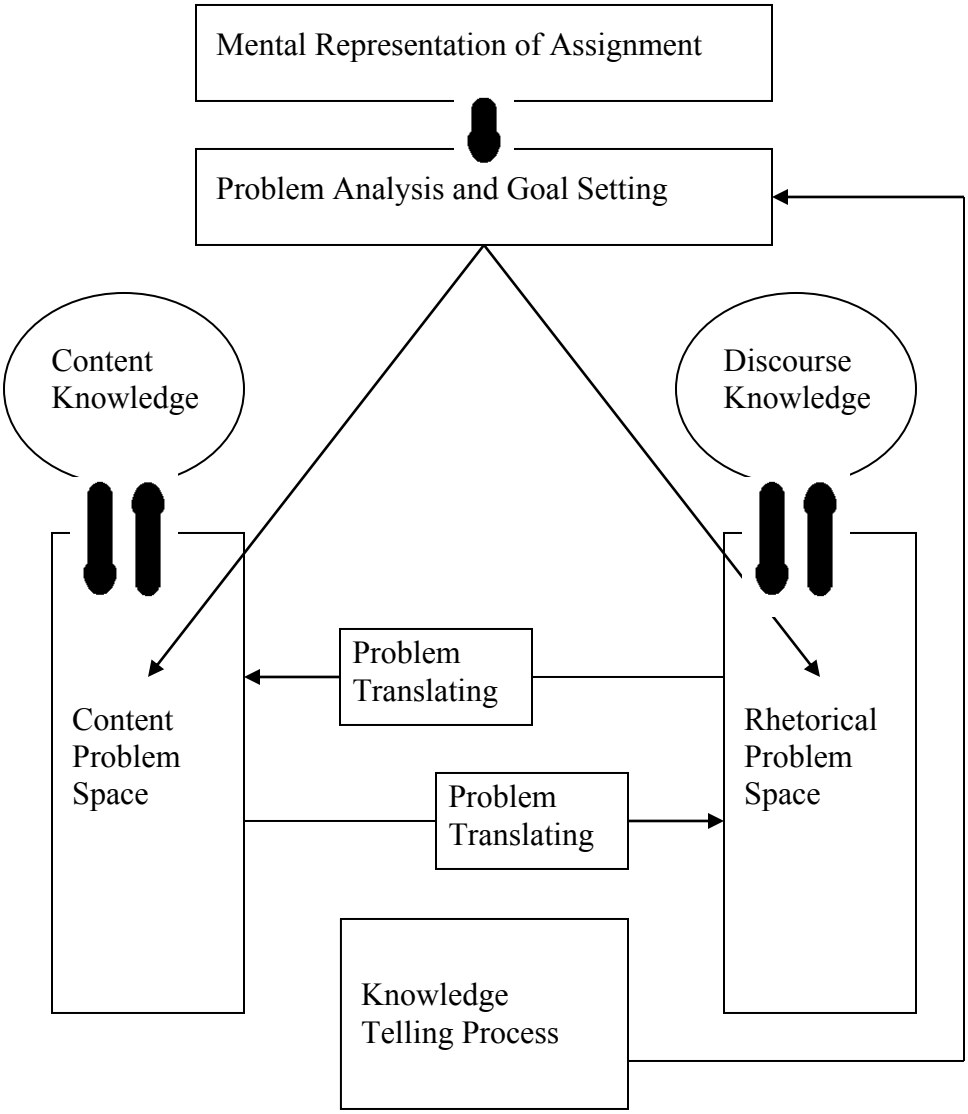

Figure 4. Bereiter and Scardamalia's (1987) knowledge- transformation model of writing

According to Bereiter and Scardamalia (1987), children's texts, even those created by talented writers, adhere strongly to the constraints of the *knowledge-telling* mode. Bereiter and Scardamalia analyzed protocols from children aged 10, 12, 16, and 18. They observed that approximately 90% of the writing produced by the younger group involved

text generation. Even when asked to plan in advance, younger children have difficulties separating planning from writing. When asked to make notes before beginning to write, the 10-year-olds described by Bereiter and Scardamalia wrote a first draft of the assigned composition, while the children aged 12 and up produced notes that were later expanded into text. The younger children not only had difficulties with planning their own writing production, they also had trouble with identifying the planning activities of others when asked to review videotapes of writers planning aloud. The authors note that around the age of 12, children begin to distinguish between plans and text. However, even in adolescence, plans produced for written text continue to be dominated by content generation, unless planning is central to the instructional strategy they receive (Cameron & Moshenko, 1996; De La Paz & Graham, 2002).

McCutchen (2006) suggests that *knowledge-telling* is an adaptive response to the heavy processing demands that writing can impose on a novice writer. According to McCutchen (2000), younger writers are constrained by the limitations of WM and therefore depend on *knowledge-telling*. Based on the fact that older children write longer and more coherent text, McCutchen suggests that children's language-encoding develops fluency with age, and thus students are able to increasingly handle the processing requirements imposed by writing tasks. McCutchen attributes this improvement in writing skills to the development of the interaction between LTM and WM by expert writers.

Text generation fluency, which is essential for coherent writing, is highly dependent on the writer's content knowledge and discourse knowledge. Therefore, a well-developed knowledge base and a well-learned schema for a particular genre will highly influence text cohesion (McCutchen, 2006). In an article titled *Knowledge, Processing, and Working*

Memory: Implications for a Theory of Writing, McCutchen (2000) outlines a developmental model of memory and writing processes that stresses the interactions between working memory and knowledge stored in LTM, as well as the changes in such interactions as writing knowledge increases at both the discourse and content level. Based on a concept developed by Ericsson and Kintsch (1995, cited in McCutchen, 2000), McCutchen proposes the concept of *long-term working memory* (LT-WM), which contains, in addition to the limited number of elements activated in WM, retrieval structures that link WM items to related elements in LTM. LT-WM contains two types of information: items activated in WM and items in LTM that can be reached via the retrieval structures. Such LTM elements are not actually stored within working memory, but they can be quickly retrieved when processing requires. Unlike WM, which has strict capacity limitations, the capacity of LT-WM is limited only by the nature of the encoding processes that build retrieval structures and by the extent of knowledge in LTM to which those structures connect. Effective retrieval structure requires knowledge that is "strong, stable, well practiced, and automated, so that it can be employed for encoding without additional resource demands" (Kintsch, 1998, p. 242). Therefore, access to rich knowledge of a particular genre enables writers to utilize the resources of LT-WM, building retrieval structures between text elements currently processed in WM and organized text representations within LTM.

While the notion of LT-WM has been proposed for expert writers, less experienced writers may also benefit from genre knowledge, even before their encoding processes are sufficiently fluent to support LT-WM. According to Bereiter and Scardamalia (1987), the *knowledge-telling* strategy uses cues from the assignment (genre and topic cues) to formulate memory probes. When children are more familiar with a genre, the memory

probes generated as part of the *knowledge-telling* process will be more systematically related and should result in a more coherent content. Thus, even though children may not have access to LT-WM, as expert writers do, their genre knowledge, including elements of narrative structure, may influence their WM operations. In addition, increases in language fluency and knowledge base allow writers to transcend the processing limits of WM and capitalize on LT-WM. Given the fact that narrative writing requires knowledge related to structure and language, it is likely that an instruction that targets both narrative structure and narrative language would allow participants to tap onto LT-WM resources and thus improve both their narrative cohesion and length.

Research on Writing

According to Bereiter and Scardamalia (1987) both novice and more expert writers use both *discourse knowledge*—knowledge about various forms of writing as well as generalized linguistic knowledge, and *content knowledge*—knowledge about the topic during writing. However, the ways in which both sources of knowledge contribute to the writing process differ depending on one's writing expertise. The *knowledge-telling* process begins with the construction of a representation of an assignment, followed by the location of topic and genre identifiers. This combination provides cues for retrieval of information for task completion. The retrieval of information is facilitated by both *discourse knowledge* and *content knowledge* (McCutchen, 1986). For example, given the assignment to write a story about "pets", the knowledge-telling writer identifies the type of written work that is required, in this case narrative, as well as topics related to "pets," such as "dogs," "cats," "birds," and perhaps "favorite pets." Anderson (1983) describes this type of retrieval process as a "spreading activation process," in which cues activate

associated concepts. Once the writer has started writing, the text produced provides retrieval cues for further related content. Thus, knowledge telling is a process of making use, in a linear fashion, of the natural abilities of language and everyday social experiences.

Like novice writers, expert writers rely on both *content knowledge* and *discourse knowledge* during writing. However, According to the *knowledge-transformation* model, the development of ideas during writing depends on the extent to which the retrieval of content and discourse is strategically controlled in order to satisfy rhetorical goals. The knowledge-transforming strategy, involves elaborating a representation of the rhetorical problem and using the goals derived from this representation to guide the generation and evaluation of both content and discourse during writing.

While both content and discourse knowledge contribute to the writing process of both novice and more expert writers, very few studies have been conducted to investigate the impact of each on the quality of the writing outcome (Olinghouse & Grahm, 2009). McCutchen (1986) looked at the impact of content knowledge to writing. In her study, McCutchen assessed the writing outcomes of 30 male children from grades 4, 6, and 8 who were classified as high-knowledge subjects versus low-knowledge subjects. Participants had to generate eight texts (four narratives and four essays); four on the topics of football and four on their school or people they knew. Results demonstrated that children generated more coherent and longer (although length differences were not significant) text about the topic they knew well. However, when content component was low, the discourse component played a significant role to compensate for a limited knowledge of the topic. In this case, participants used their knowledge about writing to

generate text. McCutchen suggests that while both content and discourse knowledge are essential for coherent writing, as children become more linguistically able, they acquire generalizable discourse and linguistic skills that they can use even when their knowledge of the subject is limited.

Saddler and Graham (2007) found that there was a relationship between writing knowledge and writing performance of ten average- to above-average writers. Knowledge about various forms of writing (i.e., knowledge of the characteristics of good writing and how to compose a paper) was significantly and positively related to quality and length of fourth-grade students' writing. Englert, Raphael, Fear, and Anderson (1988) also reported that fourth- and fifth-grade students' (high- achieving writers mixed with two groups of struggling writers) knowledge of eight different strategies for carrying out specific writing processes were significantly and positively correlated with expository writing achievement.

Recently, Olinghouse and Grahm (2008) investigated the contribution of discourse knowledge about various forms of writing on writing outcomes and whether this knowledge improves with age (Grade 4 – Grade 6). Using multiple regression analysis the authors looked at discourse knowledge as well as other factors which contribute to the writing process including handwriting fluency, spelling, attitude toward writing, and advanced written story plan factors, which also account for variance in young students' writing performance. Results demonstrated that discourse knowledge contributed to outcome measures including 14% to story quality, 20% to story length and 37% to vocabulary diversity. In addition, fourth-grade students in the study possessed more knowledge than second-grade students about the characteristics of good writing as

well as more knowledge about how to write as well. Moreover, they were more cognizant of the role of effort in composing.

The findings from the studies outlined in this section provide support for the theoretical proposition that discourse knowledge about various forms of writing is an important element in the writing of young students and thus provides support to the story grammar instruction provided to both interventions. In addition, the importance content knowledge to writing provides empirical support to the DI intervention which focused on content as related to the folktales used in my study.

Learning Disabilities

Learning disabilities refer to "a number of disorders which may affect the acquisition, organization, retention, understanding or use of verbal or nonverbal information. These disorders affect learning in individuals who otherwise demonstrate at least average abilities essential for thinking and/or reasoning" (Learning Disabilities Association of Canada, 2002, p. 1). According to Statistics Canada, among school-age children (i.e., ages 5 to 15), a learning disability is one of the two most often-reported disabilities. In 2001, over 100,000 Canadian children aged 5 to 14, or 2.6% of all children in that age group, were reported to have learning disabilities (Cossette & Duclos, 2002). In the United States, 50.5% of all children identified for special services in schools are classified as learning disabled (Torgesen, 2004).

Some experts estimate that 80% of children with learning disabilities (LD) have difficulties in one or more areas related to language development (Lyon, 1995), such as oral language, which includes listening and understanding (Kaderavek & Sulzby, 2000; Levi et al., 1984); reading, which includes decoding, phonetic knowledge, word

recognition, and comprehension (Lovett, Lacerenza, & Borden, 2000; Torgesen et al., 2001); and written language, which includes spelling and written expression (Graham & Harris, 2003; Williams, 2003). Because all aspects of language development are interdependent (Adams, 1994; Mann, 2003), a weakness in one area is bound to affect all other areas, resulting in an "arrest in development" of literacy skills in these children (Torgesen, 2002; Torgesen, Wagner, Rashotte, & Herron, 2000). Therefore, children with learning disabilities are at a disadvantage in school settings, where all aspects of language development are essential for success.

The traditional approach to educating learning disabled children has been the creation of segregated special education classes. This approach has been criticized as marginalizing children (Hallahan & Mock, 2006). Moreover, this approach did not result in substantial improvements in these students' academic skills (Torgesen, 2004). In recent years, the focus has therefore shifted to providing remediation in the classroom setting, a practice that has been termed *inclusive education*. In this model, which is accommodating of students' difficulties, the classroom teacher is responsible for the majority of necessary remediation and for modifying the curriculum to meet these students' academic needs (O'Donnell et al., 2007). The Québec Ministry of Education mandates the inclusive education model and the use of differentiating instruction to support the diverse needs of the student body (Québec Education Program, 2001). In addition, these students often receive additional remedial instruction by a resource teacher inside the classroom or in a resource room.

Learning Disabilities and Narrative Production

Compared to normally achieving children, children with LD tend to compose stories that contain fewer words and utterances (Schneider et al., 2006), reduced sentence complexity (Liles, 1993), more grammatical errors (McGrath et al., 2004), and poorer overall story quality (Davies et al., 2004). Other studies have shown that LD students' stories include fewer complete episodes as compared with NA students (Merritt & Liles, 1987; Soodla & Kikas, 2010). Within narrative episodes, LD students tend to omit important information about the character, setting, motive, and action (Schneider et al., 2006). Roth and Spekman (1986) hypothesize that this pattern reflects the difficulties LD children have in taking into account the perspective of the audience and in making appropriate inferences about shared knowledge. However, none of these studies focus on retelling as a classroom intervention. Thus, the impact of oral retelling, used as a cooperative instructional strategy, on the writing skills of normally achieving and LD children in the inclusive classroom has not been explored by scholars.

Direct Instruction

Direct instruction (DI) is an explicit teacher-directed instructional approach based on task analysis (Stein et al., 1998). The primary goal of DI is to increase the amount and quality of learning by systematically developing background knowledge and explicitly linking old and new knowledge. This is accomplished by: (a) systematic review; (b) statement of instructional objectives; (c) teacher presentation of instructional material; (d) on-going practice; and (e) on-going evaluation of students' learning (Shuell, 1996). DI is characterized by its focus on the separation of major skills into smaller sub-skills, thus

providing frequent opportunities for student response and delivering sequenced instructional steps from one level of mastery to the next (Swanson, 2001).

Cooperative Learning

Cooperative learning (CL) is an instructional strategy whereby small groups of students work together to maximize individual and group learning (Johnson & Johnson, 2004, p. 786). The idea that establishing positive interdependence among members of a learning group promotes individual learning underlies this strategy (Jenkins & O'Connor, 2003). Different theoretical perspectives provide different hypotheses to explain how CL facilitates learning. Behaviorists focus on the motivational aspect of cooperative learning, in which positive reinforcement for any group member is contingent upon all members achieving a learning criterion. This increases the likelihood that group members will behave in such a way as to facilitate the attainment of their goal (Slavin, 1996). Social constructivists emphasize how scaffolded, dialogical interaction among peers with different abilities leads to the construction of new knowledge (Vygotsky, 1978). Social cohesion theorists suggest that if the task is challenging and interesting, and if students are sufficiently prepared for group work, they will experience the process of group work itself as highly rewarding (Cohen, 1986). From a social interdependence theoretical perspective, students help their peers because they care about the group. Social interdependence requires positive interdependence among group members. When positive interdependence exists, students support and promote each other's learning and every individual contributes toward the completion of the group task. Creating positive interdependence among students must be planned and reinforced by the teacher. Abrami et al. (1995) suggest that the teacher can create positive interdependence by ensuring:

- *Outcome Interdependence*: Students' goals are interdependent. In this case, students must work together to achieve a common goal. In my study, in the CR intervention, students had to work together to produce the podcast.
- *Means Interdependence*: The means for achieving a learning outcome are positively related among students. In this case, the procedures and processes for achieving the task are structured so that the group members depend on each other for completion. In my research, *Means Interdependence* was created through resource interdependence so that students had to retell one story using a shared technological platform. Each student was required to tell part of the story, thus facilitating task interdependence.

Slavin (1996) provides a model depicting the relationship among the four theoretical perspectives which underlie CL. He suggests that the requirement of a group goal, which is dependent on individual learning for all group members, may impact cognitive process by motivating students to engage in peer modeling, cognitive elaboration, and team practice. Group goals may also create social interdependencies resulting in group members feeling responsible for one another and thus increasing individual members' motivation to engage in the cognitive processes which facilitate learning. The following graph (see Figure 5, depicted in Slavin, 1996, p. 52) illustrates how a group goal impacts the four cognitive processes, which in turn contribute to individual learning.

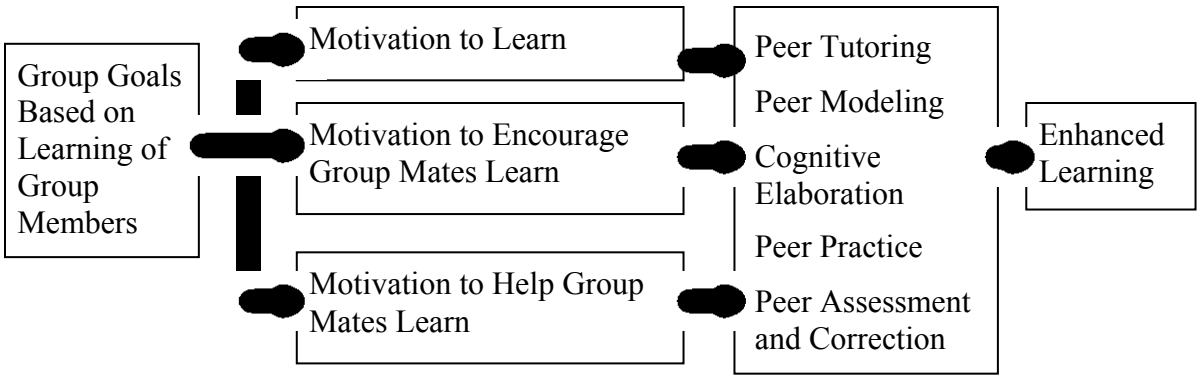

Figure 5. How a group goal may impact individual learning (Slavin, 1996, p. 56)

Four types of cooperative learning are outlined by Johnson and Johnson (2004). In *formal cooperative learning,* students work together to achieve specific tasks. In this type of CL, the teacher decides the objectives of the lesson, the size of the group, and the method of assignments. The teacher clearly explains the assignment and specifies individual roles, accountability, and the criteria for success. The teacher also monitors the students in the group and intervenes if necessary. Upon completion of the activity, the teacher evaluates both the learning of individual students and the group's accomplishment as a whole.

In the second type of CL outlined by Johnson and Johnson, *informal cooperative learning*, students work together to achieve a common goal in temporary, ad-hoc groups. In the third type of CL, *cooperative base groups* are long-term heterogeneous groups that exist to assist members of the group. The fourth cooperative learning type, *academic controversy,* is applicable when individuals have incompatible opinions and need to reach an agreement through group work.

ICT Tools Supporting Cooperative Learning and Narrative Development

Some researchers suggest that the combination of technologies that support cooperative storytelling could result in the improvement of narrative and social interaction skills in children (Di Blas, Paolini, & Sabiescu, 2010). Yet, because technologies for supporting cooperative storytelling are not making their way into the classroom, very little research has been conducted to determine their effectiveness on students' learning (Di Blas et al., 2010). For the most part, research in this area is focused on specific tools that have been designed and developed to promote children's narrative abilities through cooperative play. These tools, however, have very limited applications for mainstream classroom instruction. For example, researchers at MIT designed and developed StoryMat–a mat with objects attached to it (Ryokai & Cassell, 1999). Its fundamental function was to be a play space where children could collaboratively tell and listen to stories. The authors observed that children using the system told more interesting stories, as they were able to incorporate others' story elements into their own narration.

Another system developed at MIT, TellTale, required children to record segments of a story into the body parts of a plastic toy caterpillar. After a short period of play, including deciding how to arrange and segment story sequences, 22 children aged 6–7 exhibited more sophisticated use of discourse connectives (e.g. "and," "then," "because") and story event language (Ananny, 2002). Yet another system, Sam, an embodied conversational agent who is designed to look like a child around age 6, was created to give technology a social role in supporting young children's literacy learning (Ryokai, et al., 2003). The Sam system has two parts: the character Sam, and a toy castle with a figurine. Sam is projected onto a screen behind the castle, and can both listen to a child's

stories and tell his or her own. Research on 28 5-year-old girls has shown that, after using Sam, their use of quoted speech and temporal and spatial expressions increased.

POGO was another tool designed specifically to promote collaborative storytelling among young children (Decortis & Rizzo, 2002). POGO can be thought of as a virtual story world, accessible through a number of interactive physical tools distributed in the environment. These tools include a silver mat surrounded by leather cushions and various tools. The mat is a tissue screen with the ability to project images. The images can be projected anywhere in the room. Other tools available are cameras and videos, which can be incorporated into the constructed stories. A story composition area in form of a table is available for children to compose their stories. The POGO system was evaluated with 6—8-year-old students in a school setting. Results suggest that the system supports children in their temporal organization of a story.

The platforms described so far require the use of specifically designed technologies, which may limit their use to settings where such tools are available. With the increase in availability of computers at schools and at home, more recent research looks at the use of computer technologies to facilitate the storytelling process (e.g. Leahy, 2007; Liu, Chen, Shih, Huang, & Liu, 2011; Madden, Chung, & Dawson, 2009; Sweeder, 2008). However, while computer software was used to support narrative development, the studies focused on how the platforms affected an individual's performance rather than on the appropriateness of the software as a tool to facilitate cooperative learning and narrative development. This gap in the research highlights the importance of conducting a study on Internet tools that can be used to facilitate collaboration while developing children's narrative skills.

Technologies as Cognitive Tools

> ICT are an absolute requirement today and the Québec Education Program considers them tools and resources for teaching today…if used appropriately in teaching subject matter, information and communication technologies can accelerate the development of many cross-curricular competencies in the Québec Education Program. By providing access to a multitude of information sources and individuals, they give students the benefit of expertise from throughout the world and enable them to share their ideas and achievements with other. (Gouvernement du Québec, 2001, p. 28)

The Québec Educational Program stresses the importance of students acquiring the ICT skills that are necessary for the 21st century, while recognizing the role technologies can play in transferring knowledge and skills. Salomon, Perkins, and Globerson (1991) make the distinction between *effect with technology*—what the students can do, how well they do it, and when it is done—and *effect of technologies*—changes in cognitive structure that occur as a result of working with technologies. Grounded in the theory of situated cognition, which proposes that learning is inseparable from the context and activities in which it is situated (Brown, Collins, & Duguid, 1989), Solomon et al. (1991) propose that technology be distributed or stretched over the learner and the tool. What is important in distributed systems is the cognitive residue they leave. Cognitive residues are improved abilities, which in turn can affect other abilities. These cognitive skills should not be context-bound or situation-specific. This process can take place only through mindful interaction.

Technological tools that allow for cognition to be distributed have been referred to as *cognitive tools* – technological tools that have the potential to enhance the cognitive power

of the human mind during thinking, problem solving, and learning (Jonassen & Reeves, 1996). When learners use these tools, they *off-load* some of the uncreative memory tasks to the computer, allowing the mind to do what it does best, which is to think and manipulate symbols. In order to mediate cognition, a computer-based cognitive tool needs to:

- Engage the student actively;
- Support a deep approach to learning (thinking and reflection);
- Provide support for a student to articulate her or his knowledge; and
- Be embedded in an instructional environment.

Hence, computer-based technologies cannot be cognitive tools on their own. They must be situated within the learning context. Distributed systems are more than the sum of their parts; one cannot analyze the effect of the medium alone, nor can one analyze the effect of the learner alone. The effect of the system as a whole must be evaluated. Therefore, my research explored the impact of the Internet site VoiceThread (see http://voicethread.com/#home), an on-line collaborative podcasting tool that was used both to host podcasts of folktales and to promote cooperation among students for the CR intervention.

CHAPTER 3: METHOD

Purpose of the Study

My study measured the effects of an instructional strategy focused on the oral retelling of folktales, using a cooperative learning approach, on students' writing, as compared with a teacher-led direct instruction strategy. Both interventions were compared to a non-treatment control group. Given the inclusive educational model in Québec, my research assessed the differentiating effect of the treatments on both normally achieving and LD students within the inclusive classroom.

Research Questions

The study was set up to answer the following research questions:

1. Are there differential effects between the two instructional treatments, cooperative retelling and direct instruction, on students' written narrative competencies in the inclusive classroom, and when compared with a control group?
2. Are there differential effects of the two instructional treatments, cooperative retelling and direct instruction, on LD students' written narrative competencies, and when compared with a control group?

Research Design

Quasi-experiments are studies that have treatment outcome measures and experimental units, but do not use random assignment to create the comparison (Cook & Campbell, 1979). This quasi-experiment examined the outcomes of two instructional interventions aimed at improving the narrative writing skills of cycle 3 (grades 5 and 6) students and compared their post-intervention writings with those of a control group. The

first intervention was focused on the development of oral retelling skills using a cooperative retelling (CR) instructional method. The second intervention employed a direct instruction (DI) method to achieve the same goal. Both interventions were compared with a control group. While intact classrooms were used for the study, the three classrooms from each grade were randomly selected to each treatment intervention. Figure 6 provides a graphical representation of the research design.

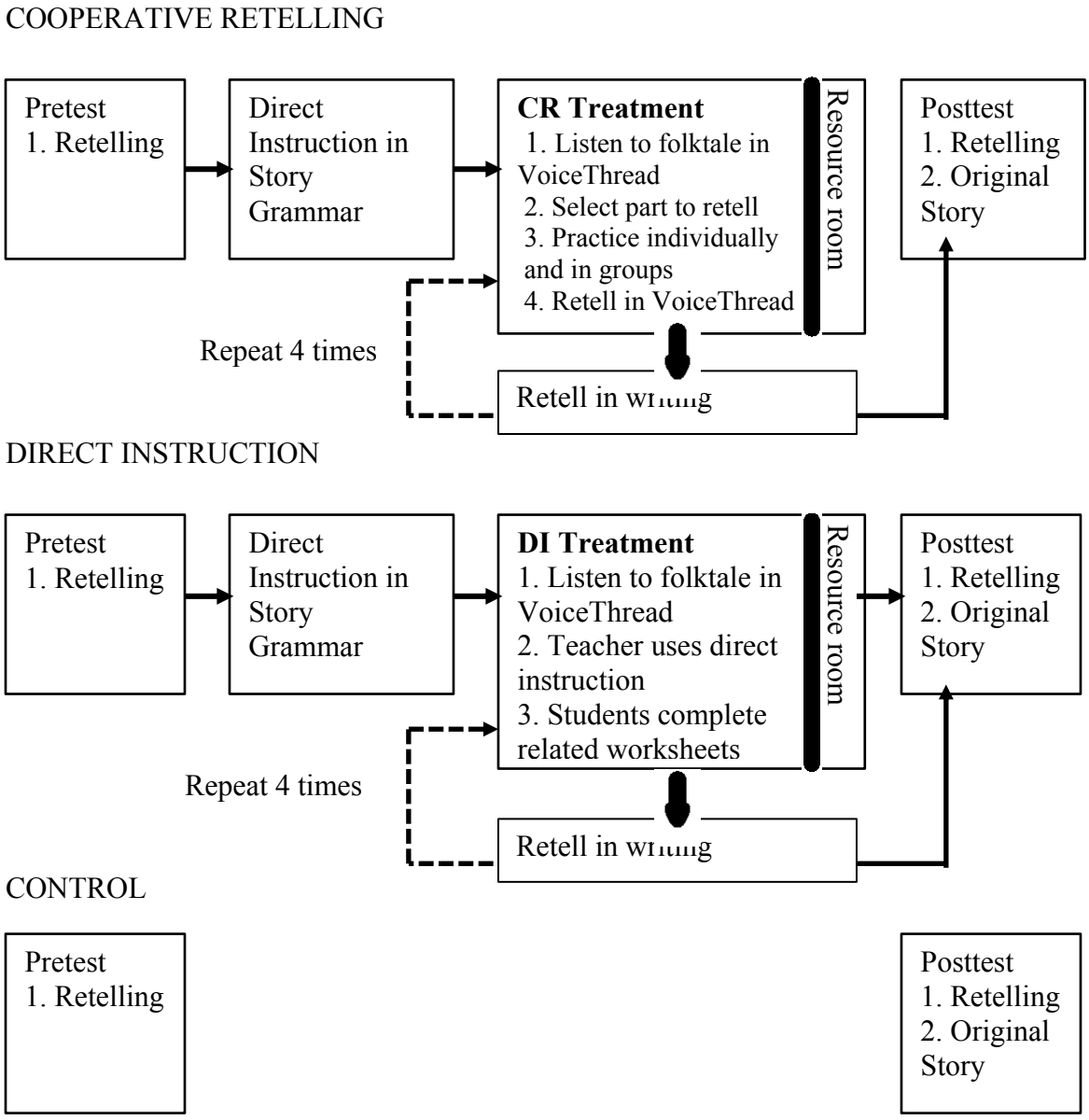

Figure 6. A graphical representation of the research design

Cook and Campbell (1979) identify several quasi-experimental designs used in applied social research. Based on their classifications, my study employs an *Untreated Control Group Design with Pretest and Posttest and Posttest only*. Structurally, based on Shadish, Cook, and Campbell (2002), it could be represented as Figure 7 below:

O_1	X_A	O_1O_2
O_1	X_B	O_1O_2
O_1		O_1O_2

Figure 7. Structural representation of the research design

In the structural representation, O_1stands for observation 1, which was the retelling of a folktale administered as pre- and posttest; O_2 stands for observation 2, which is the writing of an original story; X_A refers to treatment 1, which is the CR intervention with the whole classroom and the weekly intervention provided to the LD students in the resource room; and X_B refers to treatment 2, which is the DI intervention and the weekly intervention provided to the LD students in the resource room. The dash line indicates that the groups were not randomly formed. The treatments included interventions that were repeated 4 times for both the CR and DI groups. The treatments, therefore, can be represented in the following way:

$X_A = X_{Ai}O_iX_{Aii}O_{ii}X_{Aiii}O_{iii}X_{Aiv}O_{iv}$

$X_B = X_{Bi}O_iX_{Bii}O_{ii}X_{Biii}O_{iii}X_{Biv}O_{iv}$

Validity

Experiments are designed and implemented for the purpose of establishing cause and effect relationships between the treatment and the outcome. Therefore, they must attempt to control all variables that may influence the outcome. The concern here is with *internal*

validity, the degree to which one can infer that it is the treatment that has effected change in the dependent variable (Abrami & Bernard, 2006). According to Cook and Campbell (1979), the nonequivalent pretest-posttest design used in my study controls for all but three threats to internal validity. These threats include *selection-maturation*, which occurs when participants in one group grow more experienced and/or more tired and/or more bored then another group; *instrumentation*, which occurs when there is a change in the instrument between pretest and posttest; and *local history*, which occurs when events unrelated to the treatment affect the experimental group but not the control. Therefore, measures were put in place to attempt to control for the identified threats.

To control for *instrumentation*, I was the one who administered both pretests and posttests in order to ensure that there was no change in testing procedures. To control for *selection-maturation*, I developed and piloted a measure titled *Fidelity of Implementation Observation Protocol,* which measured, in addition to implementation fidelity, students' engagement. This observation protocol was implemented three times during the duration of the study, at the beginning middle and end of the study and assessed, in addition to implementation fidelity, students' engagement. Controlling for the *local history* threat was difficult as classrooms are dynamic systems where students' interactions with themselves and the teacher may result in an event which may impact one of the condition groups but not others. However, while these local history events could not be controlled, I was at the research school three full days a week spending all of my lunch time with participating teachers where we discussed classroom events. These discussions as well as my own observation of the experimental treatments were entered as field notes which I kept throughout the duration of my study.

Internal validity is without doubt crucial to any experiment that attempts to establish causal relations. However, in social science research, it is equally important for researchers to study an instructional intervention in the setting in which it is to be employed. Studies that look at the impact of instructional interventions in natural settings are considered to be ecologically valid. Bronfenbrenner (1977) defines *ecological validity* as "the extent to which the environment experienced by the subjects in a scientific investigation has the proper ties it is supposed or assumed to have by the experimenter" (p. 517). For a research study to be considered ecologically valid, the methods, materials, and setting of the study must resemble the real-life situation that is under investigation (Schmuckler, 2001). My intervention was situated in the QEP and followed curricular guidelines. It was designed to be implemented in real classrooms, using these guidelines. At the same time, the nature of the study, assuming that threats to internal validity are addressed, means that its findings would also contribute to the body of theories related to narrative development in children.

External validity asks whether a researcher can generalize an experimental outcome, moving beyond the confines of the experiment and applying the results to particular target persons, settings, and times (Cook & Campbell, 1979). Cook and Campbell list several threats to external validity: *interaction of selection and treatment* make it impossible for the researcher to generalize beyond the group being investigated; *interaction of setting and treatment* make it impossible for the researcher to generalize beyond the setting where the experiment occurs; and *interaction of history and treatment* make it impossible for the researcher to generalize beyond the present, into the past or future. All of these threats were present in my study. Therefore, the instructional outcomes of the study cannot be

generalized to include settings, populations, or time frames that differ significantly from those included in the present sample.

Abrami and Bernard (2006) suggest that the best research—the diamond standard—is high in both internal and external validity. When this diamond standard cannot be achieved, they suggest that "theoretical considerations should help dictate the extraneous factors of greatest importance to control for" (p. 20). From a theoretical standpoint, I gave priority to both internal and ecological validity so that the outcome of my research could contribute to the advancement of theories related to narrative development in a specific population of children situated in a particular setting and time frame.

Implementation Fidelity

Dorland (1994 cited in O'Donnell, 2008) makes a distinction between "efficiency research" and "effectiveness research." *Efficiency research* is defined as "the ability of an intervention to produce the desired beneficial effect in expert hands and under ideal circumstances" (p. 531). *Effectiveness research* complements efficiency research, and is defined as "the ability of an intervention to produce the desired beneficial effect in actual use" (p. 531). Thus, effectiveness research refers to the extent to which a program is able to achieve its outcome in field settings, where mediating and moderating factors come into play (Mihalic, 2002). Within a project design, both efficiency and effectiveness are facilitated by a researcher's careful establishment of implementation fidelity.

Implementation fidelity determines how well an intervention is implemented in comparison with the original program design (Mihalic, 2002). Implementation fidelity "is essential for the validity of any intervention study and is closely related to the statistical power of outcome analyses. Failure to establish fidelity can severely limit the conclusions

that can be drawn from any outcome evaluation" (Dumas, Lynch, Laughlin, Smith, & Prinz, 2001, p. 39) Without methodological consideration of the level of fidelity during a program's implementation, researchers may have insufficient evidence to support the internal validity of an efficiency or effectiveness study (Dumas et al., 2001).

O'Donnell (2008) identifies the following criteria for measuring the fidelity of implementation: (a) adherence—the extent to which the intervention is being delivered as designed; (b) quality of delivery—the manner in which the implementer delivers the program, using the techniques, processes, or methods prescribed; (c) participant responsiveness—the extent to which participants are engaged by and involved in the activities and content of the program; and (d) program differentiation—whether critical features that distinguish the program from the comparison condition are present or absent during implementation.

To ensure fidelity of implementation in my study, I designed and developed detailed lesson plans. As I was the one who delivered the lessons in the classroom, I was able to ensure that the lessons were implemented as designed. Following each lesson, I completed a checklist, in order to ensure that all objectives were met. Measures of fidelity of implementation are critical, not only in determining whether the intervention is implemented according to project specification, but also whether there exist critical differences between what the experimental and comparison groups receive, thus allowing the researcher to attribute any difference in student outcomes to the independent variable(s). Therefore, as suggested by O'Donnell et al. (2008), I developed a separate instrument, titled "Fidelity of Implementation Observation Protocol," for measuring the critical components and processes of my intervention. This protocol was piloted by a

research assistant to ensure that it could be used to effectively observe the implementation of the intervention (see Appendix B).

The research assistant who piloted the Fidelity of Implementation Observation Protocol observed each of the participating classrooms three times during the duration of the study: once during the 3rd week of the study, once during the 7th week, and once during the 11th week. To ensure consistent evaluation, the same research assistant observed all of the classrooms.

Setting

ABC Academy is a French Immersion school serving approximately 500 kindergarten to Grade 6 students in a Montreal suburb. In keeping with the School Board's immersion model, the students receive half of their daily instruction in French and half in English. As a result, each class has two main teachers, one for French and one for English. The school services predominately middle-income families. While the school is culturally diverse, many of the students are of Greek and Italian background. Over 25% of the school population has been identified as at risk of academic failure, and the students that make up this group are at least two grades below the rest of their classmates in reading and/or writing and/or math skills. These students may have one or more conditions, such as learning disabilities, attention deficit hyperactivity disorders, and behavioral conduct disorders. Each at-risk student has an Individual Education Plan (IEP) that identifies his or her academic difficulties and details the strategies required to address these difficulties. The school has two remediation teachers with special education backgrounds, one for French instruction and one for English.

The school has two portable computer labs with 24 computers each. A wireless network is available throughout the school to allow for Internet access. However, as the research was sponsored by a grant from the Québec Ministry of Education Leisure and Sport (MELS), the money allocated for the purchasing of equipment was used to buy 10 mini laptop computers. These computers were allocated for use solely by the project, so that access to computers was assured. The school's principal actively promotes the use of technology in the school. He also promotes research related to technology use, as long as it takes into account the instructional curriculum and the technological expertise of teachers. The school principal was involved in the writing of the grant application to MELS and was highly supportive of the research project.

Participants

The research involved all of the cycle 3 (Grades 5 and 6) classes at the school. Thus, three grade 5 classes (children aged 10-11) and three grade 6 classes (children aged 11-12) participated in the research. The majority of the participants came from middle class families. The population was mostly ethnic, with approximately 60% from third generation Greek and Italian families. The rest of the participants were of mixed ethnicities, including Canadian, Portuguese, Armenian, and Jewish. All of the participants had access to a computer with an Internet connection at home.

In keeping with MELS and the School Board policy of inclusive education, students with learning disabilities are integrated into the regular classroom. These students may or may not have an official diagnosis by a licensed psychologist. However, they are all at least two years behind their classmates in reading fluency, reading comprehension, verbal expression, and writing skills. Many of them also display great difficulties with math. All of

these LD students have an IEP that identifies their academic areas of difficulties. This group receives additional remediation from a resource teacher in a resource room or inside the classroom once a week.

Measures

In this study, I analyze written narrative performance at two levels, macrostructure and microstructure (Griffith, Ripich, & Dastoli, 1986). Macrostructure analysis typically examines the entire narrative produced by the speaker and/or writer (Hughes et al., 1997). This component of my study is focused on children's inclusion of story grammar components and the complexity of episode structure, based on Stein and Glenn's (1979) approach. Microstructure analysis, by contrast, considers the internal linguistic structures used in the narrative construction, such as the length of the story, frequency of grammatical utterances, syntax, and so on. The same analysis procedure was used for both pre- and posttests. The procedure used was outlined by Hughes et al. (1997) in their book *Guide to Narrative Language: Procedure for Assessment*.

These procedures have also been widely used in research assessing the oral and written retelling of narratives (e.g., Griffith et al., 1986; Holliday & Hasan, 1976; Marrow, 1985; Roth et al., 1995; Shonna et al., 2003; Stein & Glenn, 1979). Therefore, because I employed free text as a dependent variable, as recommended by Liles (1993), I used research-based analysis procedures, as opposed to standardized measures. Given the prevalence of these assessment procedures in studies analyzing children's narrative production, the study considers these measures valid.

Microstructure Dependent Variables

Length.

When measuring the quality of written narratives, researchers often use the total number of words contained in the account (Fey et al., 2004; Hughes et al., 1997; Puranik, Lombardino, & Altmann, 2008; Strong, 1998). As such, experts often use text length as an index of written fluency, particularly because older children typically write longer texts then younger ones. Furthermore, texts written by children with LD are often shorter than those of their normally developing peers (Graham & Harris, 2003). This study measured length by counting the number of words contained in each written narrative, following the guidelines established by Loban (1976) in the list below.

- Contractions are counted as two words (e.g. *it's* is counted as two words *it* and *is)*.
- Repeated words are counted once (e.g. "When they came home, *theythey* saw" counts only the first "they").
- Proper and compound nouns are counted as one word (e.g. bathroom).
- Unintelligible words are not counted.
- The words "The End" are not counted.

T-units.

In 1965, a report published by the National Council of the Teachers of English presented the term *T-unit* as a way to quantify written language. Kellogg Hunt, the publisher of the report, noted that as students get older, their ability to write sentences with subordinate clauses increases. However, students go through a period of connecting many clauses with the coordinate conjunction "and." If length were calculated by simply

adding up the number of words per sentence, then students' evaluations would improve as a result of their use of "and." Therefore, simply counting the words in students' sentences is problematic. Hunt (1965) suggested an alternative unit, and coined the term "minimal terminal unit" or, in short, "T-unit," which counts as a unit each segment of a sentence able to begin with a capital and terminate with a period. Hunt defined the T-unit as one main clause to which all subordinate clauses attach. A clause in this case is a unit containing a subject and a verb, or a coordinate verb. When researchers evaluate writing using T-units, the student who does not punctuate properly will not be penalized.

Since Hunt's study, T-unit analysis has been cited in scholarly works as the most common method for investigating syntactic complexity in analyses of written samples of children's writing (e.g., Fey et al., 2004; Loban, 1976; Nelson & Van Meter, 2003; Puranik et al., 2008; Scott & Windsor, 2000). T-unit analysis in my study followed Hunt's (1965) procedure, where a T-unit is one main clause with all subordinate clauses embedded within it. Clauses that begin with the coordinating conjunctions "and," "but," "so" "for" "or" "nor", or "yet" begin a new T-unit.

Syntax.

About 10 years after Hunt's (1965) report, another research report published by Loban, (1976) provided the outcome of a language analysis of children who were followed for 7 year. Loban's analysis of showed that children's language continues to grow. Written sample from children in grades 3 to 12 showed gradual change in number of words per T-units. Syntactic complexity was calculated by dividing the number of words produced by the number of T-units. Given that the average number of words per T-units is often used in research studies on narrative writing (e.g., Hughes et al., 1997;

Puranik, Lombardino, & Altmann, 2008; Strong, 1998), it is a variable that is used in my study to measure language complexity.

Macrostructure Dependent Variables

Macrostructure dependent variables assess the coherence of the narrative. Coherence refers to a global representation of story meaning and connectedness (Nicolopoulou, 2008). Karmiloff-Smith (1985) defines coherence as the temporal and causal structure of a story. The coherence of a narrative is created on several different levels, and is maintained not only by remembering events that are most relevant to the story, but also by organizing the story in a manner that preserves the causal connections between story events. I used two macrostructure measures in my study. One measure, *story grammar*, analyzes story grammar elements, including the total number of episodes, and the complexity of episodes in the story. This measure provided a variable titled *total episodes score*. The second measure, *story coherence*, is a rubric designed to measure the sequence of events and the quality of the story as a whole. This measure had three variables including *fluency*, *elaboration*, and *organization*.

Story grammar.

Story grammar analysis of pre- and posttests involved the identification of story grammar elements in the narratives as listed in Table 1 (Hughes et al., 1997). Each story was coded for the presence of story grammar elements. The coded story grammar elements were then used to identify the number and quality of the episodes in the stories.

Table 1

Story Grammar Elements with Description and Examples (Hughes et al., 1997)

Story Grammar Element	Description	Example
Setting (S)	Reference to time and place, introduction of the main character, the protagonist, and the spatial-temporal context.	Long ago, in a small village in Africa, there lived a very old man….
Initiating event (IE)	The event which sets the story in motion and therefore leads the main character(s) to formulate his or her goals and start the sequence of actions and events.	One day, he called his children, his grand children, and his great grand children to his barn…
Internal response (IR)	The main perceptions of the character(s) and his or her feelings about the initiating event.	He was content to know that soon he would be able to see his family again…
Plan (P)	A statement or an idea that may fix the problem.	By the end of the day, he had a plan. He had to come up with a task that...
Attempt (A)	The action the characters take to solve the problem.	The oldest son went to the market. There, he bought a truck full of straw…
Consequence (C)	The attainment or non-attainment of the character's goals.	However, the straw barely covered the floor of the barn…
Reaction (R)	The final state or situation triggered by the initiating event. It does not cause or lead to other actions or states.	The old man felt happy. His wish has come true.
Ending (E)	A statement or a phrase that clearly indicates that the story is over.	And he lived happily ever after. The end!!

Story grammar analysis, which involves simply listing the elements presented in a story, does not provide a measure of the quality of the story (Norbury & Bishop, 2003). For example, students may produce a descriptive sequence, outlining characters, setting, and action that are not causally related, or they might produce a list of actions, again with no

causal relationship. A story must have a plot with a character(s) who seek to solve a problem. Only by analyzing the quality and the number of episodes in a story can one get a sense of how good the story is. Liles (1987) defined a complete episode as having an initiating event, an action, and a consequence. However, this is the simplest form of an episode. Often, by Grades 5 and 6, students include more complex episodes (Griffith et al., 1986). On the other hand, the narratives of children with learning disabilities may have several incomplete episodes (Liles et al., 1995). Therefore, to measure the quality of episodes in a story, my study used a classification, based on McGillivray and Schmidek's (1997) work, to identify the quality of the episodes. Given that students' stories may embed in them episodes of different qualities, they were given different scores for different types of episodes. Table 2 describes the episode levels, ordered from simplest to most complex, and presents the numerical value that I assigned to each episode. Each student obtained a total episode score (Hughes et al., 1997).

Table 2

Episode Level Description

Episode Level	Description	Score
Abbreviated episode	Provides aim or intention of the character, but does not explicitly state the character's plan to achieve that goal. Planning must be inferred.	1 point
Incomplete episode	States planning, but one or more of the essential story grammar parts to complete the episode is missing, i.e. IE, A or C.	1 point
Complete episode	Includes aim and plan of the character to reach the goal. Has at the minimum an IE, A and C. Uses words and phrases like "decided to". The goal must be explicit and the attempt to solve the problem is stated.	2 points
Complex episode	Includes elaboration of a complete episode by including multiple plans, attempts, and consequences within an episode.	3 points
Embedded episode	Embeds another complete episode or reactive sequence within an episode.	4 points
Interactive episode	Describes one set of events from two perspectives, with characters and goals influencing one another. May have an R or C for one character serving as an IE for another character.	5 points

According to Stein and Glenn (1979), a simple narrative consists of a setting and an episode. More complicated narratives may consist of several settings and several episodes. However, the setting is not a part of the episode system, and therefore was not coded. Appendix C provides the marking scheme used when participants' narratives were analyzed for story grammar elements.

Story coherence.

Story grammar analysis is one way of establishing story coherence, as it quantifies the number of episodes presented in the narrative. However, this analysis does

not provide an indication of the logical order of event sequencing within the narrative, nor does it evaluate the quality of discourse. To address this deficiency, Fox and Write (1997) developed a measure to assess story coherence. This measure uses a 4-point scale, in which the values corresponded to the categories of "no evidence," "meager evidence," "fair evidence," and "strong evidence." However, my and my research assistant's attempt to use this scale to rate the pretest data obtained by my study resulted in a very low inter-rater agreement. It was difficult for the assessors to clearly decide, for example, whether there was meager evidence of logical story sequencing or fair evidence of story logic.

The International Reading Association offers other measures, accessible online (see http://www.readwritethink.org). Their 6-point rubric was developed to assess different types of writing, and therefore uses only two points related to the writing of narratives, elaboration and organization. However, when reading participants' pretests, the insufficiency of these measures became apparent; while a story can be well organized, with elaborated episodes, if there are many grammatical errors, or if the use of language is poor, the quality of the story suffers. Because traditional story grammar analysis did not evaluate the quality of written text, a more complete measure is called for.

As a result of the inadequacy of existing measures, I designed a rubric for analyzing story coherence. The rubric included the following narrative coherence elements, which were rated using a 5-point scale where 1 equals "incoherent," 2 equals "somewhat coherent," 3 equals "mostly coherent," 4 equals "coherent," and 5 equals "very coherent." Each tier is clearly defined (see Appendix D for a copy of the rubric). They include: (a) *fluency*—the flow of the written text; (b) *elaboration*—the degree to which the episodes are elaborated by details, descriptions, and reactions; and (c)

organization—the clarity of the logical flow of the story and/or movement of an event through time.

Procedure

Prior to the selection of the classes, the principal presented the project to his cycle three staff (Grades 5 and 6). One Grade 5 (children aged 10-11 years old) teacher and one Grade 6 (children aged 11-12 years old) teacher volunteered to participate in the study. Each of the educators teaches language arts to two classes. One teacher, who teaches both Grades 5 and 6, agreed to participate as the control group. I submitted a *Summary Protocol Form* for ethical approval to the Office of Research at Concordia University, which granted me approval to conduct the research on December 3rd, 2008. Participation was contingent upon a written consent form, signed by the students' legal guardians (see Appendix E), as well as oral consent given by the students (see Appendix F). As the study was scheduled to begin in January 2009, the classroom teachers distributed the consent forms to students on December 15th, 2008. The teachers collected the signed forms and ensured that all forms were returned to school. There was a very high consent rate of 95.13% (i.e., 137 out of 144). Prior to the beginning of the study, as required by the Summary Protocol Form, the teachers explained to the students that they would be participating in a research study and that they had the right to refuse to participate. One of the grade 6 students did not give oral consent, which brought the total number of participants to 136.

All of the participant teachers signed the *Teacher's Consent* forms (see Appendix G) prior to the beginning of the study. As the CR intervention required students to work in groups, I asked teachers to group students using the following guidelines: (a) each group should include 4 to 5 students; and (b) each group should be composed of students with

mixed abilities. While students in all of the participating classrooms were already sitting in groups, the original groups were not the same as the groups that were formed by the teachers for the intervention. Consequently, students in all groups moved places at the beginning of each session. The groups remained the same for the duration of the intervention.

The research began on the week of January 12, 2009. Teachers who were participating in the experiment agreed to allocate two of their Language Arts periods a week for research activities in the classroom. One hour a week per class was allocated to resource time with the LD children. These designations allowed us to establish a schedule for the time in which the research would be conducted. Table 3 provides the scheduled time per treatment and grade level.

Table 3

Scheduled Weekly Research Periods

Time	Tuesday	Wednesday	Thursday
9:10-10:10	Whole Class DI Gr. 6		Whole Class DI Gr. 6
10:10-11:10	Whole Class DI Gr. 5	Resource CR Gr. 6	Whole Class DI Gr. 5
11:10-11:30	Recess	Recess	Recess
11:30-12:30		Resource CR Gr. 5	
12:30-1:30	Lunch Break	Lunch break	Lunch Break
1:30-2:30	Whole Class CR Gr. 6	Resource DI Gr. 5	Whole Class CR Gr. 6
2:30-3:30	Whole Class CR Gr. 5	Resource DI Gr. 6	Whole Class CR Gr. 5

As indicated in Table 3, each one of the treatment groups received two hours of intervention per week. The students with LD received an additional hour per week of instruction in a resource room.

Pretests were administered during the week of January 12, 2009. To ensure fidelity of implementation, I was the one who administered the pretest. The pretest required students to retell the folktale they knew best, out of a preselected group of stories. Students were given a choice of retelling one of the following folktales: (a) the *Three Little Pigs*, (b) the *Three Billy Goats Gruff*, (c) *Goldilocks and the Three Bears*, (d) *The Boy Who Cried Wolf*, (e) *Cinderella*, and (f) *Little Red Riding Hood*. These options were provided to ensure that the students were not required to retell a story they did not know well. Participants were given an hour to retell the story. The same measure was used as the posttest. In addition, to help gauge how student learning was transferred from retelling to narrative writing, another posttest measure required students to write a folktale using the following criteria:

- The story must have a king, a queen, or a lord;
- it must have a boy or a girl; and
- it must have a tiger.

As some of these elements were present in the folktales that the students had retold as part of the intervention, I was attempting to determine whether there was transfer of ideas and discourse.

The intervention began the following week. To ensure fidelity of implementation, I was the one who conducted the lessons in both experimental conditions, as well as in the resource room. I am a certified elementary school teacher and I have a Diploma in Special Education. I also have a Master's in Educational Technology and have worked as a

technology coordinator. Therefore, I have the necessary professional experience to implement the instructional intervention measured in my study, along with in-depth knowledge and understanding of the intervention being implemented. At the same time, as a researcher, I maintained the methodological rigor necessary when implementing the instructional intervention, to ensure internal validity and implementation fidelity.

All of the students received the interventions. The data of the students who did not consent to participate was then destroyed. Participating teachers remained in the classroom during the intervention to observe the process. The teachers had minimal previous knowledge of the application and integration of ICT into the curriculum. A professional development model, called *collaborative apprenticeship*, posits that teachers rely on the expertise and support of one another to adopt innovative practices (Glazer, Hannafin, & Song, 2005). My study assumed that, by observing an expert model the instructional intervention, the participating teachers would take the first step towards adopting the new practice. The collaborative apprenticeship model is based on a theory of situated cognition, which suggests that knowledge is the product of the activities, context, and culture in which it is developed and used (Brown et al., 1989). This model proposes that, when they observe and are coached by an expert who employs a particular technological intervention, teachers will eventually be more likely not only to adopt the practice, but also to become mentors to other teachers in the school. In my study, I consider collaborative apprenticeship to be the by-product of the cooperation between myself and participating teachers. I encouraged the teachers to help in scaffolding the students' application of the intervention and to assist in dealing with potential behavioral issues. Table 4 provides the time line for the intervention implementation.

Table 4

Time Line for the Intervention Implementation

Week	Research Activity
January 19 - January 30	Instruction in Story Grammar
February 2 - February 20	Instruction related to *The Wise Old Woman* folktale
February 23 - February 27	Instruction related to *The Name of the Tree* folktale
March 2	March Break
March 9 - March 20	Continued instruction related to The Name of the Tree folktale
March 23 - April 10	Instruction related to The Wise Old Woman folktale
April 13 - May 22	Provincial Exams
May 25 - June 5	Instruction related to The King's Ring folktale
June 8	Administer posttests

Instructional Interventions

Story grammar models describe what researchers know about the grammar or the structure of episodes in a story. Story grammar identifies the constituent parts which make up a story, as well as underlying rules for generating and understanding stories. Taking into account research indicating that story grammar instruction is effective in facilitating story comprehension and writing, both interventions began with instruction in story grammar. Following the lessons on story grammar, students in each intervention group received specific instructions related to the intervention selected for that class. One group received an instructional intervention that included direct instruction but focused on cooperative retelling, and one group received an instructional intervention that was focused on teacher-based direct instruction. Embedded within each instructional intervention was a weekly

remediation session, provided to the LD students within that treatment group in the school resource room.

In both treatments, students were required to listen to folktales. The website VoiceThread (see http://voicethread.com/#home) was used to host the pre-chosen folktales. Participants in the cooperative retelling group used VoiceThread to record their cooperatively retold stories. VoiceThread is a multimedia, on-line tool that holds images, documents, and videos, and allows people to leave comments using voice, text, and audio files. When used for educational purposes, the on-line account created is administered by the teacher and can only be accessed by members of the class. Within this private space, students have the opportunity to cooperate with one another to retell their stories. They were also able to listen to their own podcasts, which gave them the opportunity to self-evaluate. Figure 8 illustrates how the VoiceThread environment supports cooperative learning.

Figure 8. VoiceThread interface

Story Grammar Instruction.

Given that research on story grammar instruction has shown that it is effective in facilitating story comprehension and writing, both interventions began with sessions devoted to instruction in story grammar. This instruction was identical in both groups. During this time, I used the direct instruction model to teach students about the structure of folktales. Direct instruction gives children a strategy, teaches them how to apply it, and provides feedback on their performance. Gagne (1984) lists nine events within direct instruction which facilitate the transfer of learning to long-term memory. These include:

- gaining the learner's attention to ensure that the information will be transferred from sensory memory to WM;
- stating the learning objectives, so that the students are oriented to what they will be learning and what performance will be expected of them;
- stimulating recall of prior learning in order to associate new information with prior knowledge, reduce WM load, and facilitate the learning and encoding process;
- presenting the content to the learner, giving examples, and demonstrating the concepts;
- providing the learners with guidance to help them encode information for long-term storage (such guidance could be in the form of probing questions to ensure that the students understand the material);
- providing practice to give the students opportunities to demonstrate their new skill;
- providing the learner with feedback on his or her performance and re-teaching skills if the answers are not correct;
- assessing students' performance to ensure that the skill has been learned; and

- providing additional practice and review to ensure skill transfer to other situations.

During the first two lessons, I focused on each story grammar constituent and its temporal relation to other story parts. I described the story elements (e.g., setting, initiating events), pointed out the elements on a wall chart, and gave two or three other examples of elements that would be appropriate for the story on the chart. I then elicited two or three oral examples of story elements from the children. Next, I gave non-examples and asked why these were not good examples of the elements being studied. The non-examples might have been different story parts (e.g., an outcome for an attempt), or they might have been the right story part that had been misplaced within the story. Lastly, the students participated in one or more group or individual activities designed to reinforce understanding of the element being taught that day. The second week, which constituted the last week of instruction in story grammar, consisted of individual and group activities. These were designed to provide continued reinforcement of knowledge of story grammar elements and to make the children aware of the relationship between knowledge of specific story parts and their temporal relations and story production. Examples of the sorts of activities used to reinforce knowledge of story elements during week 2 are a scrambled folktales task, in which students were required to reorder stories that had been jumbled, and a finish-the-story exercise.

Cooperative Retelling Treatment

Whole classroom procedure.

Following the story grammar instruction, students were told that in the next few months, they would be required to listen to folktales and cooperate in small groups to retell them. They then received instruction on how to cooperate with their group members. Based

on Johnson and Johnson's (2004) outline of cooperative learning types, I employed a formal cooperative learning strategy in my study. According to Johnson and Johnson, "formal cooperative learning is students working together for one class period for several weeks to achieve shared learning goals and complete jointly specific tasks and assignment" (p. 788). Therefore, I

- assigned students into mixed ability groups;
- clearly defined to students what they must do;
- scaffolded students throughout the learning process; and
- provided feedback to each group on their efforts.

Following the instruction in cooperative learning, students listened to a folktale in VoiceThread. As this exercise demands that the students commit the tale to memory, they were required to listen to the tale several times prior to the cooperative retelling task. Once they had finished listening to the story, they were provided with a checklist, which supplied them with the story grammar elements contained within the tale. The checklist ensured that the children included all of the important parts of the story. After receiving their checklists, the children then worked in mixed abilities groups of four or five students, first determining which part of the story each child wanted to retell. Once they had selected the part of the folktale they were going to retell, each child drafted his or her part and then cooperated with the group in order to orally retell the story, initially without using VoiceThread. When they were ready, they recorded themselves in VoiceThread, during which activity students cooperated to practice their parts and to record their podcasts.

Resource room procedure.

The sessions in the remediation room focused on providing the LD students with additional teaching or scaffolding of both story grammar and oral retelling. Students were required to listen to the podcasted stories and were provided with opportunities to practice orally retelling their part. Figure 9 provides a graphical representation of the CR intervention, in the classroom and in the resource room.

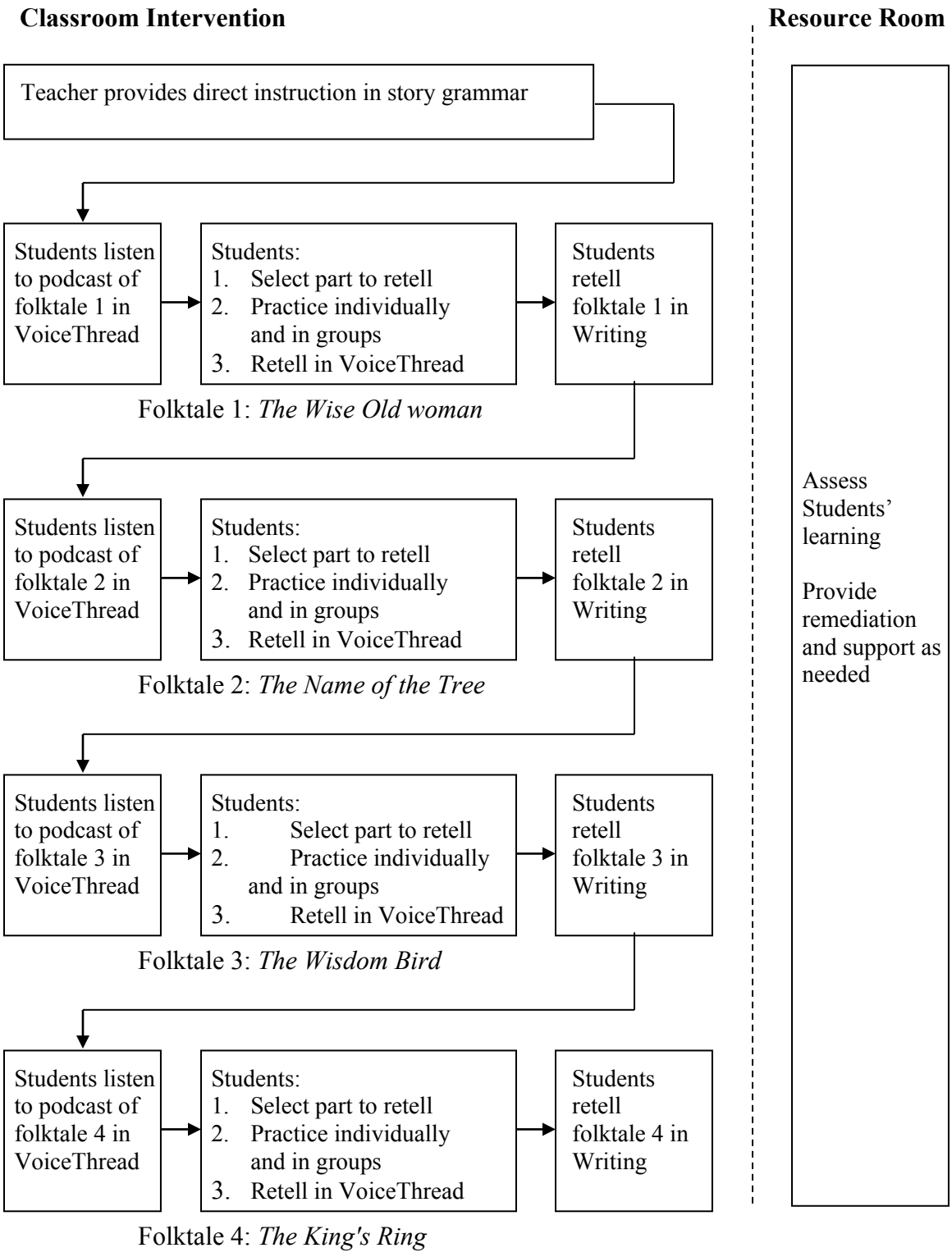

Figure 9. Graphical representation of the CR intervention

Direct Instruction Treatment

Whole classroom procedure.

Following the story grammar instruction, students receiving the direct instruction intervention also listened to the folktales using VoiceThread. The instruction for each folktale followed Gagne's (1984) events of instruction, thus facilitating the transfer of learning to long-term memory. The following list repeats Gagne's events and details the in-classroom methods that I employed during the intervention.

- *Gaining the learner's attention*: I did this by providing information essential to the children's understanding of the folktale. For example, in conjunction with the African story, *The Name of the Tree*, a lesson clarified the role of the chief in the African society as well as the problem of drought.
- *Stating the learning objectives*: At the beginning of each lesson, I outlined its objective, so that the students were aware of what they would be learning and what performance would be expected of them.
- *Stimulating recall of prior learning*: This included story grammar as well as the contents of the previous lesson.
- *Presenting the content to the learners*: Students listened to the folktale.
- *Providing guidance to the learners*: This included teacher-led questions related to the facts presented in the story, as well as questions related to understanding as outlined by Krathwohl (2002), including interpreting, classifying, summarizing, comparing, and explaining.
- *Providing practice*: Students retold the story in writing. When they were done writing their story, they recorded their story on VoiceThread.

- *Providing the learner with feedback on his or her performance*: Students received very general feedback on their retold stories, as the intervention was focused on the impact of retelling and not on the revision of written work or on identifying mistakes in one piece of writing.
- *Providing additional practice*: The intervention was focused on on-going practice and included listening to folktales, answering questions related to the folktales, and retelling the story in writing.

Resource room procedure.

The sessions in the remediation room focused on providing the students with additional opportunities to listen to the folktales. Teachers also assessed students' comprehension of the story and provided scaffolding as needed. Figure 10 provides a graphical representation of the DI intervention, in both the classroom and the resource room.

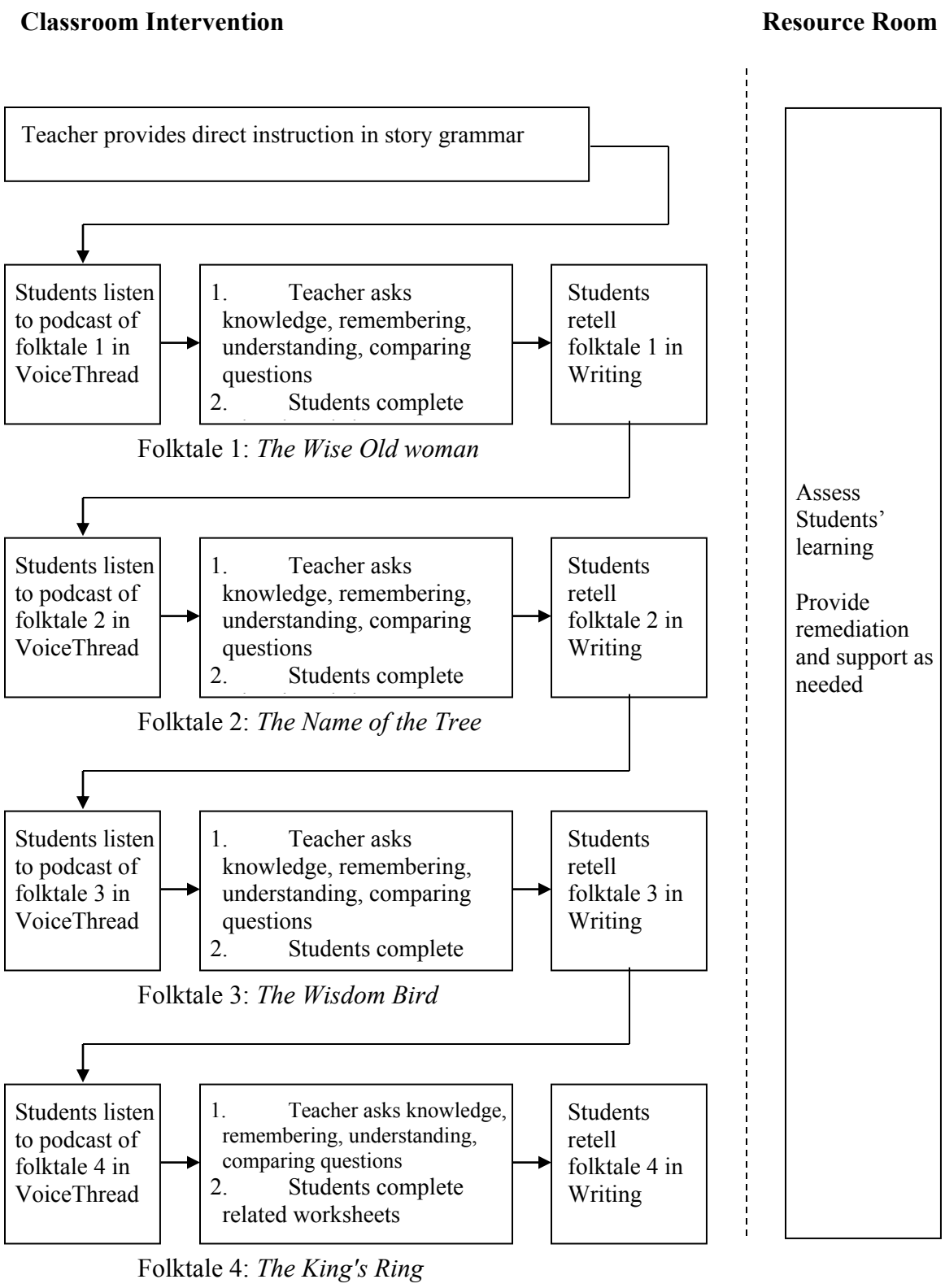

Figure 10. Graphical representation of the DI intervention

Control Group Instruction

The control group followed the Québec English Language Arts (ELA) curriculum, which has as a general objective "to develop the students' capacity for oral (speaking and listening) and written (reading and writing) communication" (Québec Education Program, 2001, p. 70). The focus is on literacy development by doing rather than through rote learning. With its emphasis on addressing individual students' needs within the context of the inclusive classroom, collaborative learning is mandated by the curriculum.

The English Language Arts program is first and foremost a literacy program in which speaking, listening, viewing, writing, and production of media texts are learned in an integrated fashion. This integration lies at the core of the development of critical literacy. Students are expected to learn about different text types, including self-expression text, information-based text, and narrative text. When it comes to narrative text, students are expected to:

- understand the following narrative structure: character, setting, episodes, conflict, and resolution;
- orally produce their own stories, referred to as storytelling; and
- read and listen to folktales (Québec Education Program, 2001).

To ensure implementation fidelity, the control groups were taught ELA at the time of the intervention. However, while narrative instruction as mandated by the QEP was provided to the control groups during the duration of the intervention, the classrooms were only observed by a research assistant three times during the duration of the study. Thus, the amount of time that was spent on developing narrative competencies in the

control classes is difficult to determine. This limitation of my research will be discussed in the section titled "Limitation of the Study."

Instructional Material

Folktales are traditionally orally told stories. As such, they not only have the story grammar elements described, but also possess very clear structural characteristics which aid in retellings (Mandler & Johnson, 1977). Many of the commonly known folktales such as the *Three Little Pigs*, *Goldilocks and the Three Bears*, and the *Three Billy Goats Gruff* have repeated events and repeated language which facilitates recounting. For example, in the *Three Little Pigs*, the first pig builds a house of straw and the wolf blows it down; the second pig builds a house of sticks and the wolf blows it down; and the last pig builds a house of bricks, which the wolf it is unable to blow down. Similarly, in the *Three Billy Goats Gruff*, the first goat goes out onto the bridge, and the troll comes out wanting to kill it, but the goat convinces the troll to wait for his bigger brother. The second goat goes out onto the bridge, the troll comes out wanting to kill it, but the goat convinces the troll to wait for his bigger brother. The last goat goes out onto the bridge, the troll comes out, but this time the goat kicks him and he disappears forever. The repeated episodes and language make folktales easy to remember and retell. For this reason, folktales are ideal narratives for retelling and, as such, are well-suited to this study.

Given that all folktales are originally orally told stories, they are within the public domain. The four folktales selected for retelling during the intervention are based on the following stories (see Appendix H for a copy of the folktales):

- *The King's Ring*, an English tale (Beneteau, 2007);

- *The Name of the Tree*, an African tale (Beneteau 2007);
- *The Wisdom Bird: Tale of Solomon and Sheba*, a Jewish tale (Oberman, 2000); and
- *The Wise Old Woman*, a Japanese tale (Uchida, 1994).

To assess the level of difficulties of orally told stories such as these, I used the New Dale-Chall formula (Dale & Chall, 1995) for predicting readability with an online software (Nirmaldasan, 2008). This readability formula is the one most often cited by scholars. Based on the surface characteristics of the text, it includes average sentence length and words not matching a list of 3000 familiar words. According to Kotula (2003), while there are over 100 factors which are associated with text difficulties, their strongest predictors are vocabulary complexity and sentence length. The Dale-Chall readability score is derived using the following formula: Reading grade score = .1579X+.0496Y+3.6365

Where X = Dale score (relative number of words outside the Dale list of 3000 words); and

Y = Average sentence length; and 3.6365 = constant

Table 5 provides the estimated grade level using the Dale and Chall (1949, 1995) score.

Table 5

Estimating Grade Level Using Dale-Chall Formula

Formula Score	**Correct Grade Level**
4.9 and below	Grade IV and below
5.0 to 5.9	Grades V – VI
6.0 to 6.9	Grades VII – VIII
7.0 to 7.9	Grades IX – X
8.0 to 8.9	Grades XI – XII
9.0 to 9.9	Grades XIII – College

Table 6 provides the calculated grade level for the selected folktales, using the Dale-Chall online software (Nirmaldasan, 2008).

Table 6

The Dale-Chall Formula Applied to the Folktales Used in the Study

Folktale	Raw Score	Grade level
The King's Ring	5.72	V - VI
The Name of the Tree	5.43	V - VI
The Wisdom Bird	5.17	V - VI
The Wise Old Woman	5.14	V - VI

The folktales were also evaluated by the classroom teachers, who found them to be appropriate for the comprehension level of the students in their classes.

CHAPTER 4: RESULTS

Fidelity of Implementation

As described above, a Fidelity of Implementation Observation Protocol was developed and piloted by a trained research assistant (see Appendix B) to ensure that the study proceeded as designed, that participants were engaged in the activities, and that the critical features distinguishing each one of the interventions were respected. Once familiar with the observation procedures, the research assistant observed each one of the participating classrooms three times: (a) once at the beginning of the intervention, (b) once in the middle of the intervention, and (c) once near the end of the study. The average percentage of time spent by each class was calculated for each of the following activities:

- Teacher-led direct instruction
- Teacher modeling of concepts or tasks
- Student participation in cooperative work assigned, including cooperative retelling
- Student cooperation in retelling the story using VoiceThread
- Student complete individual work assigned by teacher
- Student overall engagement in classroom activities

Figure 11 shows the percentage of time spent by the Grade 5 classes on the above activities during the three observed sessions. Figure 12 shows the outcome for the Grade 6 classes.

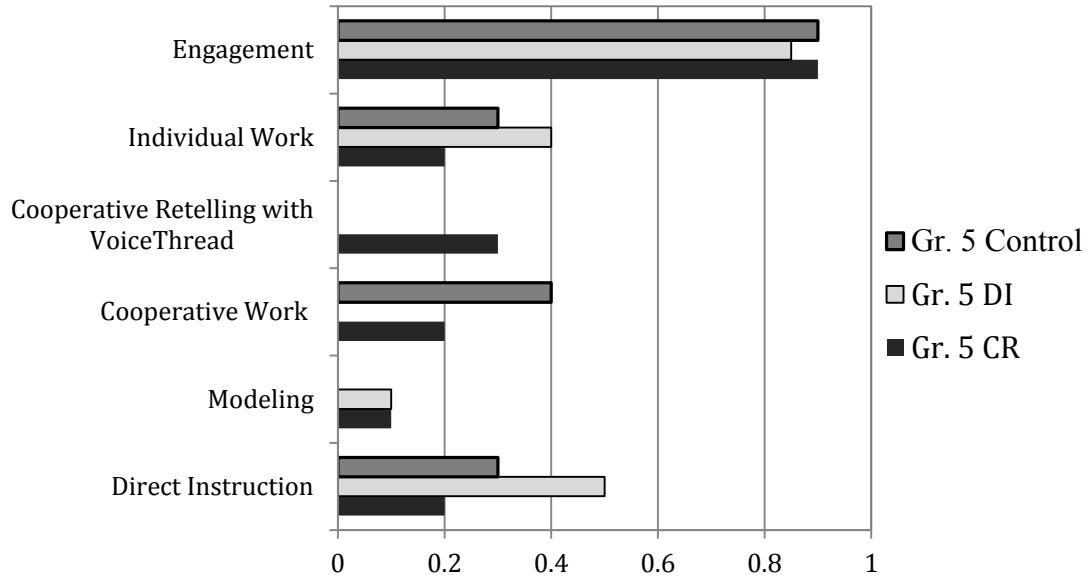

Figure 11. Fidelity of Implementation outcome, Grade 5 data

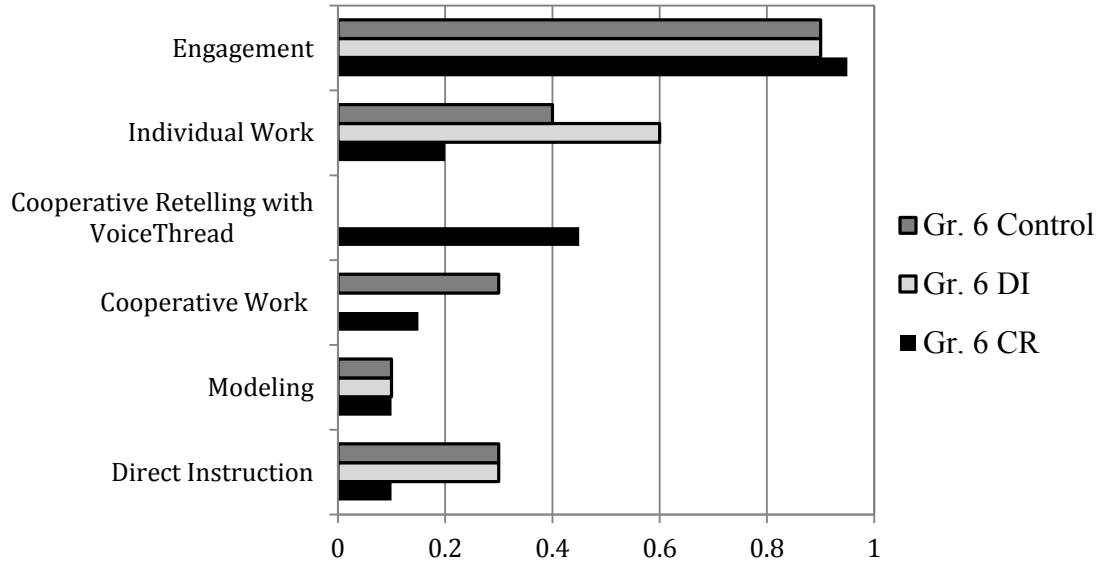

Figure 12. Fidelity of Implementation outcome, Grade 6 data

The research assistant observed a high level of engagement in classroom activities for all groups. For the Grade 5 classes, the CR and the control group engagement were at 90%, while the DI group was at 85%. For the Grade 6 classes, the CR group's engagement was at 95%, while the DI and the control groups were at 90%. In the Grade 5

DI group, the fidelity of implementation observation sheet indicated that 50% of classroom time was spent on teacher-led instruction, while the CR group allocated 20% of the time for direct instruction. Direct instruction was part of the treatment for the DI group and thus, I expected that the amount of time spent on this activity would be higher for that group than for the CR group. For the CR group, direct instruction was only employed for teaching story grammar and for providing instructions to students at the beginning of each lesson. Thirty percent of the control group's time was spent on teacher-led instruction.

The outcomes were somewhat different for the Grade 6 groups. Both the DI and the control groups spent 30% of their time on teacher-led instruction, while the CR group spent 10% of their time on teacher-led instruction. In contrast to the Grade 5 CR group, the Grade 6 CR group did not require much instruction at the beginning of each class. As demonstrated in the forthcoming section, *Analysis of Group Equivalence*[2], the two groups were significantly different from each other, with the grade 5 CR group scoring significantly below the grade 6 CR group on all dependent variable measures. Therefore, it is not surprising that the amount of time spent using direct instruction differed between the two classes. This is an important observation that supports the outcomes of my study.

The amount of time students spent on writing their stories and listening to them individually in VoiceThread was calculated as *individual work*. Within the Grade 5 groups, The DI section spent 40% of its time on individual work, while the CR participants spent 20% of their time working individually. Members of the control group spent 30% of their time working independently on tasks given by the teacher. Among the

[2] For a more detailed explanation of how the groups differed, see the section entitled *Analysis of Group Equivalence,* starting on page 91.

Grade 6 cohort, members of the DI group spent 60% of their time working on their own, while the CR group was at 20% for the same measure

Prior to using VoiceThread, the cooperative element of the experiment consisted of students working together to orally retell a story. The Grade 5 CR group used 20% of its classroom time for this activity, while the grade 6 CR group used only 15% of its time on this exercise. The Grade 5 group spent 30% of its time in cooperative retelling using VoiceThread. In comparison, the Grade 6 level cooperated using VoiceThread for 45% of the time allotted[3]. The control groups engaged in cooperative work as well, spending 40% of their time on such activities at the Grade 5 level and 20% at the Grade 6 level. Modeling by the teacher took up 10% of classroom time in both the CR and DI Grade 5 groups. This activity was not present in the Grade 5 control group when the observations were made. Modeling was present in all Grade 6 groups, and was at 10% of the total instruction time.

Coding and Entering the Data in SPSS

Pretests and posttests were collected and photocopied. Original data was kept untouched. All of the data coding was done on the photocopied stories by me and two research assistants I trained, one a third year student in the faculty of education at Concordia University and one a graduate student in the same faculty. To facilitate entry of the data into the Statistical Package for the Social Sciences (SPSS), a scoring sheet was completed for each one of the pre- and posttests (see Appendix C). The coded data was entered into SPSS by one of the research assistants, who had substantial experience with data entry, and was verified by me.

[3] This difference can be explained by the disparate abilities of the Grade 5 and 6 groups, and will be later discussed in the section *Analysis of Group Equivalence*.

Cleaning Up the Data

Data obtained from the study for each participant included: (a) a retelling of a folktale used as a pretest, (b) a retelling of the same folktale used as a posttest, and (c) an original story written by the student used as a posttest only. There were additional data obtained for each student who participated in the experimental conditions, as each of these children retold four particular folktales that were used as part of the intervention.

Initial analysis looked at the number of missing data points in the written stories of the 136 students whose parents/legal guardians signed a consent form and who have given an oral assent. Three students who were missing more than 50% of the data were removed (i.e., one from the Grade 5 control group, one from the Grade 6 CR group, and one from the Grade 6 control group), bringing the total number of participants to 133. Two other Grade 6 students from the DI groups were removed as they had other academic disabilities that were not representative of the population of the study. They were considered outliers.

Box plots were used to detect univariate outliers in the data. Box plots use the median and the lower and upper quartiles (defined as the 25th and 75th percentiles) of the data set to isolate data that deviate from the norm. A box plot is constructed by graphing the data and drawing a box between the upper and lower quartiles with a solid line drawn across the box to locate the median. Extreme cases are those that fall on the graph more than 3 box lengths above the box, and they are marked with an asterisk in SPSS. Using this technique, I was able to identify and investigate the extreme cases and make corrections in several instances where data were entered inaccurately. Out of a total of 393 pieces of possible writing samples, obtained from both pre- and posttests and the

intervention stories, 1 pretest was missing from Grade 5 and 1 posttest was missing from Grade 6. The series mean was used to replace the missing data. Table 7 provides a distribution of participants per class and conditions.

Table 7

Total Number of Participants per Condition

Condition	Grade 5 *n*	Grade 6 *n*	Total
CR	21	24*	45
DI	19	24**	43
Control	17*	26*	43
Total	57	74	131

*One removed due to less than 50%
**Two removed as outliers

Within each classroom, the students with Individual Education Plans (IEP) were identified and grouped as LD students. There was no retelling data missing from this group. Table 8 provides a distribution of participants with IEPs per class and condition.

Table 8

Total Number of Participants with IEPs per Grade and Condition

Condition	Grade 5 *n*	Grade 6 *n*	Total
CR	7	4	11
DI	7	3	10
Control	4	7	11
Total	18	14	32

Data Obtained

Narrative Retelling Data

To ensure that some students were not at a disadvantage because they were required to retell a story they were not familiar with, the participants were given the following choices of folktales: (a) The *Three Little Pigs*, (b) The *Three Billy Goats Gruff*, (c) *Goldilocks and the Three Bears*, (d) The *Boy Who Cried Wolf*, (e) *Cinderella*, and (f) *Little Red Riding Hood*. Each child retold the same story during his or her pre- and posttest. Figure 13 provides the frequency distribution for the folktales chosen by the Grade 5 students. Figure 14 provides the same distribution for the Grade 6 class.

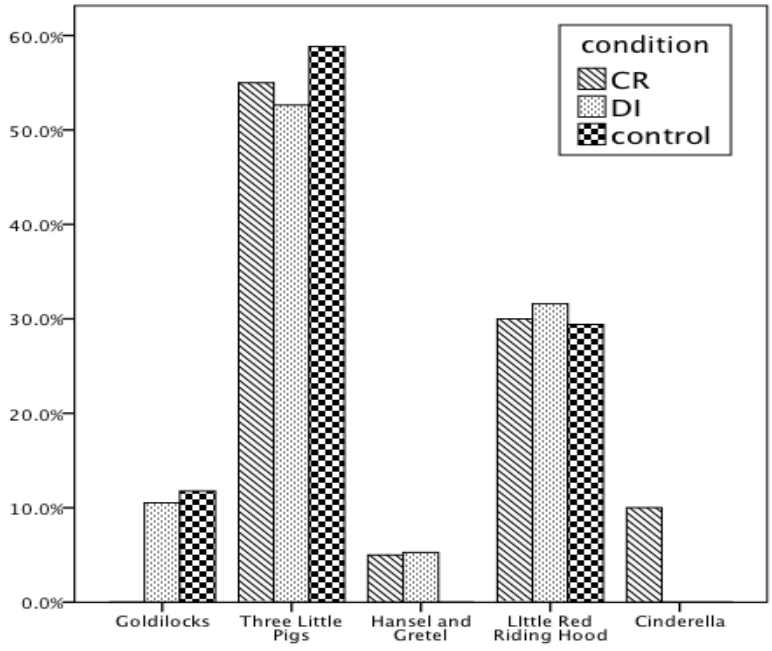

Figure 13. Frequency of the folktale titles chosen by the Grade 5 students

Analyses were conducted to measure whether differences in participants' choice of the recounted story had an impact on the quality of the story produced. Given that the majority of Grade 5 participants chose to retell two stories namely, the *Three Little Pigs*

and *Little Red Riding Hood*, independent sample t-tests were conducted on participants' data to compare their choice of story on all outcome measures at both microstructure and macrostructure levels. Independent sample t-tests conducted on all measures used in my study demonstrated no significant differences in story quality suggesting that the choice of story had no impact on participants' writing competencies. Table 9 below provides the outcome of the analysis.

Table 9

Comparison of Story Choice on Outcome Measures

Variable	The Three Little Pigs		Little Red Riding Hood			
	M	*SD*	*M*	*SD*	*t*	*p*
Length	181.93	90.84	214.94	72.09	46	.74
T-units	20.41	10.15	24.00	8.19	46	.29
Episodes	4.18	2.73	4.94	2.67	46	.34
Fluency	2.45	0.87	3.00	0.67	46	.08
Elaboration	2.03	0.73	2.58	0.69	46	.23
Organization	2.34	0.77	2.52	0.61	46	.32

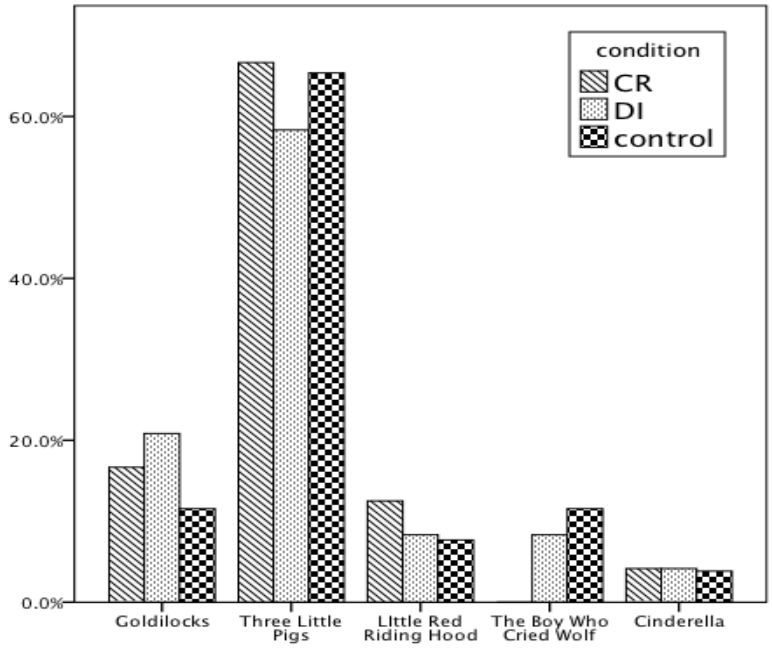

Figure 14. Frequency of the folktale titles chosen by the Grade 6 students

Overall, 55% of the Grade 5 students retold the story of the *Three Little Pigs*, with the following distribution: 11/21 in the CR group, 10/19 in the DI group and 10/17 in the control group choosing that title. In the same group, 30% chose *Little Red Riding Hood*, with 6/21 in the CR group, 6/19 in the DI group and 5/17 in the control group retelling that story. The remaining 15% of students chose *Goldilocks and the Three Bears* (7%), *Hansel and Gretel* (4%) and *Cinderella* (4%).

In the Grade 6 classrooms, 63% chose to retell the story of the *Three Little Pigs*, with the following distribution: 16/24 in the CR group, 14/24 in the DI group, and 17/26 in the control group. 16% of the Grade 6 students chose retell the story of *Goldilocks and the Three Bears*, a figure that breaks down into 4/24 in the CR condition, 5/24 in the DI condition, and 3/26 in the control condition. The remaining 21% variously decided upon *Little Red Riding Hood* (9.5%), *The Boy Who Cried Wolf* (7%), and *Cinderella* (4%).

Analyses were conducted to measure whether differences in participants' choice of the recounted story had an impact on the quality of the story produced. Given that the majority of Grade 6 participants chose to retell two stories namely, the *Three Little Pigs* and *Goldilocks*, independent sample t-tests were conducted on participants' data to compare their choice of story on all outcome measures at both microstructure and macrostructure levels. Independent sample t-tests conducted on all measures used in my study demonstrated no significant differences in story quality suggesting that the choice of story had no impact on participants' writing competencies. Table 10 below provides the outcome of the analysis.

Table 10

Comparison of Story Choice on Outcome Measures

Variable	The Three Little Pigs		Goldilocks			
	M	*SD*	*M*	*SD*	*t*	*p*
Length	294.00	107.40	282.00	100.97	44	.73
T-units	30.76	11.95	32.83	13.15	44	.62
Episodes	7.38	3.72	9.83	4.53	44	.70
Fluency	3.29	0.76	3.58	0.99	44	.30
Elaboration	3.10	0.79	3.25	1.06	44	.58
Organization	3.18	0.87	3.17	0.72	44	.97

Students with learning disabilities.

Figure 15 provides a frequency distribution of the folktales chosen by the students with learning disabilities. In total, 78% of the LD students chose to retell the story of the *Three Little Pigs* (25/32), 12% (4/32) chose to retell the story of *Little Red Riding Hood*, and the last 10% chose to retell the story of *Goldilocks* (2/32) or *Cinderella* (1/32).

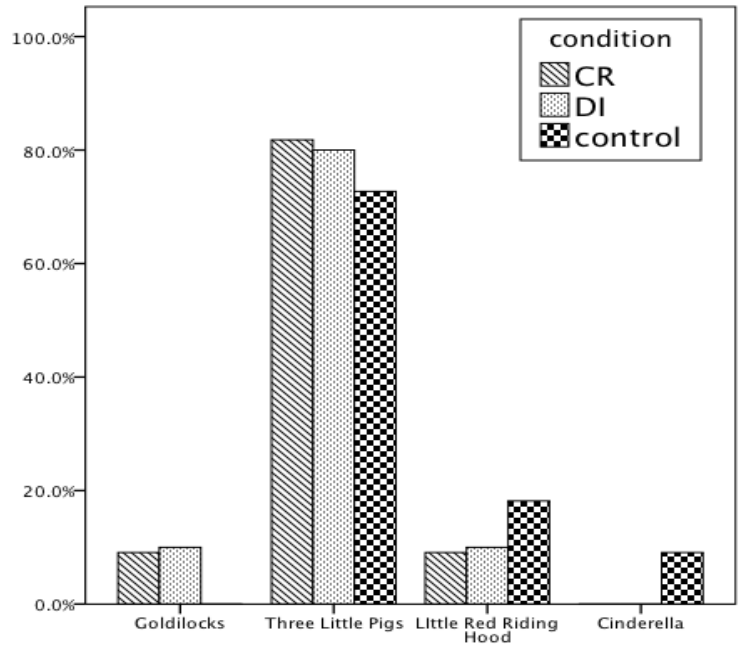

Figure 15. Frequency of the folktales titles chosen by the LD students

Given that most students wrote the story of the *Three Little Pigs*, it was not necessary to conduct an analysis looking at the differences in story outcomes.

Original Story Data

To establish what if any impact the treatment had on participants' ability to construct an original story, participants were asked to write an original folktale at the end of the intervention. The folktale had to include the following characters: a king or a queen, a boy or a girl, and a tiger. Two original stories were missing from the Grade 5 data, one from the DI group and one from the control group. In these cases, series mean replaced the missing values in SPSS. Table 9 indicates the number of original stories told by grade and condition.

Table 11

Number of Original Stories Told by Grade and Condition

	Grade 5	Grade 6	
Condition	*n*	*n*	Total
CR	21	24	45
DI	19	24	43
Control	17	26	43
Total	57	74	131

Treatment Data

The treatment conditions required students to retell four folktales: (a) *The Wise Old Woman*, (b) *The Name of the Tree*, (c) *The Wisdom Bird*, and (d) *The King's Ring*. Given that these data were only available for those students who received the treatment, the total number of possible stories in this category was 352. Sixteen stories were missing, eight from the Grade 5 students and eight from the Grade 6 students. As a result, the missing data for the treatment stories was 4.5% of the total. Because the stories were distributed across the different conditions, the series mean was once again used to replace the missing values. Table 10 provides the number of treatment stories obtained by both treatment conditions.

Table 12

Number of Treatment Stories by Conditions

Grade	*n*	Condition	The Wise Old Woman	The Name of the Tree	The Wisdom Bird	The King's Ring
5	21	CR	21	20*	20*	20*
	19	DI	19	17*	17*	18*
6	24	CR	23*	22*	24	24
	24	DI	22*	23*	24	22*

***** Indicating missing data

Reliability of Measures Used

While microstructure measures were considered objective measures, as they require the counting of the number of words in the story and the counting of T-units, macrostructure measures used rubrics which are grounded in research but have not been validated in previous studies in which they were used. Therefore, to insure the reliability of macrostructure measures, I calculated the interrater reliability for both the story grammar and story coherence measures. All stories were coded using the procedure outlined in the methods section.

Story Grammar

Interrater reliability in the story grammar section was calculated by randomly selecting and analyzing 50% of the data ($n = 64$) for both pre- and posttests. The interrater correlation coefficients obtained for story grammar *total episodes score* for pretest data was $r = .968^{***}$ (correlation is significant at $p < .001$, two-tailed) and for posttest data was $r = .958^{***}$ (correlation is significant at $p < .001$, two-tailed). In addition, a reliability statistic

was conducted for both pre- and posttests, using the same randomly selected data. The resulting Cronbach's Alpha was $\alpha = .950$ with $p < .000$.

Story Coherence

The coherence rubric went through several iterations until the language was specific enough that an acceptable interrater reliability could be established. Interrater correlation for story coherence was also calculated by randomly selecting and analyzing 50% of the data (n = 64). Table 11 outlines the interrater correlation coefficients for both pre- and posttests.

Table 13

Interrater Correlation Coefficient for Coherence Score

Coherence Element	Pretest	Posttest
Fluency	$r = .900^{**}$	$r = .897^{**}$
Elaboration	$r = .912^{**}$	$r = .947^{**}$
Organization	$r = .909^{**}$	$r = .899^{**}$

$^{**}p < .01$, two-tailed

A reliability statistic was conducted for both pre- and posttests, using the same randomly selected data. The resulting Cronbach's Alpha was $\alpha = .902$, $p < .001$.

Analysis of Group Equivalence

The lack of random assignment in a pretest-posttest quasi-experimental design necessitates an analysis of group equivalence prior to analyzing the treatment's impact. The analysis of group equivalence forms the basis for the decision regarding which statistical procedure should be conducted to determine an experiment's causal inferences. For example, if pretest analysis indicates that the groups are equal in terms of all

dependent variables, then one may choose to conduct ANOVAs on posttest data. On the other hand, if the groups' pretest measures are unequal, one may choose to use the *Gain Score* procedure or, alternately, to use the pretest as a covariate of the posttest in testing for the impact of the treatment (Abrami & Bernard, 2006).

This study had three independent variables (IVs): *condition*, *grade*, and *academic profile*. The *condition* IV had three levels: (a) CR, (b) DI, and (c) control. The *grade* IV had two levels: Grade 5 and Grade 6. *Academic profile* also had two levels: NA and LD students. Given the quasi-experimental design of my study and the fact that intact groups were used, it was important to measure whether the groups were equal across grade level and/or across conditions, Therefore, several Multivariate Analysis of Variance (MANOVAs) were performed to compare the groups on all pretest dependent variables (DVs), including microstructure and macrostructure variables as described in the following section.

Establishing Group Equivalence on Microstructure Dependent Variables

Microstructure DVs are those that constitute the internal linguistic structure used in narrative construction. They are: (a) *story length*—the total number of words in the story; (b) *T-units*—defined as one main clause, to which all subordinate clauses attach; and (c) *syntax*—the number of words/T-units. Table 12 provides descriptive statistics for microstructure variables analyses of pretest data.

Table 14

Descriptive Statistics for Grade 5 and Grade 6 Microstructure Variables Pretest Data

			Length		T-units		Syntax	
Grade	Condition	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
5	CR	21	146.61	74.14	17.21	9.38	8.68	0.76
	DI	19	225.26	79.96	25.26	9.01	8.92	0.98
	Control	17	247.06	73.26	26.88	8.56	9.25	1.16
6	CR	24	305.91	109.79	32.88	13.49	9.69	1.91
	DI	24	300.33	57.10	32.5	7.42	9.43	1.69
	Control	26	214.08	129.63	22.85	12.85	9.39	1.44

A 3 X 2 MANOVA was performed on the three microstructure dependent variables. Order of entry of the IV was *condition*, and then *grade*. The assumptions of independent observations, homogeneity of variance, and normal distribution of the dependent variable for each group were checked. The assumption of homogeneity of variances was violated for *length* and *syntax*. Thus, results for both DVs should be viewed with caution. The assumption of normal distributions of the DV for each group was not violated. The main effect for *grade* was significant: Wilks $\Lambda = 8.27$, $F(2, 124) = 11.212$, $p < .000$, partial $\eta^2 = .153$, although this was not the case for *condition*, where $F(4, 248) = 1.041$, $p = .387$, partial $\eta^2 = .017$. A significant interaction effect between *grade* and *condition* was obtained: Wilks $\Lambda = .823$, $F(4, 248) = 6.324$, $p < .000$, partial $\eta^2 = .093$. Follow up ANOVAs (Table 13) indicated that the differences between the Grade 5 classes and the Grade 6 classes were significant for all microstructure DVs: *length*, *T-units*, and *syntax*. Analysis of the interaction between *grade* and *condition* was significant for *length* and *T-units*, but not for *syntax*.

Table 15

Effect of Condition, Grade, and Condition X Grade on Microstructure DVs

Independent Variable	Dependent Variable	*df*	*F*	Partial η^2	*p*
Condition	Length	2	1.970	.031	.144
	T-units	2	1.959	.030	.145
	Syntax	2	.135	.002	.874
Grade	Length	1	16.664	.118	.000***
	T-units	1	11.333	.083	.001***
	Syntax	1	4.877	.039	.029*
Condition X Grade	Length	2	11.460	.155	.000***
	T-units	2	9.344	.130	.000***
	Syntax	2	1.053	.017	.352
Error	Length	125			
	T-units	125			
	Syntax	125			

***$p < .001$, **$p < .01$, *$p < .05$, two-tailed

In summary, MANOVA performed on microstructure DVs indicated that Grade 5 and Grade 6 differ in terms of *story length*, *T-units*, and *syntax*, and thus do not belong to the same population and cannot be analyzed together. In addition, the significant interaction between the IVs *condition* and *grade* for the DVs *length* and *T-units* indicated that within each grade level, the three conditions groups were statistically different on these DVs prior to the study.

Establishing Group Equivalence on Macrostructure Dependent Variables

Macrostructure variables included two measures. One measure was used to analyze story grammar elements in order to compute the number of episodes in the story. This variable was titled *total episodes score*. The second measure, *Story Coherence*, was a rubric designed to measure the sequence of events and the quality of the story as a whole. This measure included three DVs: (a) *fluency*—the flow of the written text; (b) *elaboration*—the degree to which the episodes are elaborated by details, descriptions, and reactions; and (c) *organization*—the clarity of the logical flow of the story and/or movement of an event through time. Table 14 provides descriptive statistics for all macrostructure dependent variables of pretest data.

Table 16

Descriptive Statistics for Grade 5 and Grade 6 Macrostructure DVs of Pretest Data

			Total Episodes		Fluency		Elaboration		Organization	
Grade	Condition	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
5	CR	21	3.63	3.05	2.57	0.87	2.03	0.79	2.22	0.96
	DI	19	5.16	3.25	2.95	0.71	2.53	0.84	2.58	0.61
	Control	17	5.41	2.58	2.77	0.90	2.47	0.72	2.59	0.87
6	CR	24	8.50	3.65	3.17	0.70	3.16	0.76	3.34	0.92
	DI	24	8.33	3.66	3.20	0.93	3.04	0.69	2.91	0.72
	Control	26	6.12	3.77	2.97	1.00	2.50	1.03	2.62	0.94

A 4 X 2 MANOVA was performed on the four macrostructure DVs. Order of entry of the IV was *condition*, then *grade*. The assumptions of independent observations, which were homogeneity of variance, and normal distribution of the dependent variable

for each group, were checked. The assumption of homogeneity of variances was violated for *organization*; thus, results for this DV should be read with caution. The assumption of normal distributions of the dependent variable for each group was not violated. The main effect for *grade* was significant: Wilks $\Lambda = 8.39$, $F(4, 124) = 5.853$, $p = .000$, partial $\eta^2 =$ 114. This was not the case for *condition*, where Wilks $\Lambda = .953$, $F(4, 244) = .817$, $p =$ .588, partial $\eta^2 = .022$. A significant interaction effect between *grade* and *condition* was obtained: Wilks $\Lambda = .891$, $F(4, 244) = 2.426$, $p = .027$, partial $\eta^2 = .056$. Follow up ANOVAs (Table 15) indicated that the differences between Grade 5 and Grade 6 were significant with respect to all story coherence DVs. Analysis of the interaction between *grade* and *condition* indicated significant differences for *total episodes score, elaboration* and *organization*, but not for *fluency*.

Table 17

Effect of Condition, Grade, and Condition X Grade on Macrostructure DVs

Independent Variable	Dependent Variable	*df*	*F*	Partial η^2	*p*
Condition	Total Episodes	2	.915	.014	.403
	Fluency	2	.856	.014	.427
	Elaboration	2	1.415	.022	.247
	Organization	2	.580	.009	.561
Grade	Total Episodes	1	23.448	.158	.000***
	Fluency	1	5.308	.041	.000***
	Elaboration	1	14.937	.107	.001***
	Organization	1	11.824	.007	.029*
Condition X Grade	Total Episodes		4.026	.061	.020*
	Fluency	2	.675	.011	.511
	Elaboration	2	4.917	.073	.009**
	Organization	2	5.149	.076	.007**
Error	Total Episodes	125			
	Fluency	125			
	Elaboration	125			
	Organization	125			

***$p < .001$, **$p < .01$, *$p < .05$, two-tailed

In summary, like for the microstructure DVs, MANOVA performed on macrostructure variables indicated that the Grade 5 and Grade 6 classes differ significantly in their *total episodes score*, *fluency*, *elaboration*, and *organization*, and thus do not belong to the same population. Furthermore, the significant interaction between the two IVs *condition* and *grade* for *total episode score*, *elaboration* and

organization indicates that within each grade level, the three conditions groups were statistically different prior to the study of these DVs.

Proposed Statistical Procedure to Establish Intervention Impact

Pretest MANOVAs found a main effect for *grade*, meaning that students within the categories of Grade 5 or Grade 6 did not belong to the same population. In addition, significant interaction effect between *grade* and *condition* was found for many of the DVs, indicating that within each grade level, the groups were significantly different. Therefore, when selecting which statistical procedure should be performed to establish group differences, the pretest differences that exist between groups must be considered. Several statistical methods could be used in comparing groups with pretest and posttest data: (1) repeated measures ANOVA, (2) analysis of covariance (ANCOVA), and (3) ANOVA on the gain scores (Dimitrov & Rumrill, 2003).

Repeated measures ANOVA can be used with pretest-posttest data as a factorial design, with one between-subjects factor. In the case of my study, these are the different conditions and one within-subjects (pretest-posttest) factor. The principal problem with repeated measures analysis is the confusion regarding the three F-ratios: (a) one for the main effect of treatment, (b) one for the main effect of time, and (c) one for the treatment-by-time interaction. The most relevant *F* is for the treatment-by-time interaction, which is mathematically equivalent to the square of the *t* for the gain scores (Dimitrov & Rumrill, 2003). Because of the mathematical equivalence with gain score, Knapp and Schafer (2009) suggest that this analysis is not worth considering when gain score analysis is a possibility.

Gain scores, also called difference scores or change scores, can be used to establish the impact of a treatment where the difference between the pretest and posttest data is used (Cook & Campbell, 1979). The gain score analysis focuses on the change that occurs from pretest to posttest. By analyzing the change scores within each group, one can determine whether both groups improved at different rates, whether one group improved while the other group showed no improvement, or even whether one group improved while the other group deteriorated. The analysis of gain scores makes no assumption about the equivalence of the pretest-posttest regression line.

Alternately, the pretest can be used as a covariate of the posttest. In this case, mean differences are established after variations due to pretests are removed from the total sum of squares (Abrami & Bernard, 2006). ANCOVA aims to estimate a treatment effect on some posttest outcomes or impact measures, while adjusting for initial pretest scores.

According to Smolkowski (2010), the debate between the use of gain scores and ANCOVA has a long history. On the one hand, some note that change scores can often overcorrect the posttest by the pretest (Cohen, Cohen, Aiken, & West, 2003). On the other hand, some argue that the choice between an analysis of gain scores versus ANCOVA depends on the research question. According to Fitzmaurice, Laird, and Ware (2004), ANCOVA tests the following question: Given that participants start with the same score, how do they differ at posttest? On the other hand, they argue that tests of gain scores answer a different question: How do groups, on average, differ in gains? They recommend the use of ANCOVA only in the analysis of randomized controlled trials. The analysis of gain scores answers a research question that focuses on the improvements

from pretest to posttest. The analysis of gain scores compares those improvements between groups, such as treatment and control groups. Specifically, the analysis tests whether we can reject the hypothesis that the groups improved at the same rate. Gain score analysis looks at difference in group means; ANCOVA addresses the question of whether an individual belonging to one group is expected to change more (or less) than an individual belonging to the other group, given that they have the same pretest response. However, initial differences are essential in my study and are addressed in my research questions, which look at the impact of the treatment on LD children.

ANCOVA estimates a treatment effect on one or several posttest outcomes while adjusting for initial pretest scores (Oaks & Feldman, 2001). According to Oak and Feldman, for a randomized experiment, ANCOVA yields unbiased treatment estimates and typically has superior power to gain score methods. On the other hand, in a quasi-experimental design, the covariate adjustment for pretest in quasi-experimental studies can bias results, as the covariate may take away the meaningful variations between groups, resulting in a conclusion of *no difference* (Fitzmaurice, Laird, & Ware, 2004*)*. Therefore, in the absence of randomization, when baseline differences between groups exist, Oak and Feldman suggest that change-score models yield less biased estimates.

It should also be noted that some argue that using gain score may result in a regression effect (Cook & Campbell, 1979), as those students who scored high in the pretest will, on average, have smaller gain than those students who scored low in the pretest (Yin & Brennan, 2002). Thus, gain scores give advantages or disadvantages to participants who received either high or low scores on pretests measures. However, Allison (1990) argues that regression toward the mean only occurs in situations

dependent upon the time frame of the measurement, and only then if the variances within time frame 1 and time frame 2 remain stable. If, for example, the variance of a measure increases over time, regression toward the mean does not hold. Moreover, Cohen et al. (2003) propose that regression towards the mean poses no threat when one compares stable groups.

Given the argument for the benefit of using gain scores in a nonequivalent pretest-posttest design, gain scores were used in my study. Gain scores were obtained by subtracting pretest scores from posttest scores on all microstructure and macrostructure DVs.

Data Analysis of the Inclusive Classroom

Because the research questions required a main effects analysis of treatments impact on writing measures as well as an analysis of the interaction between the treatment condition and the student's academic profile (LD versus NA), two-way or factorial ANOVAs were conducted on all dependent variables. As recommended in the most recent edition of the American Psychological Association (APA) Publication Manual (2009), both statistical significance tests as well as effect size analysis were conducted. Significant testing resulting in *p* value increases the probability of rejecting the null hypothesis when it is in fact true or accepting it when it is false. The problem with significant testing is that when the sample size is small, important effects may seem insignificant, resulting in a type II error (Levine & Hullett, 2002). In addition, *p* value gives no indication of the actual magnitude of the treatment's impact. Magnitude is addressed by effect size (ES) analysis, which provides an indication of the size of the treatment's impact. SPSS factorial ANOVA output table provides *partial* η^2 score, which

describes the proportion of total variation attributable to the factor being analyzed, plus its associated error variance. Therefore, as suggested by Henson (2006), I reported both the overall partial η^2 for the ANOVA and a standardized mean difference effect using Cohen's *d*. According to Cohen (1988), *d* = .20 signifies a small effect; *d* = .50 signifies a moderate effect; and *d* = .80 signifies a large effect.

The significant differences between the Grade 5 and Grade 6 students on many of the measures meant that the analysis was conducted by grade level. For the *narrative retelling* data, gain scores were used, as this measure was given as pre- and posttest. For the *original story* data, which was given as posttest only, raw scores were used. Two-way analysis of variance was conducted for all dependent variables, with *treatment condition* considered as one factor with three levels (CR, DI and control) and *academic profile* as another factor with two levels (NA and LD).

Given the fact that all of the written narrative data were analyzed at two levels, microstructure level which considered the internal linguistic structures used in the narrative construction (including the variables: *story length*, *T-units* and *syntax*) and macrostructure level which examined the entire narrative produced (including the variables: *total episodes score*, *fluency*, *elaboration*, and *organization*), data analysis at each grade level was divided into two subsections, one providing the analysis of the microstructure dependent variables and one providing the analysis of the macrostructure DVs. Following the analysis of the inclusive classroom data, a separate analysis will be conducted on the students with learning disability.

Grade 5 Data Analysis

Narrative retelling data.

Microstructure dependent variables.

Microstructure dependent variables are the measures which look at the internal linguistic structure of the narrative. These include *story length*, *T-units* and *syntax*. Table 18 provides the descriptive statistics for all microstructure DVs for both pretest and posttest data.

Table 18

Descriptive Statistics for Grade 5 Pretest and Posttest Microstructure Data

		Length		T-units		Syntax	
Measure	Condition	*M*	*SD*	*M*	*SD*	*M*	*SD*
Pretest	CR	146.61	74.14	17.21	9.38	8.68	0.76
	DI	225.26	79.96	25.26	9.01	8.92	0.98
	Control	247.06	73.26	26.88	8.56	9.25	1.16
Posttest	CR	243.05	94.13	26.33	9.70	9.20	1.10
	DI	214.84	61.06	25.10	6.17	8.64	1.59
	Control	184.41	69.69	21.82	10.75	8.97	2.08

Given that the initial analysis indicated that the groups were not equal at the onset of the study, two-way ANOVAs using gain scores were conducted on all dependent variables with *treatment conditions* being one IV, which had three levels, CR, DI and control, and *academic achievement* with two levels, NA and LD.

For *story length* variable (the number of words in the story), a two-way ANOVA conducted demonstrated a significant main effect for *treatment conditions*: $F(2, 51) =$

14.830, $p < .000$, and partial $\eta^2 = .368$. [The assumption of homogeneity of variances was not violated]. Post hoc analyses using the Tukey HSD post hoc criterion indicated significant differences between the CR condition ($M = 93.18$, $SD = 85.51$) and the DI group ($M = -10.42$, $SD = 84.41$), where $p < .000$, and calculated effect size $d = 1.23$, which is considered a large effect. Significant differences were also found between the CR group and the control group ($M = -62.65$, $SD = 83.62$), when $p < .001$, and $d = 1.85$, indicating a large ES. No significant differences were found between the DI and the control groups: $p = .161$ and $d = .62$. No significant interaction effect was found between a student's *academic profile* and his or her *treatment conditions*: $F(2, 51) = 1.241$, $p = .298$, and partial $\eta^2 = .046$.

Two-way ANOVA conducted on the gain scores of the *T-units* (one main clause with all the subordinate clauses attached to it) demonstrated a significant main effect for the *treatment condition*, with $F(2, 51) = 7.922$, $p < .001$, and partial $\eta^2 = .237$. [The assumption of homogeneity of variances was not violated]. Post hoc analyses using the Tukey HSD post hoc criterion indicated significant differences between the CR condition ($M = 8.28$, $SD = 8.87$), where $p = .021$ and the DI group ($M = -.16$, $SD = 8.84$), with calculated $d = .85$ indicating a large effect. Significant differences were found between the CR and the control group ($M = -5.05$, $SD = 11.55$), $p < .000$, with $d = 1.34$, which is considered large effect size. No significant differences were found between the DI and the control group for the *T-units* measure, $p = .246$ and $d = .51$. There was no interaction effect between a student's *academic profile* and the *treatment conditions*, as $F(2, 51) = 1.077$, $p = .348$, and partial $\eta^2 = .041$.

No statistical differences were found between the three conditions for the *syntax* variable: $F(2, 51) = 1.656$, $p = .201$, and partial $\eta^2 = .061$. There was no interaction effect between *condition* and *academic profile* for this measure, where $F(2, 51) = .483$, $p = .620$, and partial $\eta^2 = .019$.

Macrostructure dependent variables.

Macrostructure dependent variables assess the coherence of the narrative or the global representation of story meaning and connectedness. This analysis included four dependent variables, *total episode score*, *fluency*, *elaboration* and *organization*. Table 19 provides the descriptive statistics for all macrostructure DVs for both pretest and posttest data.

Table 19

Descriptive Statistics for Grade 5 Pretest and Posttest Macrostructure Data

		Total Episodes		Fluency		Elaboration		Organization	
Measure	Condition	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Pretest	CR	3.63	3.05	2.57	0.87	2.03	0.79	2.22	0.96
	DI	5.16	3.25	2.95	0.71	2.53	0.84	2.58	0.61
	Control	5.41	2.58	2.77	0.90	2.47	0.72	2.59	0.87
Posttest	CR	9.52	4.73	3.52	0.93	3.71	0.96	3.72	0.97
	DI	7.26	2.74	3.21	0.71	3.21	0.78	3.26	0.65
	Control	5.58	3.37	3.00	0.87	3.00	0.87	2.88	0.93

A two-way ANOVA using gain scores was conducted to establish the treatment effect on story grammar variable which was measured by calculating the *total episodes score*. Significant differences were found $F(2, 51) = 11.262$, $p < .000$, and partial $\eta^2 =$

.306. [The assumption of homogeneity of variances was violated, and thus these results should be viewed with caution]. Post hoc analyses using the Tukey HSD post hoc criterion indicated that the CR condition (M = 5.70, SD = 3.91) performed significantly higher than the DI condition (M = 2.10, SD = 3.77), with p = .007 and d = 1.01, which is considered a large effect. Significant differences were also found between the CR and the control group (M = .18, SD = 2.72): p < .000 and d = 1.55, which is considered a large effect. No significant differences were found between the DI and the control group, as p = .243 and d = .26. No interaction effect was found between a student's *academic profile* and the *treatment conditions*: $F(2, 51) = 1.387$, p = .259, and partial η^2 =.052.

A two-way ANOVA was conducted on the story coherence variables, which include *fluency*, the flow of the written text; *elaboration*, the degree to which the episodes are elaborated by details, descriptions, and reaction; and *organization*, the clarity of the logical flow of the story. No significant main effects were found for *fluency*, where $F(2, 51) = 2.934$, p = .062, and partial η^2 = .306. [The assumption of homogeneity of variances was not violated]. The Tukey HSD test indicated that there were no significant differences between the CR group (M = .92, SD = 1.08) and the DI group (M = .26, SD = .73), p = .087 and d = .69. Nor were significant differences found between the CR group and the control group (M = .23, SD = .97): p = .083, d = .71. No significant differences were found between the DI group and the control group, as p = .996 and d = .002. No interaction effect was found between a student's *academic profile* and *fluency*: $F(2, 51)$ = .131, p = .871, and partial η^2 = .005.

For the *elaboration* variable, significant main effect was found, $F(2, 51) = 11.262$, p < .001, and partial η^2 = .256. [The assumption of homogeneity of variances was not

violated]. Post hoc analyses using the Tukey HSD post hoc criterion indicated significant differences, with the CR group (M = 1.65, SD = .93) performing significantly higher than the DI group (M = .68, SD = .89), p = .004, with d = 1.07, which is considered large. Significant differences were found between the CR and the control group (M = .53, SD = .87), where p = .004 and d = 1.24, which is also considered a large effect. No differences were found between the DI and the control group (p = .865). No interaction effects between a student's *academic profile* and *treatment condition* was found: $F(2, 51)$ = 1.286, p = .285, and partial η^2 = .048.

Factorial ANOVA conducted using both *treatment condition* and *student academic profile* on the story *organization* DV resulted in a significant main effect for *condition*, $F(2, 51) = 6.881$, p = .002, and partial η^2 = .213. [The assumption of homogeneity of variances was violated, so these results should be viewed with caution]. The Tukey HSD test indicated that the CR group (M = 1.46, SD =1.05) outperformed the DI group (M = .69, SD = .88), where p = .019 and d = .74, which is considered a large effect. Significant differences were also found between the CR group and the control group (M = .29, SD = .77), as $p < .000$ and d = 1.17, which is considered a large effect size. No differences were found between the control group and the DI group: p = .379 and d = .44. No interaction effects between the *treatment condition* and a student's *academic profile* were found: $F(2, 51) = .019$, p = .981, and partial η^2 = .001.

Analysis of treatments' impact based on story choice

Even though participants' choice of story was found to not impact outcome measures at both microstructure and macrostructure level of analysis on the pretest, independent sample t-tests were again conducted on participants' gain score data using

story choice as the independent variable. Since most participants at this grade level chose to retell two stories, the *Three Little Pigs* and *Little Red Riding Hood*, analyses were conducted using gain score data of participants who chose to write these stories only. Independent sample t-test analyses conducted demonstrated no significant differences among participants, thus suggesting that the choice of the story had no impact on participants' writing competencies. Table 20 provides the outcome of these analyses.

Table 20

Outcome Analyses based on Grade 5 Participants' Story Choice

Story	*n*	Measure	*M*	*SD*	*t*	*p*
Three Little pigs	29	Length	33.83	128.70	1.171	.258
Little Red Riding Hood	19		-4.73	77.87		
Three Little pigs	29	T-units	4.38	13.03	1.572	.123
Little Red Riding Hood	19		-.84	7.70		
Three Little pigs	29	Syntax	.01	1.80	-0.224	.824
Little Red Riding Hood	19		.12	1.34		
Three Little pigs	29	Episodes	3.69	3.81	0.975	.335
Little Red Riding Hood	19		2.47	4.80		
Three Little pigs	29	Fluency	.76	.830	1.127	.226
Little Red Riding Hood	19		.42	1.07		
Three Little pigs	29	Elaboration	1.27	1.03	1.705	.096
Little Red Riding Hood	19		.79	.85		
Three Little pigs	29	Organization	1.07	.99	1.184	.242
Little Red Riding Hood	19		.74	.87		

Analysis of gender impact on Grade 5 participants retelling outcome.

While my research questions did not focus on gender effect, namely the impact of the treatments on participants based on their gender, given that importance has been put

on improving boys' achievements at school (Gouvernement du Québec, 2004), it was important to identify whether there was a differential impact of the treatments depending on participants' sex. Two-way ANOVAs were conducted using gain scores to identify the impact of the treatment on gender. No treatment impact on gender were obtained on all microstructure variables including *length* $F(2, 51) = .650$, $p = .526$; *T-units* $F(2, 51) = 1.842$, $p = .169$ and *syntax* $F(2, 51) = .659$, $p = .522$. Similarly, no differences were obtained for all macrostructure variables including *total episodes score* $F(2, 51) = .835$, $p = .440$; *fluency* $F(2, 51) = .647$, p = .528; *elaboration* $F(2, 51) = .197$, $p = .822$; and *organization* $F(2, 51) = .758$ $p = .474$.

Summary of results for grade 5 narrative retelling data analysis.

Two-way ANOVAs using gain scores conducted on all DVs indicated significant main effects for the treatment condition on microstructure (*length*, *T-units* and *Syntax*) and macrostructure (*total episode score*, *fluency*, *elaboration*, and *organization*). Post hoc analysis using the Tukey HSD indicated that the CR treatment scored significantly higher than both the DI and the control group on many of the measures. Calculated effect size using Cohen's *d* indicated a moderate to large effect for these measures. There was no significant interaction between *academic profile* and *treatment condition* for any of the DVs. Table 21 provides a summary of the impact of the treatment on both microstructure and macrostructure variables.

Table 21

Summary of Results for Grade 5 Retelling Data Analysis

Microstructure Level of Analysis	Obtained Statistical Differences
Length Total number of words	**Significant differences** CR > DI & Control; DI = Control
T-units One main clause with its subordinate clauses	**Significant differences** CR > DI & Control; DI = Control
Syntax Number of words/T-units	No significant differences CR = DI = Control
Macrostructure Level of Analysis	
Total episode score Total number of episodes	**Significant differences** CR > DI & Control; DI = Control
Fluency The flow of the written text	No significant differences CR = DI = Control
Elaboration The degree of details in the story	**Significant differences** CR > DI & Control; DI = Control
Organization The clarity of the logical flow of the story	**Significant differences** CR > DI & Control; DI = Control

Original story data analysis.

To establish what, if any, impact the treatments had on participants' ability to construct an original story, the students were asked to write a folktale at the end of the intervention. Given that this measure was given as a posttest only, raw scores rather than gain scores were used. Two-way ANOVAs were conducted on all dependent variables with *treatment conditions* being one IV which had three levels, CR, DI and control, and *academic achievement* with two levels, NA and LD.

Microstructure dependent variables.

Descriptive statistics for microstructure variables of original story data including *story length* and *T-units* are depicted in Table 22.

Table 22

Descriptive Statistics for Grade 5 Microstructure DVs of Original Story

		Length		T-units	
Condition	*n*	*M*	*SD*	*M*	*SD*
CR	21	266.28	136.51	29.42	14.16
DI	19	208.36	105.05	23.84	14.03
Control	17	207.64	102.52	21.47	10.58

Two-way ANOVAs were conducted on microstructure variables, including *length* and *T-units*. The assumption of homogeneity of variances was not violated for these two measures. No significant differences were found on the *story length* measure, as $F(2, 51) = 2.340$, $p = .107$, and partial $\eta^2 = .084$; and *T-units* measure, where $F(2, 51) = 2.490$, $p = .093$, and partial $\eta^2 = .089$. Post hoc analysis using the Tukey HSD indicated that there were no significant differences between the three conditions on these two microstructure measures. There was no interaction effect between *treatment conditions* and *academic profile* for *story length*: $F(2, 51) = 1.077$, $p = .348$; and partial $\eta^2 = .041$ and for *T-units*: $F(2, 51) = 1.179$, $p = .316$, and partial $\eta^2 = .044$.

Macrostructure dependent variables.

Descriptive statistics for macrostructure variables of original story data including *total episodes score*, *fluency*, *elaboration* and *organization* are depicted in Table 23.

Table 23

Descriptive Statistics for Grade 5 Macrostructure DVs of Original Story

		Total Episodes		Fluency		Elaboration		Organization	
Condition	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
CR	21	7.81	3.72	3.14	0.19	2.95	0.86	2.90	0.76
DI	19	6.47	2.93	2.52	0.77	2.57	0.69	2.52	0.77
Control	17	4.71	2.93	2.47	0.94	2.35	0.61	2.29	0.68

Two-way ANOVAs was conducted to establish the *treatment* effect on story grammar variable including *total episodes score*. Significant differences were found with $F(2, 51) = 5.499$, $p = .007$, and partial $\eta^2 = .177$. Post hoc analyses using the Tukey HSD post hoc criterion indicated that the CR condition group ($M = 7.81$, $SD = 3.73$) performed at a significantly higher level than the control group ($M = 4.70$, $SD = 2.93$), with $d = 1.02$, which is considered a large effect. No differences were found between the CR group and the DI group ($M = 6.47$, $SD = 2.85$), $p = .355$. There was no interaction effect between *treatment conditions* and *academic profile*, as $F(2, 51) = .930$, $p = .401$, partial $\eta^2 = .035$.

Two-way ANOVAs were conducted on *story coherence* variables, including *fluency*, *elaboration*, and *organization*. Significant differences were found for *fluency*, in that $F(2, 51) = 3.854$, $p = .028$, and partial $\eta^2 = .131$. Post hoc analyses using the Tukey HSD post hoc criterion indicated that the CR treatment group ($M = 3.14$, $SD = .91$) performed significantly higher than the DI condition ($M = 2.52$, $SD = .77$), where $p = .045$ and $d = .78$, which is considered a moderate effect. Significant differences were also found between the CR group and the control group ($M = 2.47$, $SD = .94$); $p = .032$ and $d = .85$, which is considered a large effect size. No significant differences were found

between the DI and the control groups (p = .976). There was no interaction effect between *treatment conditions* and *academic profile*: $F(2, 51) = .285$, p = .753, and partial η^2 = .011.

Significant differences were found for *elaboration*, where $F(2, 51) = 3.871$, p = .027, and partial η^2 = .132. [The assumption of homogeneity of variances was violated, and so these results should be viewed with caution]. Post hoc analyses using the Tukey HSD post hoc criterion indicated that the CR group (M = 2.95, SD = .86) performed significantly better than the control group (M = 2.95, SD = .61), p = .018 and d = .86, which is considered a large effect size. No differences were found between the CR and the DI group (M = 2.58, SD = .69), where p = .175. There were no differences between the DI and the control groups (p = .554). There was no interaction effect between *treatment conditions* and *academic profile*: $F(2, 51) = 1.287$, p = .285, and partial η^2 = .048.

No differences were found for *organization*, where $F(2, 51) = 2.896$, p = .064, and partial η^2 = .102. Post hoc analyses using the Tukey HSD post hoc criterion indicated that the CR group (M = 2.90, SD = .76) performed at a significantly higher level than the control group (M = 2.29, SD = .68), with p = .023 and d = .90, which is considered a large effect size. No differences were found between the CR and the DI group (M = 2.53, SD = .77), where p = .199. There were no differences between the DI and the control groups (p = .571). There was no interaction effect between *treatment conditions* and *academic profile*: $F(2, 51) = 2.002$, p = .146, and partial η^2 = .073.

Summary of results for grade 5 original story data analysis.

Two-way ANOVAs on participants' original story data indicated that there were no significant differences on the microstructure variables *length* and *T-units*. For macrostructure variables, several significant differences were found for. Post hoc analysis using the Tukey HSD indicated that the CR treatment scored significantly higher than both the DI and the control group on many of the measures. Calculated effect size using Cohen's *d* indicated a moderate to large effect for these measures. There were no significant interaction between *academic profile* and *treatment condition* for any of the DVs. Table 24 provides a summary of the impact of the treatment on all variables.

Table 24

Summary of Results for Grade 5 Original Story Data Analysis

Microstructure Level of Analysis	Obtained Statistical Differences
Length Total number of words	No significant differences CR = DI = Control
T-units One main clause with its subordinate clauses	No significant differences CR = DI = Control
Macrostructure Level of Analysis	
Total episode score Total number of episodes	**Significant differences** CR > control; DI =Control
Fluency The flow of the written text	**Significant differences** CR > DI & Control; DI = Control
Elaboration The degree of details in the story	**Significant differences** CR > control; DI = control
Organization The clarity of the logical flow of the story	**Significant differences** CR > control; DI = control

Grade 6 Data Analysis

Narrative retelling data.

Microstructure dependent variables.

Table 25 provides the descriptive statistics for all microstructure DVs for both pretest and posttests data.

Table 25

Descriptive Statistics for Grade 6 Pretest and Posttest Microstructure Data

		Length		T-units		Syntax	
Measure	Condition	*M*	*SD*	*M*	*SD*	*M*	*SD*
Pretest	CR	305.91	109.79	32.88	13.49	9.69	1.91
	DI	300.33	57.10	32.5	7.42	9.43	1.69
	Control	214.08	129.63	22.85	12.85	9.39	1.44
Posttest	CR	286.95	104.07	31.52	10.06	9.10	1.88
	DI	281.75	104.19	29.29	11.34	9.68	1.55
	Control	164.19	65.48	18.58	6.56	8.81	1.71

As with the Grade 5 data, gain-scores were used to measure the impact of the treatments on Grade 6 participants' retelling data. Two-way ANOVAs were conducted on all dependent variables with *treatment conditions* being one IV which had three levels, CR, DI and control, and *academic achievement* with two levels, NA and LD.

A two-way ANOVA conducted on the *story length* variable indicated that there were no significant differences between the groups, with $F(2, 68) = .711$, $p = .495$, and partial $\eta^2 = .020$. No interaction effect was found between *treatment* and *academic profile* for this measure $F(2, 68) = .223$, $p = .800$, and partial $\eta^2 = .007$). No differences were found for *T-units*, as $F(2, 68) = .615$, $p = .543$, and partial $\eta^2 = .018$. No interaction effect

was found between *treatment* and *academic profile* for *T-units*, in that $F(2, 68) = .421$, $p = .658$, and partial $\eta^2 = .012$. No statistical differences were found between the three conditions in the *syntax* variable, where $F(2, 68) = 1.656$, $p = .251$, and partial $\eta^2 =. 007$.

Macrostructure dependent variables.

Table 26 provides the descriptive statistics for all macrostructure DVs for both pretest and posttest data.

Table 26

Descriptive Statistics for Grade 6 Pretest and Posttest Macrostructure Data

		Total Episodes		Fluency		Elaboration		Organization	
Measure	Condition	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Pretest	CR	8.50	3.65	3.17	0.70	3.16	0.76	3.34	0.92
	DI	8.33	3.66	3.20	0.93	3.04	0.69	2.91	0.72
	Control	6.12	3.77	2.97	1.00	2.50	1.03	2.62	0.94
Posttest	CR	10.83	4.28	3.97	0.67	3.71	0.74	4.09	0.75
	DI	8.54	2.75	3.29	0.80	3.08	0.65	3.10	0.65
	Control	5.57	2.73	2.88	1.07	2.61	0.98	2.61	0.98

A two-way ANOVA using gain scores was conducted to establish the treatment effects on *total episodes score*. No significant differences were found; $F(2, 68) = 1.858$, $p = .164$, and partial $\eta^2 = .052$. However, post hoc analysis using the Tukey HSD post hoc criterion indicated that the CR group ($M = 2.23$, $SD = 4.54$) performed significantly higher than the control group ($M = -.54$, $SD = 2.89$), where $p = .031$ and $d = .73$, which is considered a moderate effect. No significant differences were found between the CR and the DI condition for this measure ($M = .21$, $SD = 3.61$), with $p = .159$. As well, no

differences were found between the DI and the control conditions ($p = .765$). No interaction effect was found between *treatment conditions* and *academic profile* for this measure: $F(2, 68) = .087$, $p = .917$, and partial $\eta^2 = .002$.

Two-way ANOVAs were conducted on story coherence variables, including *fluency*, *elaboration*, and *organization*. Significant differences were found within the *fluency* variable, with $F(2, 68) = 7.691$, $p < .001$, and partial $\eta^2 = .184$. [The assumption of homogeneity of variances was not violated]. Post hoc analyses using the Tukey HSD post hoc criterion indicated that the CR group ($M = .81$, $SD = .64$) scored significantly higher than the DI group ($M = .08$, $SD = .71$), where $p = .002$ and $d = 1.07$, which is considered a large ES. As well, significant differences were found between the CR condition and the control group ($M = -.08$, $SD = .74$), where $p < .000$ and $d = 1.04$. No significant differences were found between the DI and the control group ($p = .709$). No interaction effect was found between *treatment* and *academic profile* for the *fluency* measure: $F(2, 68) = .326$, $p = .723$, and partial $\eta^2 = .010$.

No significant differences were found within the *elaboration* variable, with $F(2, 68) = 2.783$, $p = .069$, and partial $\eta^2 = .076$. [The assumption of homogeneity of variances was not violated]. Post hoc analysis using the Tukey HSD indicated significant differences between the CR group ($M = .56$, $SD = .77$) and the DI group ($M = .04$, $SD = .62$), where $p = .029$ and $d = .75$, considered a moderate ES. No significant differences were found between the CR group and the control group ($M = .11$, $SD = .65$), with $p = .064$. However, calculated Cohen's d indicated a moderate effect ($d = .65$). No significant differences were found between the DI condition and the control group ($p = .925$). No

interaction effect was found for between *treatment* and *academic profile*: $F(2, 68) = 1.092$, $p = .342$, and partial $\eta^2 = .031$.

The two-way ANOVA conducted on the *organization* variable indicated significant differences, in that $F(2, 68) = 8.748$, $p < .000$, and partial $\eta^2 = .205$. [The assumption of homogeneity of variances was not violated]. Post hoc analyses using the Tukey HSD post hoc criterion indicated that the CR group ($M = .77$, $SD = .76$) scored significantly higher than the control group ($M = .00$, $SD = .49$), with $p < .000$ and $d = 1.14$, considered a large effect. No significant differences were found between the CR group and the DI group ($M = .50$, $SD = .66$), with $p = .268$. Significant differences were found between the DI and the control group: $p = .017$ and $d = .80$, which is considered large.

Analysis of treatments' impact based on story choice

Even though participants' choice of story was found to not impact outcome measures at both microstructure and macrostructure level of analysis on the pretest, independent sample t-tests were again conducted on participants' gain score data using story choice as the independent variable. Since most participants at this grade level chose to retell two stories, the *Three Little Pigs* and *Goldilocks*, analyses were conducted using gain score data of participants who chose to write these stories only. Independent sample t-test analyses conducted demonstrated no significant differences among participants, thus suggesting that the choice of the story had no impact on participants' writing competencies. Table 27 provides the outcome of these analyses.

Table 27

Outcome Analysis based on Grade 6 Participants Story Choice

Story	*n*	Measure	*M*	*SD*	*t*	*p*
Three Little pigs	45	Length	-34.86	106.25	-1.294	.201
Goldilocks	14		7.50	109.38		
Three Little pigs	45	T-units	-3.00	12.44	-.500	.619
Goldilocks	14		-1.07	13.22		
Three Little pigs	45	Syntax	.01	1.87	-1.351	.182
Goldilocks	14		.12	1.66		
Three Little pigs	45	Episodes	3.69	3.88	.721	.474
Goldilocks	14		2.47	4.72		
Three Little pigs	45	Fluency	.76	.89	-.314	.755
Goldilocks	14		.42	.74		
Three Little pigs	45	Elaboration	1.27	.72	.590	.558
Goldilocks	14		.79	.86		
Three Little pigs	45	Organization	1.07	.72	-1.072	.288
Goldilocks	14		.74	.63		

Analysis of gender impact on Grade 6 participants retelling outcome.

Two-way ANOVAs were conducted using gain scores to identify the impact of the treatment on gender using gain scores. No interaction effects between treatment and gender were obtained on all microstructure variables including *length* $F(2, 68) = 1.896$, $p = .158$; *T-units* $F(2, 68) = 2.872$, $p = .063$ and *syntax* $F(2, 68) = 1.671$, $p = .196$. Similarly, no differences were obtained for most macrostructure variables including *total episodes score* $F(2, 68) = .262$, $p = .770$; *elaboration* $F(2, 68) = .1485$, $p = .234$; and *organization* $F(2, 68) = 2.899$ $p = .062$. Significant interaction effects between treatment and gender were found for *fluency* $F(2, 68) = 6.645$, $p = .002$ with girls in the CR

intervention group scoring significantly higher on this measure (*M* = .56, *SD* = .77) than the DI group (*M* = .0417, *SD* = .62) and the control group (*M* = .11, *SD* = .65).

Summary of results for grade 6 retelling data analysis.

Two-way ANOVAs using gain scores conducted on all DVs indicated that there were no significant main effects for the treatment condition on all microstructure variables (*length*, *T-units* and *Syntax*). For macrostructure variables (*total episode score*, *fluency*, *elaboration*, and *organization*), post hoc analysis using the Tukey HSD indicated significant differences between the interventions groups and the control group. Table 28 provides a summary of the impact of the treatment on both microstructure and macrostructure variables.

Table 28

Summary of Results for Grade 6 Retelling Data Analysis

Microstructure Level of Analysis	Obtained Statistical Differences
Length Total number of words	No significant differences CR = DI = Control
T-units One main clause with its subordinate clauses	No significant differences CR = DI = Control
Syntax Number of words/T-units	No significant differences CR = DI = Control
Macrostructure Level of Analysis	
Total episode score Total number of episodes	**Significant differences** CR > Control; CR = DI
Fluency The flow of the written text	**Significant differences** CR > DI; DI = Control
Elaboration The degree of details in the story	**Significant differences** CR > DI & Control; DI = Control
Organization The clarity of the logical flow of the story	**Significant differences** CR = DI ; CR > Control

Original story data analysis.

Microstructure dependent variables.

Descriptive statistics for microstructure variables of original story data including *story length* and *T-units* are depicted in Table 29

Table 29

Descriptive Statistics for Grade 6 Microstructure DVs of Original Story

		Length		T-units	
Condition	*n*	*M*	*SD*	*M*	*SD*
CR	24	460.70	214.90	47.12	21.72
DI	24	350.08	155.79	36.83	15.22
Control	26	181.11	196.20	19.61	19.71

Two-way ANOVAs conducted on story length indicated a significant main effect for *treatment conditions*, as $F(2, 68) = 11.661$, $p < .000$, and partial $\eta^2 = .255$. [The assumption of homogeneity of variances was violated]. Post hoc analyses using the Tukey HSD post hoc criterion indicated that the CR group scored significantly higher ($M = 460.70$, $SD = 214.90$) than the DI group ($M = 350.08$, $SD = 155.79$), where $p = .50$ and $d = .70$, representing a moderate effect. Significant differences were also found between the CR and the control group ($M = 181.11$, $SD = 196.20$), with $p < .000$ and $d = 1.75$, which is considered a large effect. Results also demonstrated that the DI group performed significantly higher than the control group, as $p < .001$and $d = 1.06$ is considered a large effect. There was no interaction effect for this measure: $F(2, 68) = .140$, $p = .869$, and partial $\eta^2 = .004$.

Factorial ANOVA conducted on the *T-units* variable demonstrated significant main effect: $F(2, 68) = 11.806$, $p < .000$, and partial $\eta^2 = .258$. [The assumption of homogeneity of variances was violated]. Post hoc analyses using the Tukey HSD post hoc criterion indicated that the CR group scored significantly higher ($M = 47.12$, $SD = 21.72$) than the control group ($M = 19.61$, $SD = 19.71$), as $p < .000$ and $d = 1.70$ is considered a large effect. Significant differences were found between the DI ($M = 36.83$, $SD = 15.22$) and the control group, with $p < .001$ and $d = 1.07$. No significant differences were found between the DI group and the CR group, as seen by $p = .077$ and $d = .64$, which is considered a moderate effect. There was no interaction effect for this measure: $F(2, 68) = 1.211$, $p = .304$, and partial $\eta^2 = .034$.

Macrostructure dependent variables.

Descriptive statistics for microstructure variables of original story data including *total episode score*, *fluency*, *elaboration* and *organization* are depicted in Table 30.

Table 30

Descriptive Statistics for Grade 6 Macrostructure DVs of Original Story

		Total Episodes		Fluency		Elaboration		Organization	
Condition	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
CR	24	11.53	4.80	3.32	.57	3.57	0.84	3.49	0.89
DI	24	6.50	3.10	3.00	.72	2.92	0.83	2.79	0.83
Control	26	3.30	2.66	2.23	.58	2.04	0.53	2.15	0.54

A significant main effect was found for the *total episodes score*, with $F(2, 68) = 19.839$, $p < .000$, and partial $\eta^2 = .368$. Post hoc analyses using the Tukey HSD criterion

indicated that the CR group scored significantly higher (M = 11.53, SD = 4.80) than both the DI group (M = 5.50, SD = 3.10), where $p < .000$ and d = 1.39, and the control group (M = 3.30, SD = 2.66), where $p < .000$ and d = 2.27. The DI group scored significantly higher than the control group, with $p < .007$ and d = 1.10, which is considered a large effect. There was no interaction effect for this measure: $F(2, 68) = .398$, $p = .673$, and partial $\eta^2 = .012$.

Two Way ANOVAs were conducted on all coherence variables. [The assumption of homogeneity of variances was not violated for any of the coherence variables] A significant main effect was found for *fluency*, with $F(2, 68) = 11.888$ $p < .000$, and partial $\eta^2 = .299$. Post hoc analysis using the Tukey HSD post hoc criterion indicated that the CR group (M = 3.32, SD = .57) scored significantly higher than the control group (M = 2.23, SD = .59), with $p < .000$ and d = 1.95 representing a large effect. Significant differences were found between the DI (M = 3.00, SD = .72) and the control group, where $p < .000$ and d = 1.37, which is considered a large effect. No differences were found between the CR and the DI group.

Analysis conducted on the *elaboration* variable demonstrated a significant main effect, with $F(2, 68) = 16.166$, $p < .000$, and partial $\eta^2 = .322$. Post hoc analysis using the Tukey HSD post hoc criterion indicated that the CR group (M = 3.57, SD = .84) scored significantly higher than the DI group (M = 2.92, SD = .83), with $p = .006$ and d = .90, considered a large effect. Significant differences were found between the CR and the control group (M = 2.03, SD = .53), where $p < .000$ and d = 2.13, indicating a large effect. Significant differences were also found between the DI and the control groups, with $p <$

.000 and $d = 1.22$, representing a large effect. There was no interaction effect for this measure, as $F(2, 68) = 1.082$, $p = .673$, and partial $\eta^2 = .012$.

A significant main effect was found for *organization*, in that $F(2, 68) = 10.729$, $p < .000$, and partial $\eta^2 = .240$. Post hoc analysis using the Tukey HSD post hoc criterion indicated that the CR group ($M = 3.49$, $SD = .89$) scored significantly higher than the DI group ($M = 2.79$, $SD = .83$), with $p = .005$ and $d = .94$, considered a large effect. Significant differences were found between the CR and the control group ($M = 2.15$, $SD = .54$), as $p < .000$ and $d = 1.80$, considered a large effect. Significant differences were also found between the DI and the control group, with $p = .009$ and $d = .86$, considered a large effect.

Summary of results for grade 6 original story data analysis.

Two-way ANOVAs on participants' original story data indicated that there were significant differences on the microstructure variables *length* and *T-units* with both treatment conditions scoring significantly higher than the control group. For macrostructure variables, several significant differences were found. Post hoc analysis using the Tukey HSD indicated that the CR treatment scored significantly higher than both the DI and the control group on many of the measures. Calculated effect size using Cohen's *d* indicated a moderate to large effect for these measures. In addition, the DI treatment group scored significantly higher than the Control group. There were no significant interaction between *academic profile* and *treatment condition* for any of the DVs. Table 31 provides a summary of the impact of the treatment on all variables.

Table 31

Summary of Results for Grade 6 Original Story Data Analysis

Microstructure Level of Analysis	Obtained Statistical Differences
Length Total number of words	**Significant differences** CR > DI & Control DI > Control
T-units One main clause with its subordinate clauses	**Significant differences** CR > Control DI > Control
Macrostructure Level of Analysis	
Total episode score Total number of episodes	**Significant differences** CR > DI > Control;
Fluency The flow of the written text	**Significant differences** CR = DI > Control;
Elaboration The degree of details in the story	**Significant differences** CR > DI > Control;
Organization The clarity of the logical flow of the story	**Significant differences** CR > DI > Control

Data Analysis of Children with LD

Narrative Retelling Data Analysis

Microstructure dependent variables.

To establish the treatment's impact on each one of the microstructure variables, namely *story length*, *T-units*, and *syntax*, a one-way ANOVA was conducted. Significant differences were found for *story length*: $F(2, 29) = 4.911$ and $p < .015$, with the Tukey HSD test indicating that the CR group scored significantly higher ($M = 80.72$, $SD = 105.53$) than the control group ($M = -61.54$, $SD = 137.34$); $p = .015$ and $d = 1.16$ represent a large effect size. However, no differences were found between the CR and DI

(*M* = -33.30, *SD* = 85.64) treatment conditions (*p* = .068). No significant differences were found between the three conditions in terms of the *T-units* variable (*p* = .051) or the *syntax* variable (*p* = .799).

Macrostructure dependent variables.

Multivariate Analysis of Variance (MANOVA) was conducted. Significant differences were found within the variable of *total episode score*: $F(2, 29) = 10.803$, $p < .000$, and partial $\eta^2 = .427$ with the Tukey HSD test indicating that the CR group (*M* = 5.00, *SD* = 4.77) scored significantly higher than both the DI group (*M* = .00, *SD* = 1.55), *p* = .008 and *d* = 1.41 indicating a large effect size, and the control group (*M* = .80, *SD* = 1.93), *p* < .000 and *d* = 1.15 indicating a large effect size. No differences were found in this variable between the DI and the control group (*p* = .513).

Significant differences were found within the *fluency* variable: $F(2, 29) = 4.922$, $p < .014$, and partial $\eta^2 = .253$, with the Tukey HSD test indicating that the CR group (*M* = 1.09, *SD* = .83) scored significantly higher than the control group (*M* = .09, *SD* = .83), with *p* = .015 and *d* = 1.20, indicating a large effect. No differences were found between the DI (*M* = .30, *SD* = .67) group and the CR group (*p* = .071) or between the DI and the control group (*p* = .816).

Significant differences were also found in the *elaboration* variable: $F(2, 29) = 8.956$ $p < .001$, and partial $\eta^2 = .382$, with the Tukey HSD test indicating that the CR group (*M* = 1.55, *SD* = .93) scored significantly higher than both the DI (*M* = .40, *SD* = .70), with *p* = .006 and *d* = 1.39, indicating a large effect, and the control group (*M* = .27, *SD* = .65), with *p* = .002, and with *d* = 1.59 likewise demonstrating a large effect. No differences were found between the DI and the control condition (*p* = .925).

Significant differences were found for *organization*, as well: $F(2, 29) = 10.360$, $p < .000$, and partial $\eta^2 = .417$, with the Tukey HSD test indicating that the CR group ($M = 1.45$, $SD = .82$) scored significantly higher than both the DI group ($M = .70$, $SD = .48$), where $p = .024$ and $d = 1.11$, and the control group ($M = .27$, $SD = .47$), where $p < .000$ and $d = 1.76$. No differences were found between the DI and the control condition ($p = .267$).

Original Story Data Analysis

Microstructure dependent variables.

Descriptive statistics for the microstructure analysis of original story data obtained from children with LD are depicted in Table 32.

Table 32

Descriptive Statistics for LD Microstructure DVs of Original Story

		Length		T-units		Syntax	
Condition	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
CR	11	300.00	220.20	31.91	20.19	9.01	1.45
DI	10	187.30	133.50	23.80	17.30	7.95	1.07
Control	11	134.73	30.83	15.10	5.59	9.70	2.74

A one–way ANOVA was conducted to measure the impact of the treatments on the microstructure variables. Significant differences were found within the *story length* variable: $F(2, 29) = 3.464$, $p = .039$, and partial $\eta^2 = .193$. Post hoc analyses using the Tukey HSD indicated that the CR LD condition ($M = 300.00$, $SD = 220.20$) scored significantly higher than the control LD condition ($M = 134.73$, $SD = 30.83$), where $p =$

.039 and $d = 1.07$ considered a large effect. No statistical differences were found between the CR group and the DI group ($M = 187.30$, $SD = 133.50$; $p = .216$), or between the DI group and the control group ($p = .706$) for the *story length* variable. Significant differences were likewise found in the *T-units* variable: $F(2, 29) = 3.187$, $p = .044$, and partial $\eta^2 = .180$. Post hoc analyses using the Tukey HSD indicated that the CR LD condition ($M = 31.91$, $SD = 20.19$) scored significantly higher than the control LD condition ($M = 15.10$, $SD = 5.59$), with $p = .044$ and $d = 1.13$ indicating a large ES. No statistical differences were found between the CR group and the DI group ($M = 23.80$, $SD = 17.30$; $p = .470$), or between the DI group and the control group ($p = .420$) for the *T-units* variable. No differences were found for the *syntax* variable ($p = .126$)

Macrostructure dependent variables.

Descriptive statistics for the story grammar analysis of original story data obtained from children with LD is depicted in Table 33.

Table 33

Descriptive Statistics for LD Macrostructure DVs of Original Story

		Total Episodes		Fluency		Elaboration		Organization	
Condition	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
CR	24	8.34	4.51	2.80	.60	2.62	.49	2.79	.75
DI	24	4.00	2.05	2.00	.47	1.91	.57	1.90	.56
Control	26	2.64	2.01	2.00	.63	2.15	.67	1.91	.30

One-way ANOVAs were conducted to measure the impact of the treatments on the story grammar variable *total episodes score*: $F(2, 29) = 9.998$, $p < .000$, and partial $\eta^2 = .408$. Post hoc analyses using the Tukey HSD indicated that the CR LD condition ($M = 8.34$, $SD = 4.51$) scored significantly higher than both the DI LD condition ($M = 4.00$, $SD = 2.05$), with $p = .009$ and $d = 1.23$, considered to be a large effect, and the control LD condition ($M = 2.64$, $SD = 2.01$), with $p < .001$ and $d = 1.62$ also considered a large effect. No differences were found between the DI and the control group ($p = 5.85$).

A one–way ANOVA was conducted to measure the impact of the treatments on the story coherence variables. Significant differences were found within the *fluency* variable: $F(2, 29) = 8.814$, $p < .001$, and partial $\eta^2 = .935$. Post hoc analyses using the Tukey HSD indicated that the CR LD condition ($M = 2.80$, $SD = .60$) scored significantly higher than both the DI LD condition ($M = 2.00$, $SD = .47$), where $p = .026$ and $d = 1.48$, considered a large effect, and the control LD condition ($M = 2.00$, $SD = .63$), where $p < .001$ and $d = 1.30$, also considered a large effect. No differences were found between the DI and the control group ($p = .99$).

Significant differences were likewise found within the *elaboration* variable: $F(2, 29) = 5.192$, $p = .012$, and partial $\eta^2 = .943$. Post hoc analyses using the Tukey HSD indicated that the CR LD condition ($M = 2.62$, $SD = .49$) scored significantly higher than both the DI LD condition ($M = 1.91$, $SD = .57$) where $p = .003$ and $d = 1.33$, considered a large effect, and the control LD condition ($M = 2.15$, $SD = .67$), where $p = .003$ and $d = .80$, also considered a large effect. No differences were found between the DI and the control group ($p = .99$).

Finally, significant differences were observed in terms of organization: $F(2, 29) = 8.817$, $p < .001$, and partial $\eta^2 = .313$. Post hoc analyses using the Tukey HSD indicated that the CR LD condition ($M = 2.79$, $SD = .75$) scored significantly higher than both the DI LD condition ($M = 1.90$, $SD = .56$), where $p = .007$ and $d = 1.34$, considered a large effect, and the control LD condition ($M = 1.91$, $SD = .30$), where $p = .017$ and $d = 1.54$. No differences were found between the DI and the control group ($p = .99$).

Analysis of Treatment Data

During the intervention, both experimental groups had to listen to four folktales produced on the Internet site VoiceThread. They were: (1) *The Wise Old Woman*, (2) *The Name of the Tree*, (3) *The Wisdom Bird*, and (4) *The King's Ring.* Following their listening experiences, one group received DI, while the other group collaborated to retell the folktale they had just heard. Both groups were then required to retell the story in writing. Given that these four folktales were retold by the students in the treatment conditions, these data were analyzed using the same microstructure and macrostructure analysis procedure used in the retelling pretest and posttest exercises. However, this is longitudinal data, and it is the trend over time that will be most significant. The analysis

of the treatment data will look at change in the variables as measured over the duration of the study. As in the analyses of the retelling and original story data, the analysis of the intervention data will be described according to grade level. To conduct the analysis, data with substitute means were used.

Grade 5 Data Analysis

Length.

Descriptive statistics of the *story length* variable for participants' four recounted folktales used for both treatments are displayed in Table 33.

Table 34

Descriptive Statistics for Grade 5 Treatment Data of the Story Length DV

Condition	*n*		Folktale 1	Folktale 2	Folktale 3	Folktale 4
CR	21	*M*	252.28	438.79	309.99	371.74
		SD	127.43	161.13	116.54	178.83
DI	19	*M*	261.57	484.16	342.40	379.82
		SD	116.49	173.38	120.24	140.31

A repeated measures ANOVA was conducted. Mauchly test indicated that the assumption of sphericity has been violated $\chi^2(5) = 19.90$ $p < .001$. The Huynh – Feldt was used to correct the violation of the assumption of sphericity ($\varepsilon = .84$). Significant differences were found for *story length*: $F(2.523, 95.885) = 25.324$, $p < .000$. Partial $\eta^2 = .400$ suggesting that both treatments had an impact on the length of students' stories. There was no interaction effect between *story length* and condition: $F(2.523, 95.885) = .284$, $p = .803$, partial $\eta^2 = .007$. The impact of the treatments on *story length* for both treatment conditions is illustrated in Figure 16.

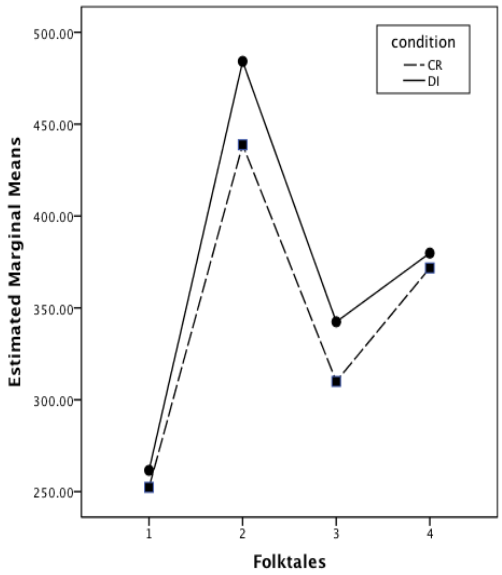

Figure 16. Story length scores for Grade 5 treatment data

T-units.

Descriptive statistics of the *T-units* variable for participants' four recounted folktales used for both treatments are displayed in Table 35.

Table 35

Descriptive Statistics for Grade 5 Treatment Data of the T-units DV

Condition	*n*		Folktale 1	Folktale 2	Folktale 3	Folktale 4
CR	21	*M*	22.86	44.72	31.50	40.57
		SD	12.07	15.39	11.39	16.65
DI	19	*M*	22.00	45.52	34.39	41.83
		SD	11.13	15.99	12.25	14.91

A repeated measures ANOVA was conducted. Mauchly test indicated that the assumption of sphericity has been violated $\chi^2(5) = 11.279$ $p < .046$. The Huynh – Feldt was used to correct the violation of the assumption of sphericity ($\varepsilon = .920$). Significant differences were found for *T-units*: $F(2.761, 104.919) = 34.851$, $p < .000$, partial $\eta^{2} =$

.478, suggesting that both treatments had an impact on the number of *T-units* in the retold folktales. There was no interaction effect between *T-units* and condition: $F(2.761, 104.919) = .690$, $p < .803$, partial $\eta^2 = .018$. The impact of the treatments on *T-units* for both conditions is illustrated in Figure 17.

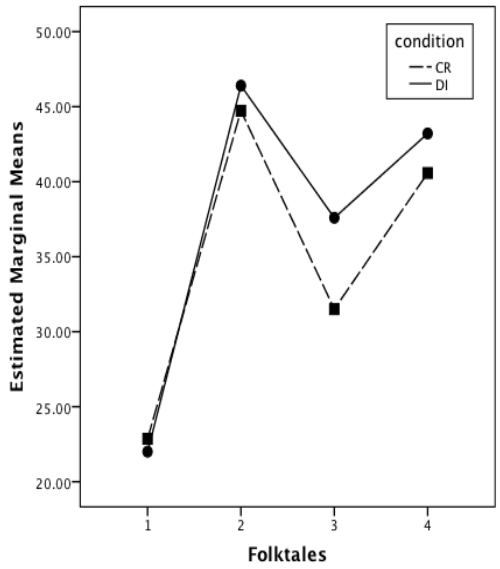

Figure 17. T-units scores for Grade 5 treatment data

Episodes.

Descriptive statistics of the *total episode score* for participants' four recounted folktales used for both treatments are depicted in Table 36.

Table 36

Descriptive Statistics for Grade 5 Treatment Data of the Total Episodes DV

Condition	*n*		Folktale 1	Folktale 2	Folktale 3	Folktale 4
CR	21	*M*	5.62	11.55	8.36	9.08
		SD	4.59	3.72	3.36	3.74
DI	19	*M*	5.00	10.11	7.80	8.03
		SD	3.05	4.30	2.90	2.99

A repeated measures ANOVA was conducted. Mauchly test indicated that the assumption of sphericity has not been violated $\chi^2(5) = 3.433$, $p = .634$. Significant differences were found for *total episode score*: $F(3,114) = 34.022$, $p < .000$, partial $\eta^2 = .472$, suggesting that both treatments had an impact on the number of episodes in the retold folktales. There was also an interaction effect between *total episode score* and condition: $F(3, 114) = 24.849$, $p < .000$, partial $\eta^{2 =} .395$. The impact of the treatments on *total episode score* for both conditions is illustrated in Figure 18.

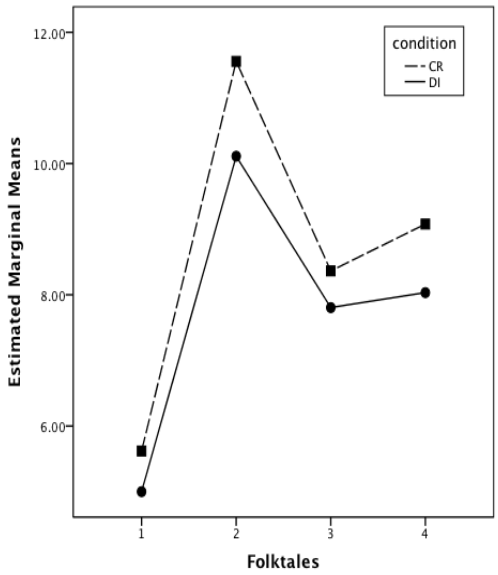

Figure 18. Total episode scores of Grade 5 treatment data

Fluency.

Descriptive statistics of the *fluency* variable for the four retold folktales used during both treatments are depicted in Table 37.

Table 37

Descriptive Statistics for Grade 5 Treatment Data of the Fluency DV

Condition	*n*		Folktale 1	Folktale 2	Folktale 3	Folktale 4
CR	21	*M*	2.57	3.30	3.00	3.55
		SD	.60	.56	.71	.66
DI	19	*M*	2.79	3.15	3.07	3.29
		SD	.79	.57	.52	.65

A repeated measures ANOVA was conducted. Mauchly test indicated that the assumption of sphericity has not been violated $\chi^2(5) = 1.368$ $p = .069$. Significant differences were found for *fluency*: $F(3,114) = 17.372$, $p < .000$, partial $\eta^{2 =} .314$, suggesting that both treatments had an impact on fluency in the retold folktales. There was no interaction effect between *fluency* and condition: $F(3, 114) = 1.972$, $p = .122$, partial $\eta^2 = .049$. The impact of the treatments on *fluency* for both conditions is illustrated in Figure 19.

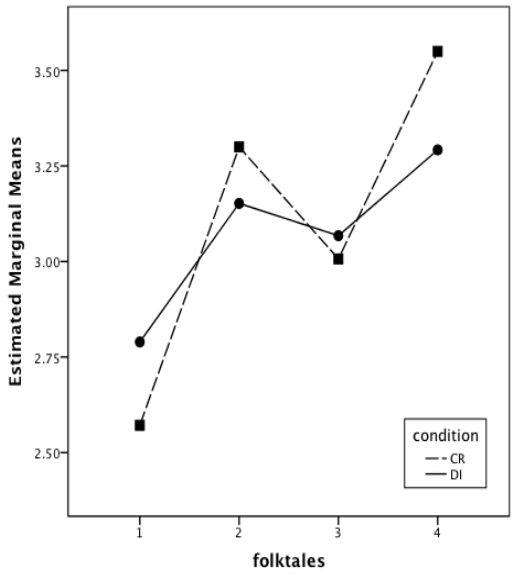

Figure 19. Fluency scores of Grade 5 treatment data

Elaboration.

Descriptive statistics of the *elaboration* variable for the four retold folktales used during both treatments are depicted in Table 38.

Table 38

Descriptive Statistics for Grade 5 Treatment Data of the Elaboration DV

Condition	*n*		Folktale 1	Folktale 2	Folktale 3	Folktale 4
CR	21	*M*	2.48	3.61	3.16	3.41
		SD	.81	.59	.57	.86
DI	19	*M*	2.31	3.35	2.93	2.98
		SD	.75	.89	.58	.72

A repeated measures ANOVA was conducted. Mauchly test indicated that the assumption of sphericity has not been violated $\chi^2(5) = 10.654$, $p = .928$. Significant differences were found for *elaboration*: $F(3,114) = 8.503$, $p < .000$. Partial $\eta^{2} = .379$,

suggesting that both treatments had an impact on *elaboration* in the retold folktales. There was no interaction effect between *elaboration* and condition: $F(3, 114) = .360$, $p = .782$, partial $\eta^2 = .009$. The impact of the treatments on *elaboration* for both conditions is illustrated in Figure 20.

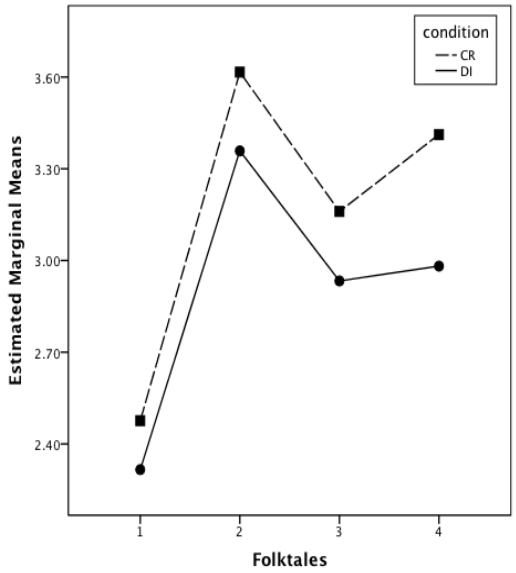

Figure 20. Elaboration scores of Grade 5 treatment data

Organization.

Descriptive statistics of the *organization* variable for the four retold folktales used during both treatments are depicted in Table 39.

Table 39

Descriptive Statistics for Grade 5 Treatment Data of the Organization DV

Condition	*n*		Folktale 1	Folktale 2	Folktale 3	Folktale 4
CR	21	*M*	2.19	3.36	2.97	3.16
		SD	.81	.59	.59	.73
DI	19	*M*	2.52	3.13	3.10	3.23
		SD	.77	.80	.63	.54

A repeated measures ANOVA was conducted. Mauchly test indicated that the assumption of sphericity has not been violated $\chi^2(5) = .996$ $p = .963$. Significant differences were found for *organization*: $F(3, 114) = 20.806$, $p < .000$, partial $\eta^2 = .354$, suggesting that both treatments had an impact on *organization* in the retold folktales. There was no interaction effect between *organization* and condition: $F(3, 114) = 1.615$, $p = .190$ partial $\eta^2 = .041$.Table 21 illustrates the impact of the treatments on *organization*.

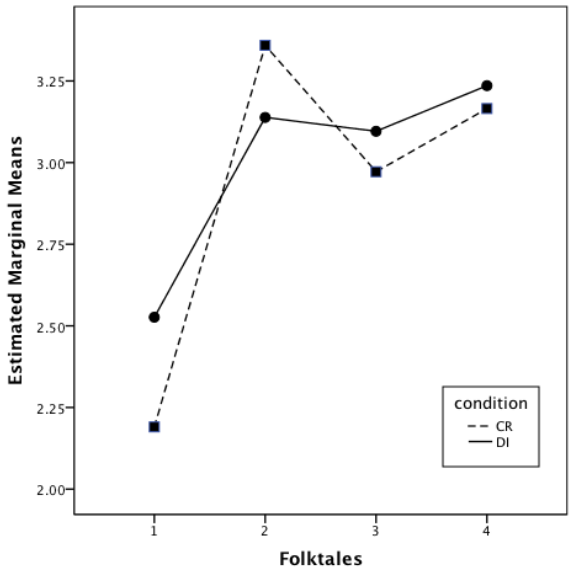

Figure 21. Organization scores of Grade 5 treatment data

Summary of the Grade 5 treatment data analysis

Analysis conducted on the intervention data suggests that participants in both treatment conditions improved significantly over the duration of the study on all variables measured. No interaction effect was obtained between treatment and condition for all of the dependent variables, suggesting that statistically, both treatments had the same impact on all of the variables used to analyze the four retold folktales used during the intervention.

Grade 6 Data Analysis

Length.

Descriptive statistics of the *story length* variable for the four retold folktales used during both treatments are depicted in Table 40.

Table 40

Descriptive Statistics for Grade 6 Treatment Data of the Story Length DV

Condition	*n*		Folktale 1	Folktale 2	Folktale 3	Folktale 4
CR	21	*M*	252.28	438.79	309.99	371.74
		SD	127.43	161.13	116.54	178.83
DI	19	*M*	261.57	484.16	342.40	379.82
		SD	116.49	173.38	120.24	140.32

A repeated measures ANOVA was conducted. Mauchly test indicated that the assumption of sphericity has not been violated $\chi^2(5) = 4.940$ $p < .423$. Significant differences were found for *story length*: $F(3,138) = 34.416$, $p < .000$, partial $\eta^2 = .428$, suggesting that both treatments had an impact on *story length* in the retold folktales. In addition, there was an interaction effect between *story length* and condition $F(3, 138) = 17.357$, $p < .000$ partial $\eta^2 = .274$. The impact of the treatments on *story length* for both conditions is illustrated in Figure 22.

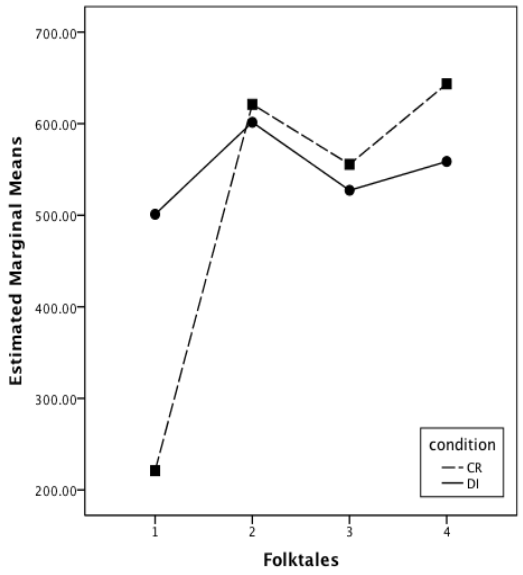

Figure 22. Story length scores for Grade 6 treatment data

T-units.

Descriptive statistics of the *T-units* variable for the four retold folktales used during both treatments are displayed in Table 41.

Table 41

Descriptive Statistics for Grade 6 Treatment Data of the T-units DV

Condition	*n*		Folktale 1	Folktale 2	Folktale 3	Folktale 4
CR	21	M	22.86	44.72	31.50	40.57
		SD	12.07	15.39	11.39	16.65
DI	19	M	22.00	46.40	37.59	43.21
		SD	10.31	17.00	12.66	13.03

A repeated measures ANOVA was conducted. Mauchly test indicated that the assumption of sphericity has been violated $\chi^2(5) = 11.489$ $p = .043$. The Huynh – Feldt was used to correct the violation of the assumption of sphericity ($\varepsilon = .922$). Significant

differences were found for *T-units*: $F(2.767, 127.279) = 67.003$, $p < .000$, partial $\eta^2 = .593$, suggesting that both treatments had an impact on the number of *T-units* in the retold folktales. In addition, there was an interaction effect between *T-units* and condition: $F(2.767, 127.279) = 13.971$, $p < .000$ partial $\eta^2 = .233$. The impact of the treatments on the number of *T-units* for both conditions is illustrated in Figure 23.

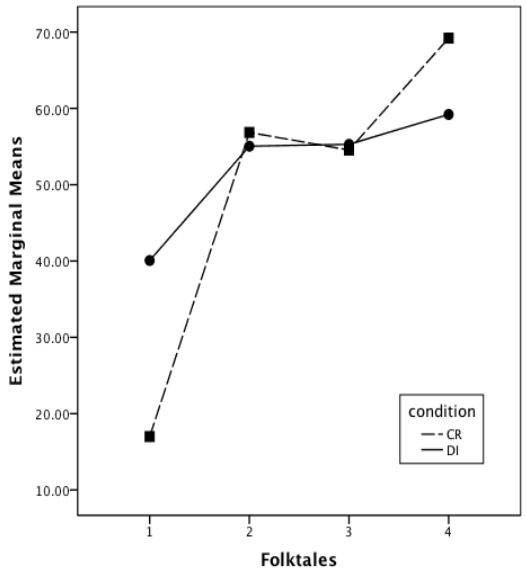

Figure 23. T-units scores for Grade 6 treatment data

Episodes.

Descriptive statistics of story grammar analysis for the *total episodes score* of the four retold folktales used during both treatments obtained for Grade 6 groups are depicted in Table 42.

Table 42

Descriptive Statistics for Grade 6 Treatment Data of the Total Episodes DV

Condition	*n*		Folktale 1	Folktale 2	Folktale 3	Folktale 4
CR	21	*M*	4.18	12.13	10.54	13.08
		SD	2.52	2.61	4.50	2.61
DI	19	*M*	9.92	12.61	11.33	11.59
		SD	2.56	3.35	3.42	3.31

A repeated measures ANOVA was conducted. Mauchly test indicated that the assumption of sphericity has been violated $\chi^2(5) = 12.073$, $p = .034$. The Huynh – Feldt was used to correct the violation of the assumption of sphericity ($\varepsilon = .907$). Significant differences were found for *total episodes score*: $F(2.720, 125.108) = 39.003$, $p < .000$, partial $\eta^{2 =} .459$, suggesting that both treatments had an impact on the *total episodes score* in the retold folktales. There was also an interaction effect between treatment and the *total episodes score*; $F(2.720, 128.169) = 15.124$, $p < .000$, partial $\eta^2 = .247$. The impact of the treatments on *total episodes score* for both conditions is illustrated in Figure 24.

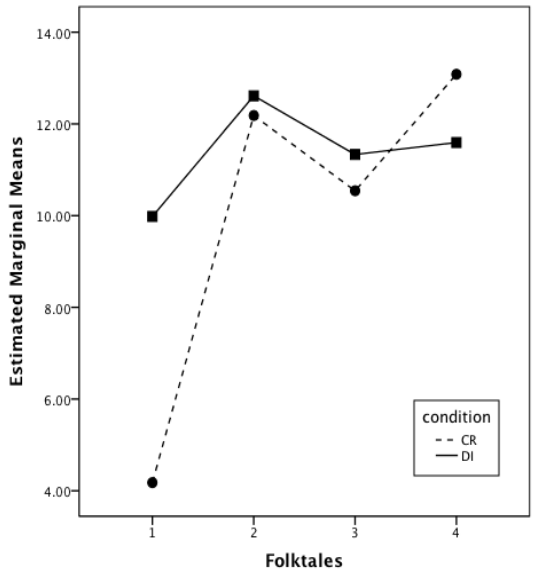

Figure 24. Total episode scores for Grade 6 treatment dat**a**

Fluency.

Descriptive statistics of the *fluency* variable for the four retold folktales used during both treatments are depicted in Table 43.

Table 43

Descriptive Statistics for Grade 6 Treatment Data of the Fluency DV

Condition	*n*		Folktale 1	Folktale 2	Folktale 3	Folktale 4
CR	21	*M*	2.19	3.20	3.12	3.92
		SD	.39	.56	.68	.72
DI	19	*M*	3.27	3.51	3.33	3.37
		SD	.49	.65	.56	.63

A repeated measures ANOVA was conducted. Mauchly test indicated that the assumption of sphericity has not been violated $\chi^2(5) = 3.914$ $p = .562$. Significant differences were found for *fluency*: $F(3,138) = 32.266$, $p < .000$, partial $\eta^2 = .412$,

suggesting that both treatments had an impact on story *fluency* in the retold folktales. In addition, there was an interaction effect between *fluency* and condition: $F(3, 138) = 23.982$, $p < .000$ partial $\eta^2 = .343$. The impact of the treatments on *fluency* for both conditions is illustrated in Figure 25.

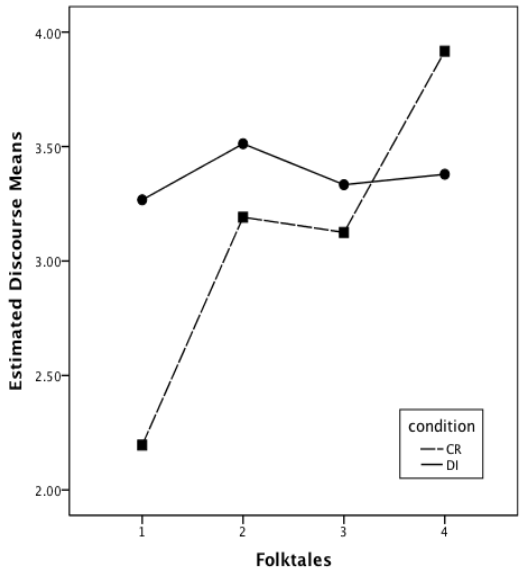

Figure 25. Fluency scores for Grade 6 treatment data

Elaboration.

Descriptive statistics of the *elaboration* variable for the four retold folktales used during both treatments are depicted in Table 44.

Table 44

Descriptive Statistics for Grade 6 Treatment Data of the Elaboration DV

Condition	*n*		Folktale 1	Folktale 2	Folktale 3	Folktale 4
CR	21	*M*	2.15	4.45	4.33	3.57
		SD	.68	.84	.70	.86
DI	19	*M*	3.38	4.16	3.72	2.92
		SD	.54	.92	.60	.83

A repeated measures ANOVA was conducted. Mauchly test indicated that the assumption of sphericity has not been violated $\chi^2(5) = 10.654$, $p = .059$. Significant differences were found for *elaboration*: $F(3,138) = 23.159$, $p < .000$, partial $\eta^2 = .379$, suggesting that both treatments had an impact on story *elaboration* in the retold folktales. There was no interaction effect between *elaboration* and condition: $F(3, 138)=.360$, $p = .782$ partial $\eta^2 = .009$. The treatments impact on *elaboration* is illustrated in Figure 26.

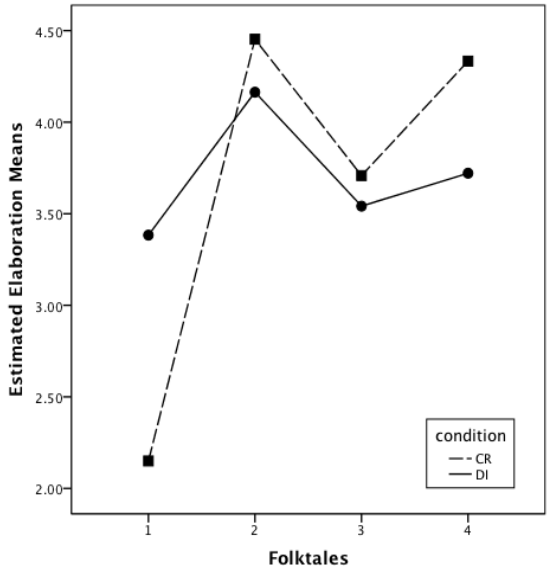

Figure 26. Elaboration scores for Grade 6 treatment data

Organization.

Descriptive statistics of the *organization* variable for the four retold folktales used during both treatments are depicted Table 45.

Table 45

Descriptive Statistics for Grade 6 Treatment Data of the Organization DV

Condition	*n*		Folktale 1	Folktale 2	Folktale 3	Folktale 4
CR	21	*M*	2.11	3.62	3.21	3.75
		SD	.30	.69	.83	.74
DI	19	*M*	3.38	3.93	3.58	3.66
		SD	.68	.75	.58	.862

A repeated measures ANOVA was conducted. Mauchly test indicated that the assumption of sphericity has been violated $\chi^2(5) = 82.891$ $p < .000$. The Huynh – Feldt was used to correct the violation of the assumption of sphericity ($\varepsilon = .462$). Significant differences were found for *organization*: $F(1.387, 52.714) = 5.802$, $p < .012$, partial $\eta^2 = .132$, suggesting that both treatments had an impact on story *organization* in the retold folktales. There was no interaction effect between *organization* and condition: $F(1.387, 52.714) = 1.584$, $p = .217$ partial $\eta^2 = .040$. The impact of the treatments on story *organization* for both conditions is illustrated in Figure 27.

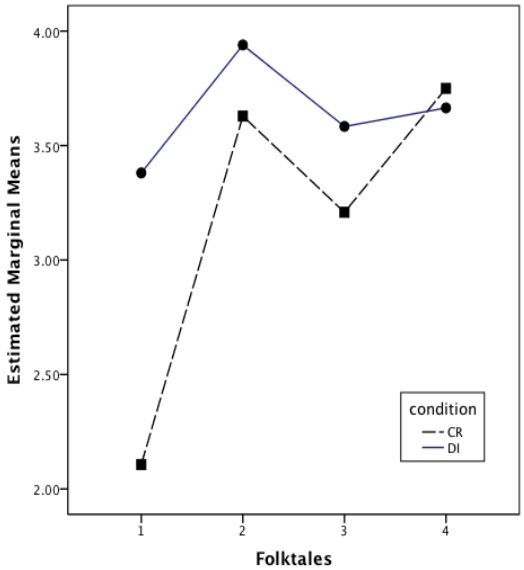

Figure 27. Organization scores for Grade 6 treatment data.

Summary of the Grade 6 treatment data analysis

Analysis conducted on the Grade 6 treatment data suggests that students in both condition improved significantly during the duration of the intervention on all microstructure and macrostructure variables measured in my study. In addition, significant interaction effect was obtained for several variables, including *story length*, *T-units*, *total episodes score*, and *fluency*, with participants in the CR conditions showing a more significant gains in writing skills during the duration of the study than those in the DI condition.

CHAPTER 5: DISCUSSION

My research measured the impact of two instructional strategies on Grade 5 and Grade 6 (aged 10-12) students in the inclusive classroom. Both instructional interventions focused on retelling of folktales, one using a cooperative learning approach, and the other employing direct instruction strategies. This study also examined the impact of these two strategies on students with learning disabilities. While these students were members of the inclusive classroom, they also received weekly remedial sessions from a resource teacher, who helped each student to follow his or her individual education plan. The two instructional interventions were compared with a non-treatment control group that followed the Québec Ministry of Education curriculum.

Both interventions, which lasted for five months, required students to listen to folktales podcasted on an Internet site called VoiceThread. Traditionally, folktales are orally told stories with a narrative structure which has been referred to as story grammar (Kwiat, 2008; Rumelhart, 1975; Stein & Glenn, 1979). Cognitive models of long-term memory suggest that story grammar is an internal structure or a schema allowing the reader or the listener to construct meaning from narrative and to generate stories, both orally and in writing (Brenner, 1997; Rumelhart, 1975; Stein, & Glenn, 1979). Since research findings suggest that instruction in story grammar improves narrative writing (Fitzgerald & Teasley, 1986; Paris, 2003), direct instruction in story grammar was provided to both treatment groups.

While instruction in story grammar was given to the two treatment conditions, the instruction methods differed by virtue of their underlying theoretical foundations. The cooperative retelling intervention was based on cooperative learning theories and the

Bereiter and Scardamalia (1987) *knowledge-telling* model. This model suggests that novice writers engage in a linear set of processes through which they generate content by converting oral language to written. This text generation process employs both discourse knowledge and content knowledge. Discourse knowledge is made up of schemata of various discourse forms, procedures, and strategies for instantiation of mental models, as well as of sentence-generating procedures that include grammatical knowledge (McCutchen, 1986). Thus, this experimental condition was designed to supplement content knowledge with narrative discourse knowledge. In contrast, the direct instruction treatment was based on cognitive learning theories that focus on content knowledge as related to folktales.

Four folktales, orally narrated by storytellers, were selected for the intervention and were hosted on the VoiceThread website. Each folktale served to develop two units of instruction, one for each intervention. Thus, each group participated in the experimental procedure four times. Following each intervention cycle, participants in both treatment groups were required to retell the original folktale in writing. The data gathered from the written retellings were used as measures to assess the impact of the treatment over the duration of the study. An additional measure, given as a posttest only, required students to construct an original story. This assignment was given to assess the transfer of knowledge and skills from the well-defined task of retelling to the ill-defined task of original story construction.

Overall results demonstrated that the cooperative retelling intervention was more effective than the direct instruction in promoting written retelling skills. The Grade 5 and Grade 6 students, both normally achieving and learning disabled, who received the cooperative retelling treatment scored significantly higher than the DI and the control groups

on both microstructure and macrostructure variables. While the CR intervention participants at both grade levels had significantly higher scores on most original story measures, given the lack of a pretest of the same measure one can only hypothesize as to the value of this treatment on the creation of an original narrative.

In this section, I will discuss the results of my study in light of the research questions and the theories upon which they are based. I will begin with a discussion of the treatment data, as it will be used to support the results of my study. I will continue with a discussion of the inclusive classroom results and will proceed to an elaboration of the observed outcomes for the LD students. I will then discuss the significance of the study as it relates to writing development for upper elementary NA and LD students. I will conclude with a discussion of the limitations of my study and with recommendations for further research.

Impact of the Treatments on Participants in the Inclusive classroom

While the CR and the DI interventions differ in instructional strategies, both treatments included four units, each built around a different folktale selected for the study. At the end of each intervention cycle, the students were required to retell the folktale in writing. To facilitate the retelling process, participants were provided with checklists (see Appendix I) allowing students to verify the presence of story grammar elements while facilitating an organized recount of the main events in the story.

Repeated measure ANOVAs conducted on participants' treatment data resulted in significant main effects for all dependent variables measured in my study. These results suggest that participants in both grade levels and treatment conditions had improved in their retelling competencies during the duration of the treatments. This improvement was evident on all microstructure and macrostructure dependent variables measured. The on-going

growth in students' narrative retelling skills suggests that participants in both conditions remained motivated and engaged during the duration of the treatments.

However, while at the Grade 5 level participants in both treatment conditions showed the same overall growth in writing skills, analysis of the treatments' impact indicated that only participants in the CR group improved significantly as a result of the intervention. No differences were obtained between the DI and the control conditions. The results suggest that the on-going growth in writing skills in the DI treatment group during the intervention may be due to participants' reliance on the checklists provided to facilitate the writing process rather than sustained growth in writing ability. Once the checklist was removed during the posttest, participants in the DI conditions were unable to demonstrate the same writing competencies as those of the CR group. This was not the case for the CR conditions where participants may have relied on the checklists during the writing of the intervention folktales, yet were able to sustain the gains in writing ability during the posttest. As this section will demonstrate, the significant improvement in writing skills obtained by the CR group was due to the impact this treatment had on participants' discourse knowledge and content knowledge, resulting not only in improvement to their narrative retelling competencies, but also may have an impact on the construction of an original story.

Narrative Retelling

The retelling measure required participants to recount in writing one of several popular folktales. Within the Bereiter and Scardamalia (1987) *knowledge-telling* model of the writing process, a person's retelling of a familiar folktale facilitates the application of both content knowledge and discourse knowledge. The Bereiter and Scardamalia model suggests that, when writing, the content component—which determines what will be

discussed—interacts with the discourse component—which determines how it will be discussed (McCutchen, 1986). Therefore, during a retelling task, the retrieval and application of content knowledge is facilitated, since the main ideas of the story are known to the writer. The application of discourse knowledge is similarly facilitated, as the narrative structures of the folktale, as well as its language, are familiar to the student. At the same time, since participants were not given a model of the folktale prior to the retelling, this measure provides a valid representation of the student's generative processes in narrative production (Liles, 1993).

CR treatment.

While the instruction in story grammar, which was given to both treatment groups, targeted narrative discourse knowledge as related to narrative schema, the CR intervention targeted discourse knowledge as it relates to sentence generation, which is highly dependent on oral language skills. Based on Bereiter and Scardamalia's (1997) *knowledge-telling* model of writing, which suggests that when novice writers engage in text generation they convert oral language into written text, the treatment was designed to increase participants' language skills through oral retelling exercises. During the research program, participants listened to folktales hosted on VoiceThread and were then asked to cooperate with the other members of their group to retell the stories. This task required students to divide each folktale into parts, with each group member responsible for telling a segment of the story. Participants had to practice their parts with their teammates so that the entire tale could be recounted when they produced their podcast in VoiceThread. Within cooperative learning theories, the need to complete a common goal based on the individual learning of group members motivates students not only to construct and

practice their part, but also to engage in peer tutoring, providing corrective feedback to one another during individual retelling practice (Slavin, 1996). Once each student had learned his or her part, cooperative learning theorizes that they would all engage in group practice, resulting in further peer modeling and support (Jenkins & O'Connor, 2003; Johnson & Johnson, 2004).

In order to be able to orally retell their part, participants had to rehearse. They listened to the folktale, identified the part they needed to retell, outlined what they were going to say, and then practiced retelling with their group members, using peer support and peer feedback to ensure a coherent retelling of the story. The retelling process necessitated verbal rehearsal so that the parts could be repeated for the production of the podcast in VoiceThread. *Rehearsal* is the repetitive process of reciting information so that it will be remembered. Models of human memory have shown rehearsal to be essential for the transfer of information from WM to LTM (O'Donnell et al., 2007). Baddeley (2003) proposes the existence of a component within our WM called the phonological loop, which is responsible for processing sound and language. According to this theory, the phonological loop has two subcomponents, a temporary storage system that holds memory traces over a matter of seconds and a subvocal rehearsal system that maintains information within the store so that it can be transferred to the LTM. In my study, the repetitious process of verbal rehearsal facilitated the transfer of verbal skills from the phonological loop to the LTM. The instructional strategy in this intervention was repeated four times with four different folktales, with each instruction resulting in improved verbal skills, thus improving discourse knowledge as related to linguistics competencies (Bereiter & Scardamalia, 1987). The overall cumulative growth of the

students' verbal skills impacted their narrative discourse abilities which significantly expanded CR participants' narrative retelling writing abilities.

ICT played an important role in contributing to the impact of the CR intervention on the development of participants' oral skills. Students listened to the preselected folktales as podcasts on the Internet site VoiceThread. Field notes collected during the cooperative retelling procedure demonstrated that participants emulated the recorded narration by using language, expression, and tone similar to those used by the storytellers. This imitation suggests that participants in the CR treatment group engaged in observational learning (O'Donnell et al., 2007). Observational learning occurs as a function of observing, retaining, and replicating novel behavior as executed by others (Bandura, 1997). Observers must selectively pay attention to the modeled actions, actively rehearse the information in order to retain it in their long-term memory, and be motivated to overtly reproduce the modeled act. In my study, the cooperative retelling process was facilitated through emulation of the storytellers' narration. Since participants were not required to engage in generating an original version of the folktale, they were able, during the process of cooperative retelling, to focus on learning to orally retell their part.

In addition to providing a model for the student to emulate, the technologies used in my study facilitated the construction of knowledge and the application of complex cognitive processes. VoiceThread, as a platform, allowed participants to cooperate in order to retell the folktale they heard. Once participants retold the folktale in VoiceThread, they were able to listen to the final product and evaluate both their individual performance and the overall accomplishment of the group. Then, if deemed

necessary, those aspects of the presentation that were unsatisfactory were analyzed and evaluated. Based on the outcome of this analysis, participants revised their podcast. These cognitive processes have been referred to as "analysis" and "evaluation" (Krathwohl, 2002). According to Krathwohl, *analysis* requires breaking down the material into its constituent parts and determining how the parts relate to one another and to the overall structure, while *evaluation* requires making a judgment about the quality of the product. Technologies that facilitate the applications of higher order cognitive skills during learning have been referred to as cognitive tools (Jonassen & Reeves, 1996). In this way, VoiceThread as applied in my study for the CR intervention would be considered a cognitive tool.

Similarities and differences between the grades.

At the macrostructure level, both Grade 5 and Grade 6 CR participants scored significantly higher than the DI group on three of the four macrostructure variables. These variables included *total episode score*, *elaboration*, and *organization*. Text generation fluency is essential for coherent writing, as measured at the macrostructure level. Text generation is highly dependent on a writer's content knowledge and discourse knowledge. Therefore, a well-developed knowledge base and a well-learned schema for a particular genre will highly influence text generation (Bereiter & Scardamalia, 1987; Cameron & Moshenko, 1996; McCutchen, 2006). The results illustrate that the CR treatment, combined with story grammar instruction, impacted both discourse knowledge as related to narrative structure and the content-generating procedure. The overall impact of the CR treatment on students' story coherence indicates that the treatment increased participants' oral skills as well as their story grammar

knowledge, which in turn facilitated the knowledge-telling writing process employed in my study.

While the CR treatment had a significant impact on most macrostructure variables measured in this study at both the Grade 5 and the Grade 6 levels, the two cohorts behaved differently with regards to the *fluency* variable. *Fluency* rated the flow of the written text as measured by the occurrence of grammatical errors and the use of narrative language, which is characterized by the use of past tense as opposed to dialogue. At the Grade 5 level, no differences were found between the three conditions for this variable. This was likely due to the fact that when these children engaged in text generation, their main concern was turning ideas into words, sentences, and larger units of discourse within working memory, and then transcribing these onto paper (Bereiter & Scardamalia, 1987). They examined sentences individually and rarely considered the global structure of the text (McCutchen, 1986; Puranik et al., 2008). Therefore, as the Grade 5 students engaged in the retelling task, they paid little attention to the sentence structure and the use of the past tense which characterizes folktales. As a result, despite the overall improvement in discourse knowledge, the treatment had no impact on the fluency of the recounted stories.

At the Grade 6 level, however, significant divergences were observed within the *fluency* variable. Bereiter and Scardamalia (1987) noted that while all children employ the text-generation model of writing, a shift to more conscious planning occurs at around the age of 12 (Grade 6). With an increase in age, children tend to plan more in advance, resulting in more sophisticated texts. Cameron and Moshenko (1996), who investigated whether Grade 6 students engage in the knowledge–transfer process when writing, found

that narrative writers access both rhetorical and declarative knowledge and verify the extent to which their written goals are met. Their study, which analyzed children's comments on their writing process, demonstrated that although children display variations in levels of written performance, many indicated the use of planning activities prior to writing, audience awareness, and oral revision of in-process story ideas. Given the initial differences between the macro- and microstructure measures noted for the Grade 5 and Grade 6 participants, it is likely that, prior to my intervention, the Grade 6 students had begun to employ some aspects of the *knowledge-transformation* model during the writing process, including planning and in-process story revision. These processes can be seen in both the pretest and the posttest. However, with the increase in oral language skills and knowledge about narratives, students in the CR group became more aware of narrative language as well as narrative structure. Therefore, when writing the posttest, they engaged in the text-generating process, as well as in planning and reviewing, resulting in more coherent—as opposed to longer— texts. The significantly higher score of the CR group on all macrostructure measures suggests that while participants may have engaged in planning during the retelling process, as theorized by Bereiter and Scardamalia, text-generation processes continue to dominate writing at this level, especially for the reproduction of a familiar text.

Differences between the Grade 5 and Grade 6 groups were observed for two microstructure measures, including *story length* (total number of words) and *T-units* (one main clause with all the subordinate clauses attached). While at the Grade 5 level, the CR group scored significantly higher than the DI and the control group, at the Grade 6 level no differences were evident for these variables. Text length is often used as an index of written fluency, as older children typically write longer texts then younger ones (Puranik

et al., 2008). While not itself a measure of text coherence, text length has a direct influence on that aspect of writing. For example, the number and the complexity of episodes in any narrative depend on its length (Hughes et al., 1997). Therefore, the increase in story length at the posttest retelling measured at the Grade 5 level corresponded with an increase in the number and complexity of complete episodes.

At the Grade 6 level, no variation was found between the groups with regard to the microstructure measures *length* and *T-units*. While *length* has been shown to correlate with measures related to text coherence (Berman & Verhoevan, 2002), McMaster and Espin (2007), in their review of writing measurements, have noted that as students get older, text length become less valid as a measure of writing competency. While McMaster and Espin do not explain their findings, it is likely that as students get older, they begin to engage in conscious planning, thus shifting their focus from knowledge-telling, where the priority is to generate text, to the *knowledge-transformation* model of writing, where planning and reflective thoughts are integral to the process. Therefore, at the Grade 6 level, while no differences were observed between the three conditions in the *length* and *T-units* variables, the CR group made significant improvements at the macrostructure level, which focused on text coherence, as compared with both the DI and the control groups.

DI treatment.

Like the CR intervention, the DI treatment began with instruction in story grammar targeting discourse knowledge. The instruction in story grammar was followed with teacher-based direct instruction. This intervention, which focused on text comprehension, was based on cognitive learning theories, where instruction is designed

to facilitate the transfer of information from WM to LTM (Swanson, 2001). The DI intervention targeted knowledge about folktales, including an understanding of the folktales that were used during the intervention: how the story line and characters represent the cultures from which the tales originated. The DI intervention also highlighted the similar elements among the folktales chosen, including, for example: no specific time frame; the weakest or smallest characters ending up as heroes; the need for the hero to overcome a difficult task; and the occurrence of things in threes (such as three main characters, three magic objects, or three tasks to complete).

As in the CR intervention, the DI participants listened to a folktale in VoiceThread. Then, using a teacher-based direct instruction model, participants engaged in activities that focused on understanding, applying, analyzing, and synthesizing the information contained in the stories. In contrast with the CR intervention, which targeted discourse knowledge, the DI intervention was primarily designed to impact content knowledge, using a *knowledge-telling* writing model from Bereiter and Scardamalia (1987). Content knowledge consists of what one knows about a given topic (McCutchen, 1986). Given that narrative writing requires an interaction between content knowledge and discourse knowledge, an increase in knowledge about folktales was hypothesized to result in improvement in participants' narrative writing skills at both micro and macro levels.

Overall, the DI treatment did not improve students' written retelling skills. Since story grammar instruction was provided to both treatment conditions, the results imply that this instruction alone was not sufficient to improve participants' retelling skills. Gersten and Baker (2001) suggest that the explicit teaching of text structures

provides a useful guide during the writing task, as long as that instruction includes numerous explicit prompts. Greater levels of specificity provided by the prompts appear to be associated with better-written products. During the intervention, the students were provided with prompts to assist the written retelling task, and to ensure that all story grammar elements were present in the retelling (see Appendix I). These prompts facilitated the retelling process, resulting in significant improvement during the duration of the treatment for both conditions. However, once the prompts were removed during the retelling posttest, students in the DI group did not automatically access their narrative structure knowledge. This suggests that while prompts do expedite the writing process, they do not by themselves necessarily contribute to learning. For enhanced learning to occur, it appears that instruction must target the skills to be acquired while providing opportunities for feedback and independent practice, both of which were available in the CR condition.

Original Story

The original story measure was designed to assess the transfer of skills from a well-defined task to an ill-structured one. Writing an original narrative is a different cognitive task from retelling. Retelling requires recounting what one remembers of a story in writing. In this case, the writer is familiar with both the story line as well as its discourse. However, when writing an original story, the writer must generate the tale's content while insuring that the form and language of narrative discourse are used. Overall results demonstrated that participants in the cooperative retelling intervention scored significantly higher on most DVs measured in my study. While the absence of a pretest makes it impossible to conclude with certainty that the CR intervention caused the result, the overall data suggest that the

processes that participants in the CR intervention engaged in over the five months of experimental interventions resulted in the superior transfer of both content and discourse knowledge to this new task. During the retelling assignments, no differences were found between the DI and the control groups on all measures. However, for the original story project, the DI Grade 6 group outperformed the control group on all microstructure and macrostructure measures. From a theoretical perspective, the impact of the DI condition at this grade level supports the hypothesis that children at this age begin to apply conscious planning during the writing process and thus begin to employ the *knowledge-transformation* model of the writing process, as outlined by Bereiter and Scardamalia (1987). However, further studies must be conducted to measure the impact of this treatment on the construction of an original story.

From a cognitive dimension perspective, retelling requires the retrieval of relevant knowledge from long-term memory, while writing an original story requires "putting elements together to form a novel, coherent whole" (Krathwohl, 2002, p. 215). Therefore, writing an original story requires problem solving and creativity, which are considered to be high-level cognitive functions (Merritt & Liles, 1987, 1989; Ripich & Griffith, 1988). Unlike retelling, where advance planning of the content was not essential, constructing an original story requires a minimal amount of planning to take place prior to writing. Before beginning to construct the story, participants had to determine that writing a folktale requires the use of a narrative schema. As well, they had to design some of the story's content, including who the main characters were going to be and the setting in which the tale takes place. Data from my field notes suggest that, in contrast to student behavior during the retelling posttests, there was a considerable delay before students, in all conditions, began

producing their original story, suggesting that they did indeed engage in planning in this instance.

The planning activities during the writing process differ according to the knowledge and skills of the writer. For a novice writer, planning for the writing process involves identifying what the first thing to say is going to be. This planning, which requires minimal global intention is, according to Bereiter and Scardamalia (1987), the extent of the anticipatory activity in the knowledge-telling strategy employed by young writers such as those involved in this study. For expert writers, planning is defined as "a predetermination of a course of action aimed at achieving a goal" (Burtis, Bereiter, Scardamalia, & Tetrse, 1983, p. 154). In this case, the outcome is the knowledge that guides the choice of content and language in writing. The original story data demonstrate that planning, as a goal-directed behavior, is not only age-related but is also highly dependent on the nature of the writing task. As such, at the Grade 5 level, the original story results were similar to the retelling measure, in that the CR group outperformed the DI and the control groups on all macrostructure variables that measured the overall coherence of the story. This outcome suggests that the development of oral language skills had a significant impact on participants' ability to construct an original coherent narrative. In other words, an overall growth in verbal language skills allowed for a transfer of competencies from a well-structured to an ill-defined writing task. The lack of significant differences between the DI and the other two conditions in Grade 5 suggests that improvement in content knowledge alone did not contribute to the writing of an original story and thus confirmed the importance of oral language skills to narrative writing (Berninger, 2000; Cassell, 2004).

The impact of the CR treatment was evident at the Grade 6 level, as participants in this treatment condition outperformed both the DI and the control groups on all macrostructure and macrostructure measures. However, in contrast to the retelling results, which showed no differences between the DI and the control groups, the original story data demonstrated that, in the Grade 6 cohort, the DI group, as compared to the control group, made significant gains on all measures. This instructional strategy targeted narrative content knowledge as well as knowledge related to story grammar. Given that the original story task necessitated some planning prior to its composition, participants accessed their narrative-related content knowledge during the construction of their stories. That these outcomes emerged only at the Grade 6 level suggests that the ability to effectively utilize an improvement in content knowledge is age related. However, age alone is not sufficient. These results align with those of Bereiter and Scardamalia (1987) and Cameron and Moshenko (1996), who have indicated that at around Grade 6, children begin to employ more conscious planning. The more goal-directed planning employed by children at this age likely resulted in the DI group participants performing significantly better than participants in the control group. However, the superior performance of the CR group when compared with the two other conditions also illustrates the importance of verbal skills to narrative writing. The most significant impact on children's narrative writing skills is achieved when the instruction targets oral language development.

Impact of the Treatments on Participants with LD

While the above analyses address the overall hypotheses related to the effects of these treatments in an inclusive classroom, it was important to identify whether the treatments had the same impact on students with learning disabilities. When compared

with their NA peers, the narratives of children with LD are shorter, include fewer episodes, and are incomplete, poorly organized, and less coherent (Merritt & Liles, 1987; Soodla & Kikas, 2010; Troia, 2008). In this study, LD learners received the same interventions as their peers in the inclusive classroom. In addition, a weekly remediation session, in keeping with Québec policy, was provided to these students in a remediation room. This session was used to support the students in areas that they found difficult and provide them with additional time to retell in writing the treatment folktales.

Analysis of LD data suggests that the CR intervention, when compared with the DI and control conditions, had a significant impact on participants' narrative skills in terms of the microstructure and macrostructure measures utilized in both the retelling and original story assignments. No differences were found between the DI and the control condition, indicating that the DI treatment had no impact on participants' narrative writing skills as measured in this study. At the microstructure level, significant differences were observed for *story length*, suggesting that the CR treatment significantly improved participants' verbal skills. This improvement in turn facilitated the text generation process, resulting in longer stories. Because students with LD produce shorter stories than NA children (Hughes et al., 1997; Schneider et al., 2006), the increase in story length had a direct impact on participants' story coherence measures. These measures are dependent on the length of the story, including *total episodes scores* and the *elaboration* variable, which measures the degree to which the episodes are elaborated by details and descriptions.

Research on students with LD has demonstrated that, in comparison to NA students, their stories contain fewer complete episodes. Within the episodes, they tend to omit important information about the characters, motives, and action, resulting in unintelligible

stories (Roth et al., 1995). Roth and Spekman (1986) hypothesize that these students have difficulties understanding the perspectives of the audience and making proper inferences about shared knowledge. The significant improvement in LD participants' *total episodes score* suggests that the peer support, which was an integral part of the cooperative retelling process, provided LD participants with the corrective feedback to ensure that their oral retelling included a complete description of the story's events. As a result of the corrective feedback provided by their peers, LD participants not only improved their oral skills but also became consciously aware of the cause and effect relations that are essential for a well-constructed narrative. The increased ability to take into account their audience's perspectives resulted not only in a significant increase in the number of complete episodes in their written narratives, but also in an improved ability to construct organized narratives. With the increase in verbal skills as a consequence of the treatment, participants' stories included episodes that were not only more coherent but also significantly more elaborated than participants in the other two conditions.

Swanson and Sáez (2006) suggest that an effective instructional intervention with LD students must focus on teaching a few strategies well and include a great deal of practice and feedback. The CR intervention, which required participants to retell four different folktales, necessitated the repeated application of the same instructional strategy. This strategy included an on-going practice of oral story retelling accompanied by peer feedback, allowing participants to improve their verbal skills while, as noted above, coming to understand the importance of taking the audience's perspectives into account when telling stories. This was not the case with the DI intervention, which focused on the content of the stories. In this case, participants had to understand and analyze four different folktales. Thus,

while the instruction was repeated four times for the four different folktales, the outcome of the sessions differed: while the participants' content knowledge may have increased, it had no impact on their ability to either retell a folktale or create a new one.

Significance of the Study

The study establishes the importance of oral language skills to narrative writing in upper elementary school children. Much of the work on the relationship between oral language skills and writing comes from studies of children with deficits in one or more aspects of language (Shanahan, 2008). These studies have shown that children with learning disabilities have difficulties in both oral and written measures including narrative length (Davies et al., 2004; Liles et al., 1995), syntax (McGrath et al., 2004), and story coherence (Hughes et al., 1997), suggesting that for this population of children, written language is dependent on the children's oral ability. However, to date, no research had looked at the impact of oral language skills development on narrative writing in students in the inclusive classroom (Miller & McCardle, 2011). My research addressed this gap in the literature, illustrating clearly that an instructional intervention which targeted oral language development had a significant impact on writing measures both at the microstructure and macrostructure. As the impact of oral language skills on writing was evident not only for the normally achieving children but also for children with learning disabilities, these findings are valuable not only for researchers interested in the relationship between the two language systems, but also for teachers teaching in the inclusive classroom.

To date, there has been no research looking at the impact of cooperative oral retelling on the narrative writing skills of children within the inclusive classroom. The

research in which retelling was used to improve writing is scarce, and what exists is focused on the impact of written retelling on writing (Geist & Boydston, 2002). My study illustrates that written retelling on its own is not sufficient to improve writing skills in upper elementary school children. To significantly improve children's writing skills, the focus of the intervention must be on oral retelling prior to writing. The process of oral retelling of stories necessitates verbal rehearsal that is essential for transferring verbal skills from working memory to long-term memory. This in turn facilitates verbal language development, resulting in significant improvement in writing skills.

My study highlights the effectiveness of cooperative learning as an instructional strategy. While cooperative learning has been used to facilitate the acquisition of skills in many curricular-related areas including mathematics, reading and writing (Jenkins & O'Connor, 2006), its use as an instructional strategy to support oral language development has not yet been investigated. The cooperative retelling strategy used in this study has proven effective in promoting the development of verbal skills in participating students and thus had a significant impact on their narrative writing skills. Perhaps what was most important about this instructional strategy was the ease of implementation. The intervention required minimal support from the teachers. The students quickly understood what was required of them and were able to work in groups to retell the story with limited teacher feedback and support. Despite the ease of applying this instructional intervention, it was effective in promoting writing skills. The identification of an instructional intervention which is effective, yet easy to apply, is of great educational value.

The impact of the CR intervention was also likely facilitated by the long duration of the study. The study, which lasted for a period of five months, allowed for the

repetition of the same instructional strategy four times using four different folktales. Given that for the CR intervention each one of the folktales had to be orally recounted, participants had to rehearse and remember vocabulary from different folktales, resulting in overall cumulative growth of the students' verbal skills. At the same time, the repeated process of retelling and peer feedback improved participants' discourse knowledge. However, while the duration of the study was sufficient to significantly improve the narrative writing skills of the CR group as measured immediately following the intervention, it was impossible to measure the long-term impact of the intervention. Further longitudinal research should be conducted to assess the long-term impact of the cooperative retelling instructional intervention.

Several measures were used in my study to assess participants' narrative skills. Some of the measures have often been cited in research into narrative writing. These include *story length*, *T-units*, *syntax*, and *total episodes score*. However, these measures did not allow for an assessment of the overall coherence of the story, including the logical order of event sequencing within the narrative and the quality of discourse. While rubrics that look at narrative coherence are cited in the literature (see Fox & Write, 1997; http://www.readwritethink.org; Hughes et al., 1997), these measures have not been validated. Moreover, an attempt to use them in my study resulted in low interrater reliability. Therefore, based on the literature in the field, a rubric titled *Story Coherence* was developed. To ensure the reliability of the measure, inter-rater reliability was calculated using a randomly selected sample of 50% of the data ($n = 64$). This analysis resulted in both high correlation scores (ranging between $r = .897$ and $r = .968$, $p < .001$) and high Cronbach's Alpha ($\alpha = .902$, $p < .001$). The Story Coherence measure provided

valuable information in my study regarding the overall quality of the narratives produced by the participants while corroborating the results obtained by the measures often used in narrative research. Further use of the Story Coherence measure in future research into narrative writing would provide further evidence to the value of this rubric.

An essential part of my research was the use of technologies as an integral part of the instructional strategy. The Internet site VoiceThread was used both to podcast the folktales used during the intervention and to facilitate the cooperative retelling process. The application of technologies for the development of narrative skills in children using a cooperative leaning approach has been investigated by Ananny (2002), Cassell (2004), Fusai, Saudelli, Marti, Decortis & Rizzo, 2003; Ryokai et al., 2003), Druin et al. (1999), and Umaschi and Cassell (1997). However, these studies are limited to technologies designed for specific research purposes and do not describe tools that are readily available for teachers interested in promoting narrative development in their students. VoiceThread is currently available free of charge for educators interested in using ICT for narrative development. Thus, the instructional intervention used in my study could be easily replicated by upper elementary school teachers in the inclusive classroom. Given the emphasis on technology integration in North American schools (The CEO Forum 2001; Gouvernement du Québec, 2001; National Technology Educational Standards [NETS], 2005), and the fact that, for the most part, the use of ICT in schools is limited to low-level tasks such as drills and word processing (Barron, Kemker, Harmes, & Kalaydijian, 2003), identifying readily available technologies that can be easily integrated into the curriculum to promote narrative writing is valuable to both researchers and practitioners. Additionally, research into which technologies have been used for narrative

development has previously been limited to normally achieving children. Given the difficulties children with learning disabilities have with narrative discourse, this research takes the important step of identifying how technology can be used as a cognitive tool to support the development of these skills for all the children learning in the inclusive classroom.

Limitations of the Study

As a teacher-researcher, I was able not only to deliver both instructional interventions, DI and CR to both participating grades, I was also able to maintain the rigor that is necessary for conducting research, ensuring that the intervention was delivered as intended. As I was with the students for a period of five months, I developed a relationship with them. According to Saeidi and Jabbarpour (2011) teacher-students relationship counts for a large amount of variation in students' test scores. This is as a consequence of the expectations that teachers have for the performance of their students (Good, 1987). High teacher expectations were shown to highly correlate with students' achievements as students strive to fulfill their teacher's expectation (Trouilloud, Sarrazin, Martinek, & Guillet, 2001). Therefore, since students in both intervention groups had strived to realize my expectations, as they were writing their posttest stories, they made an effort to show how well they could write. This was not the case with the control group who had no relationship with me and had no interest in pleasing me. My field notes indicate that at the Grade 6 level in the control group, many participants asked why they needed to write the same story they wrote before. Moreover, they demonstrated a relative lack of motivation to complete the tasks with many of the participants taking less of the assigned period to complete the tests. This lack of interest in completing the posttests

may have resulted in the control group of students performing less well on the posttest than the pretest data on microstructure variables. This serves to explain the negative gain scores for story length. That said, *all* Grade 5 *macrostructure* scores improved from pre- to posttest in the control group, and with the exception of number of episodes, Grade 6 control group macrostructure scores were either the same or better. Thus, purported lack of motivation appears not to have influenced these substantive measures as much. Overall, the results obtained for the control group should still be viewed with caution.

Quasi-experimental designs, in general, suffer from threats to both internal and external validity. Threats to internal validity impact the degree to which one can infer that it is the treatment that has effected changes in the dependent variables. According to Cook and Campbell (1979), the Untreated Control Group with Pretest and Posttest and Posttest only design used in my study controls for all but three threats to internal validity. These threats include *instrumentation*, which occurs when there is a change in the instrument between pretest and posttest; *selection-maturation*, which occurs when participants in one group grow more experienced and/or more tired and/or more bored then those in another group; and *local history*, which occurs when events unrelated to the treatment affect the experimental group but not the control.

Recognizing that validity threats are inherent to he Untreated Control Group with Pretest and Posttest and Posttest only quasi-experimental designs, many measures were taken to ensure that identified threats to internal validity were controlled. In order to control for the instrumentation threat, I was the one who administered both pretests and posttests, to insure that the measures were given in exactly the same way to all groups. To control for selection-maturation, the *Fidelity of Implementation Observation Protocol*

measured, in addition to implementation fidelity, students' engagement. This observation protocol was implemented three times during the duration of the study, at the beginning middle, and end, and demonstrated that participants in all groups remained equally motivated and engaged throughout the intervention process. In addition, to assess students' engagement on an on-going basis, I maintained detailed field notes for all treatment groups. Therefore, I was able to assert that participants in both treatment conditions remained equally engaged during the duration of the study. In terms of the local history threat, it was not possible to control for specific events that may have affected the control group. However, field notes taken during the duration of the study, which include on-going discussions with participant teachers, showed no evidence that local history played a role in the outcome of any one of the participating groups.

While methodologists (e.g., Abrami & Bernard, 2006; Cook & Campbell, 1979) recommend randomization of participants to treatments, research opportunities often do not allow for this practice. Failing randomization, the use of pretests in my study allowed for statistical measurement of pre-existing differences. As often happens when groups are not randomly chosen, pretest analysis indicates that the groups are not statistically equal. That was the case in my study. The lack of statistical equivalence between the groups is problematic, as differences at the posttest level may be the outcome of these differences rather than the impact of the treatment. To overcome the initial differences between the groups, gain scores were used to measure the treatment impact. ANCOVA may also be used in cases when there are differences between groups (Cook & Campbell, 1979). As discussed above, following a close analysis of the literature, it was determined that gain scores, rather than ANCOVA, were the most suitable statistical procedure, given the

research questions and the importance of individual differences in the study (e.g., Cook & Campbell, 1979; Dimitrov & Rumrill, 2003). These procedures thus ameliorated concerns about selection bias.

My study used an *Untreated Control Group Design with Pretest and Posttest and Posttest only*. The control group received instructional strategies based on the Québec Education Program. However, given the limited Fidelity of Implementation observation, it is difficult to say what instruction related to narrative development was given to this group. It is therefore possible that they receive less instruction in narrative writing. However, as noted above, overall macrostructure scores improved, providing evidence that effective instruction was in fact provided. Caution should nonetheless be exercised regarding conclusions of the impact of the treatment as compared with a control group.

The original story measure was given as a posttest only. Therefore, it is impossible to conclude with any certainty that the treatment had a direct, causal impact on this measure. While the Bereiter and Scardamalia (1987) knowledge-telling model highlights the importance of both discourse knowledge and content knowledge to writing, in the absence of a pretest one cannot conclude that the CR or the DI interventions had an impact on this measure as compared with a control group. An alternative design that included this measure as a pretest could have been used, though the threat to internal validity via testing would have increased.

My research looked at the impact of two interventions, DI and CR. Both interventions included direct instruction on story grammar. However, given that I did not have a group that received direct instruction without podcasting, it is impossible to independently assess the benefit of this aspect of the experimental interventions. As

discussed above, the control groups may have featured this instruction, but too little is known of the nature of those groups to draw conclusions. Further research eliminating technology might corroborate the findings of Dimino, Gersten, Carnine, and Blake (1990) and Fitzgerald and Teasley (1986) highlighting the benefit of story grammar instruction only.

While I must acknowledge the importance of internal validity to any experiment that attempts to establish causal relations, in social science research it is equally important for researchers to study an instructional intervention in the setting in which it is to be employed. Studies that look at the impact of instructional interventions in natural settings are considered to be ecologically valid. My intervention was situated in the QEP and followed curricular guidelines. It was designed to be implemented in real classrooms, using these guidelines. At the same time, the nature of the study, assuming that threats to internal validity are addressed, means that its findings would also contribute to the body of theories related to narrative development in children.

External validity asks whether a researcher can generalize an experimental outcome, moving beyond the confines of the experiment and applying the results to particular target persons, settings, and times (Cook & Campbell, 1979). Cook and Campbell identify two threats to external validity that are pertinent to my study. They include: interaction of selection and treatment, which make it impossible for the researcher to generalize beyond the group being investigated (in my study, this includes upper elementary school children); and interaction of setting and treatment, which make it impossible for the researcher to generalize beyond similar settings where the experiment occurs (in my study, this is the inclusive classroom in Québec). While results

of this study may plausibly be generalized to other upper elementary inclusive classrooms in Québec, given the fact that inclusive education is the norm not only in Québec but also in schools across North America (Zigmond, 2006), it is likely that the results obtained may also be generalized to similar settings across Canada and the US. However, further research should be conducted to assess the impact of the treatment in other inclusive educational settings.

While the setting of the present study was similar to many other schools settings in North America, I, as the teacher-researcher, had expertise both as an elementary school teacher, a special education teacher, and a technology specialist. This expertise allowed me to design the intervention and implement it as intended so that I could clearly make inferences to the treatment outcomes. Thus, the results must be generalized to settings where the teacher's expertise is similar to that present in this study.

Given the presence of students with learning disabilities in the inclusive classroom, it was important to identify the impact the treatments had on this population of children. This study examined the individuals making up this group, both combined with the whole class and separately, but the results obtained in my study must be viewed with caution. Given the small sample size, which hampered my ability to make reasonable statistical comparisons, the Grade 5 and Grade 6 LD students were combined during the analysis of the treatments' impact, as pretests data analysis indicated no significant differences among the groups. However, the small sample size resulted in low statistical power and the possibility of type II error—suggesting that the groups are statistically the same when in fact they are different. It was, nonetheless, encouraging that differences did emerge in spite of these challenges.

In addition to the dependent variables obtained and analyzed in my study, additional data, which I have not yet fully analyzed, were collected. These data include my detailed field notes taken at the end of each session and the retelling of folktales generated by the cooperative retelling intervention group. The field notes also include descriptions of the classroom settings, students' reactions, and instructional activities as they unfolded during the lessons. The podcasts provide additional information regarding the impact of the CR on participants' oral skills and narration as they develop over the duration of the study. While these data may have provided additional valuable information regarding the treatments as they occurred in both the inclusive classroom and in the resource room, such evidence was beyond the scope of my study.

While I collected much valuable process data during the interventions, I failed to develop measures regarding students' perception of the treatment. Allowing students to provide their own evaluation of the intervention, either in a focus group or using a questionnaire, would have provided important information regarding the impact of the treatment from the participants' perspectives. These data would have allowed me not only to corroborate my observations and analysis of the outcome, but also would have provided more specific information regarding what the students found most engaging and what in the intervention could be improved for future instructional implementation.

Suggestions for Future Research

While my research focused on quantitative analysis of written narratives, I collected a large amount of data that has not yet been analyzed. Such data include detailed field notes taken at the end of each session and the podcasts produced by participants in the cooperative retelling treatment group. These valuable data should be

analyzed using qualitative methodologies in order to look at those writing processes that cannot be quantified and yet had an impact on the outcome of my research. Close examination of these data would provide additional information regarding the differences obtained in my study between in the Grade 5 and Grade 6 students. Moreover, a close analysis of the podcasts produced by the students in the CR group would allow for the mapping of the relationships between the oral language used during the cooperative retelling process and the language used in writing. This would provide additional information regarding not only the relationship between oral language and writing but also that between language and memory. The research of other scholars would also benefit from both the collection and analysis of these types of data.

Qualitative research often builds on the perspectives of participants in the research setting (Schultz, 2006). Shultz suggests that many significant advances in the writing field have come from qualitative studies, as the methods used in qualitative studies allow researchers to document and analyze variables affecting the writing processes of individuals or groups. Given the need for increased research on the motivational and engagement factors affecting writing (Miller & McCardle, 2011) and the significant impact of the cooperative retelling instructional strategies on participants' writing as measured using quantitative variables, it is important to identify, from the participants' perspectives, what it was about these instructional strategies that engaged and motivated them. Such research would provide additional knowledge related to learning and motivation and could be applied to the development of additional instructional interventions targeting writing skills.

Given the small sample of LD participants in this study, it is important to confirm the significant findings obtained for the CR treatment group using a larger sample size. The challenge that researchers face in that regard is that when LD students are integrated into the classroom, their number in each class is usually small. Thus, a future study would require the use of more classrooms in several sites, allowing for a proper analysis of the impact of the CR treatment on this population of students. Such a study would not only permit a more powerful analysis of LD students but also serve to confirm or refute the findings obtained in my study.

This study was conducted to measure the impact of oral narrative skills on narrative writing. Given the significant impact this treatment had on narrative writing skills, it is important to identify whether improving oral language skills in other discourse forms, such as argumentation and exposition, would impact writing of this genre. Identifying whether an improvement in oral language skills impacts other forms of writing would provide valuable information to both researchers and practitioners alike.

The study was conducted in upper elementary school classrooms. Given the writing difficulties experienced by many students (e.g., Grabe & Kaplan, 1996; Graham, Harris, & Mason, 2005; Singer & Bashir, 2006), it is important to identify whether such strategies would impact younger students. An analysis of the impact of the CR treatment on students in younger grades will provide valuable information on the impact of age on the development of oral skills and on how this development impacts students' writing.

Finally, due to the quasi-experimental nature of my study and the external validity threat of the interaction between setting and treatment, I strongly recommend that additional research using the same methodology be conducted in other inclusive

educational settings. It is my hope that the accumulation of additional data regarding the impact of this intervention in other schools across North America would provide further information about the value of the cooperative retelling intervention, as it was used in my study. Additional research would not only provide further evidence regarding the relative impact of the intervention strategy, but would add process data for teachers to utilize in their efforts to improve their students' narrative writing skills.

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APPENDICES

Appendix A

Québec Ministry of Education Leisure and Sports Project Application Form

Action Research Project

TO TEST INNOVATIVE INITIATIVES IN SPECIAL EDUCATION	
IDENTIFICATION OF PROJECT	
Project name: Using Podcasting Technologies to Develop Narrative Skills in Children with Learning Disabilities	
School project coordinator (person who can describe the project, provide details, receive important documentation, etc.): Mrs. Anna Kalyniak	
Main school: Hillcrest Academy	
School principal at the main school where the project will be carried out: Mr. Douglas Clarke	
School board requesting the grant: Sir Wilfrid Laurier School Board	
Names of associated school boards, if any:	
Name of the researcher associated with the project and name of the institution with which he or she is affiliated:	Dr. Richard Schmid, Concordia Univeristy

DETAILES OF THE PROJECT
PROBLEM
Explain how the project is intendent to meet the needs of the schools or dealing with issues steming from the scientific literture. A basic review of the literature is required Learning disabilities refers to a number of disorders which may affect the acquisition, organization, retention, understanding or use of verbal or nonverbal information. Since all aspects of language development are interdependent, a weakness in one area may affect other areas resulting in an "arrest in development" of literacy skills. Thus, children with LD are at a disadvantage in school settings where facilities in all aspects of language development are essential for success. Of particular relevance to academic achievement is students' capacity for narrative discourse (O'Neill, Pearce, & Pick, 2004). Narrative discourse includes the ability to construct an original story or retell a previously heard story. Narratives can be in both written and oral form. Both written and oral narratives seem to share some properties including the notion of a beginning, middle and end, the separation of the event structure from the narrative structure and the particular stance of the narrator of the story. However, oral narratives, unlike written ones, are essential for social interaction and collaboration. It is through telling stories to each other that children learn to recall and logically order ideas, to use appropriate linguistic strategies to create cohesiveness, to develop metalinguistic awareness, and to take into account the listener's knowledge and perspective (Cassell, 2004). This social act of narrative construction must be considered in the development of instructional strategies to promote narrative development in children. All aspects of narrative production are difficult for many LD children. Their stories lack structure, include fewer words and ideas and simple syntax (McGrath, Taylor, & Kamen, 2004). In addition, they have difficulties in assessing audience needs and adapting their discourse to meet these needs (Fey, Catts, Proctor-Williams, Tomblin, & Zhang, 2004). Retelling a story requires re-experiencing the story and organizing the information considered to be important (Applebee, 1978). Studies have suggested that the retelling of stories significantly improves children's story comprehension, memory of story information, sense of story structure and oral language complexity in both normally achieving and LD children. Given the important role narrative discourse plays in peer interaction, collaborative learning may be an effective instructional strategy for narrative development in LD children. Collaborative learning approach requires students to work together to achieve a common task. The peer support inherent in collaborative learning serves as a compensatory mechanism, enabling learners who experience difficulties to overcome obstacles they may not overcome working alone. Moreover, using a collaborative approach to narrative development is in accordance with the Quebec Educational Program which has identified collaboration as a competency that must be developed in school. In recent years, the role of technologies in promoting the development of storytelling skills in children using a collaborative leaning approach has been investigated by Cassell (2003; 2004). However, these studies are limited to technologies designed for specific research purposes and are not readily available tools for teachers interested in promoting narrative development in their students. A better approach would be to use technology that is readily available for all teachers and students. Given the importance of social interaction for narrative development, such technologies must provide opportunities for children to collaborate and allow teachers to facilitate the interaction in order to promote storytelling development.

RESEARCH OBJECTIVES
Our proposal aims at investigating the effect of using a collaborative learning approach to develop narrative skills in children with learning disabilities using the medium of Podcasting. Podcasts are digital recording of audio and/or video available over the Internet for downloading on mobile devices such as iPods and personal computers. By building a shared resource on the Internet, a platform for further collaboration is created as well as digital artefacts for on-going reflection and evaluation, by students as well as teachers. Given that the development of MP3 players is recent, research looking at the effect of Podcasting on teaching and learning in general is scarce and in the area of literacy development in children with learning disabilities it is non-existent. Targeted Objectives -To measure the impact of Podcasting technologies on oral narrative skills of students with learning disabilities including story grammar, story cohesion, and syntax. -To measure the impact of Podcasting technologies on story comprehension of students with LD. -To measure the impact of Podcasting technologies on written narrative skills of students with learning disabilities including story grammar, story cohesion, and syntax. -To measure the impact of telling a story prior to writing it on the writing skills of children with LD. -To describe how Podcasting technology can be used to facilitate peer collaboration for narrative development. -To assess the effect of using Podcasting technologies on the development of ICT competencies. -To assess the impact of the intervention of teachers' practices -To assess the impact of the intervention practices in teaching students with learning disabilities -To collaborate with researchers from Concordia University to modify, implement, and evaluate the effect developing and listening to Podcasts on students with learning disabilities
INOVATIONS AND PROMESING TEACHING METHODS OR SERVICE ORGANIZATION PROCEDURES AND RESOURCES USED
the use of podcasts and mp3 players in education is new and has not yet been used at our school. by providing opportunities to our ld students to listen to stories using mp3 players, and having access to stories that they would not necessarily have access to, would provide them with new opportunities to improve their literacy skills. as well, by collaborating for the development of the podcasts, students will be provided with opportunities to collaborate, learn how to support each other's learning and how to provide each other with feedback, correction, model performance and support. in addition, our current instructional approach has not focused on the development of oral language skill in our ld children. by allowing our students to orally tell a story we will be utilizing a new approach for the teaching of our ld students. through the use of epearl, our students will also continue the practice of self-regulation thus monitor their progress in developing both oral and written narrative skills and evaluate how this development affects their school achievement. resources used include teachers' time allocated for training in the use of podcasting technologies as well as related ict training. in addition, supplemental hours will be required from the teachers to maintain a log of portfolio related teaching activities, meetings related to the research and on-going analysis of students progress. a research assistant from concordia university will be involved in training and on-going implementation of the portfolio as well as analysis of the results. the project requires the use of computers for the development of the podcasts. mp3 players will be required for each participating students for loading and listening to podcasts.

CONNECTION WITH THE QUEBEC EDUCATION PROGRAM
the quebec educational program (qep) emphasizes cross-curricular competencies, ict integration, and the integration of students with special needs all which are met by our project. in addition, in accordance with the qep learner-centered approach to education, our project focuses on addressing individual students needs and at the same time allows for the development of narrative skills. the cross-curricular competencies, which have been central to the reform, are designed to ensure that the skills and knowledge being taught in our schools meet the changing demands of the 21st century workforce. these competencies include the ability to use information, to solve problems, to exercise critical judgment, to use creativity, to adapt effective work methods, to cooperate with others, to communicate with others and to make use of ict. our project will insure that these competencies are developed. in addition, in accordance with our philosophy of special education which stresses differentiated instructional strategies, this project is focused on addressing individual students needs as identified by their qep. the collaborative learning approach is facilitated by inclusive approach to education in promoted by our school board. while research shows that ld students have difficulties with both oral and written narrative skills, to date, no research has been conducted looking at the use of available technologies for the development of these skills in ld students and no research has been done to track their progress over the school year. with guidance from researchers from concordia university our cycle three ld students will develop podcasts in collaboration with their classmate. they will share their work with their classmate and receive peer feedback on their work. by receiving on-going assistance using the portfolio our students with learning disabilities will increase their ability to self-evaluate; learn to make effective educational choices; better understand themselves and focus on their strengths; and reflect on their procedures, strategies and accomplishments so that they can improve and correct them and ultimately achieve academic success. by using a collaborative learning approach through the use of technologies, our project is also in accordance with the quebec educational program which emphasizes the importance developing of collaborative skills among students and the importance of these skills for on-going growth and development in a knowledge society.

EXPECTED BENEFITS FOR STUDENTS WITH SOCIAL MALADJUSTEMNTS OR LEARNING DIFFICULTIES
the quebec educational program (qep) emphasizes cross-curricular competencies, ict integration, and the integration of students with special needs all which are met by our project. in addition, in accordance with the qep learner-centered approach to education, our project focuses on addressing individual students needs and at the same time allows for the development of narrative skills. the cross-curricular competencies, which have been central to the reform, are designed to ensure that the skills and knowledge being taught in our schools meet the changing demands of the 21st century workforce. these competencies include the ability to use information, to solve problems, to exercise critical judgment, to use creativity, to adapt effective work methods, to cooperate with others, to communicate with others and to make use of ict. our project will insure that these competencies are developed. in addition, in accordance with our philosophy of special education which stresses differentiated instructional strategies, this project is focused on addressing individual students needs as identified by their qep. the collaborative learning approach is facilitated by inclusive approach to education in promoted by our school board. while research shows that ld students have difficulties with both oral and written narrative skills, to date, no research has been conducted looking at the use of available technologies for the development of these skills in ld students and no research has been done to track their progress over the school year. with guidance from researchers from concordia university our cycle three ld students will develop podcasts in collaboration with their classmate. they will share their work with their classmate and receive peer feedback on their work. by receiving on-going assistance using the portfolio our students with learning disabilities will increase their ability to self-evaluate; learn to make effective educational choices; better understand themselves and focus on their strengths; and reflect on their procedures, strategies and accomplishments so that they can improve and correct them and ultimately achieve academic success. by using a collaborative learning approach through the use of technologies, our project is also in accordance with the quebec educational program which emphasizes the importance developing of collaborative skills among students and the importance of these skills for on-going growth and development in a knowledge society.

METHODOLOGY

A mixed method, action research design will be used for this investigation. All sessions will be videotaped and the teacher/researcher will maintains a journal documenting personal observations and reflection. As the goal of the research is to improve oral and written narrative development in children using collaborative learning approach facilitated by technology, it is necessary to identify participating children oral and written narrative prior to the intervention. A pre-test consisting of an oral and written retelling of a folktale will be administered. Students will be required to listen to a folktale from an audio file and retell it orally in their own words. Students' retold stories will be taped for analysis. Students will then be asked to write the story they just retold. Their written production will be analyzed using the same evaluation criteria as for the oral narratives. This pretests will analyze syntax complexity by looking at average of words per sentences, number of subordinate clauses and the type, position and complexity of the clause; cohesion by looking at connections or ties among sentences; and story grammar including: a setting, an initiating event, a number of attempts, a series of outcomes or consequences and the reaction of the characters to the consequences. Spelling or punctuation errors in the written production will be ignored. This analysis will be used to inform the instructional strategies used to improve the narrative development of participating children. Thus, area of weakness for each participating child will be identified and individual instructional strategy will be designed to address his/her needs. The resource teacher will meet with each student to discuss areas of strength and weaknesses. In collaboration with the classroom teacher, students will be asked to identify strategies to improve both their oral and written narrative skills. The students will be asked to list the strategies they will use to improve their skills. These strategies will be used to guide them during the collaborative storytelling activities.

Procedure: 1) Each student listens with an mp3 player to a Podcast of a story. 2) Students will be placed in triads and each participant will selects a part of the story to retell. 3) Instruction is given to students on how to facilitate peer retelling and how to provide constructive feedback using a modeling instructional strategy. 4) Students practice telling the story. 5) Students will collaborate using technologies to produce their own Podcast. 6) Students write the story. The same procedure with the exception of the "modeling" strategy which will fade as students acquire the necessary skills. The post-test will include an oral and written retelling of a folktale. It will be scored using the same procedures as the pre-test.

An interview with participating students will be conducted at the end of the research focusing on their perception of the process. Quantitative analysis of both oral and written tales of the students will be conducted focusing on story structure, story cohesion and syntax. Qualitative analysis of videotapes, journal and interviews will be conducted using open coding.

Collaborative apprenticeship is the process in which peer teaching and collaboration is used to adopt innovative practices. Through the collaboration between the researchers from Concordia University and the resource teacher to develop, design and conduct the intervention, the resource teacher will be able to continue implementing the instructional strategies using Podcasting technology once the research is terminated. As well, he/she will be able to mentor other teachers in the use of the instructional method investigated in this study.

PROCEDURE

A mixed method, action research design will be used for this investigation. All sessions will be videotaped and the teacher/researcher will maintains a journal documenting personal observations and reflection. As the goal of the research is to improve oral and written narrative development in children using collaborative learning approach facilitated by technology, it is necessary to identify participating children oral and written narrative prior to the intervention. A pre-test consisting of an oral and written retelling of a folktale will be administered. Students will be required to listen to a folktale from an audio file and retell it orally in their own words. Students' retold stories will be taped for analysis. Students will then be asked to write the story they just retold. Their written production will be analyzed using the same evaluation criteria as for the oral narratives. This pretests will analyze syntax complexity by looking at average of words per sentences, number of subordinate clauses and the type, position and complexity of the clause; cohesion by looking at connections or ties among sentences; and story grammar including: a setting, an initiating event, a number of attempts, a series of outcomes or consequences and the reaction of the characters to the consequences. Spelling or punctuation errors in the written production will be ignored. This analysis will be used to inform the instructional strategies used to improve the narrative development of participating children. Thus, area of weakness for each participating child will be identified and individual instructional strategy will be designed to address his/her needs. The resource teacher will meet with each student to discuss areas of strength and weaknesses. In collaboration with the classroom teacher, students will be asked to identify strategies to improve both their oral and written narrative skills. The students will be asked to list the strategies they will use to improve their skills. These strategies will be used to guide them during the collaborative storytelling activities.

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Appendix B

Fidelity of Implementation Observation Protocol

Class number: _____

Time of observation: _____

Total number of students: _____

Instruction

During the observation period, please indicate for **each 5-minute** segment which of the following activities was observed.

For students engagement, please indicate how engaged the student was during the activity. Use the following rating scale:
1= Low engagement (Paid attention less than 20% of the time) 2= Moderate engagement (Paid attention 30% - 60% of the time) 3 = High engagement (Paid attention 70% - 100% of the time).

Instructional Activity	Code	Description	Rating
Teacher led direct instruction	TLDI	Teacher explaining concepts or what must be done	
Modeling by Teacher	MT	Teacher demonstrating how to execute a task	
Cooperative work	IW	Students working cooperatively to practice telling the story or on tasks given by the teacher	
Cooperative work with VoiceThread	IW	Students working cooperatively with Voice Thread	
Individual work	IW	Students work individually on writing the story or assignment given by the teacher	
Students engagement	SE	Students engagement in the lessons activity-attentiveness and participation	

Appendix C

Story Grammar Scoring Sheet

Rater:_____

Student's name:_____ **Class#**_____
pretest/posttest

Episode level	Description	Score
Abbreviated episode	Provides aim or intention of the character but does not explicitly state the character's plan to achieve goal. Planning must be inferred	1 point
Incomplete episode	States planning but one or more of the essential story grammar parts to complete episode is missing i.e. IE, A or C	1 point
Complete episode	Includes aim and plan of the character to reach the goal. Has at the minimum an IE, A and C. Use words like decided to…The goal must be explicit and the attempt to solve the problem is stated	2 points
Complex episode	Include elaboration of complete episode by including multiple plans, attempts and consequences within an episode	3 points
Embedded episode	Embeds another complete episode or reactive sequence within an episode	4 points
Interactive episode	Describes one set of events from two perspectives with characters and goals influencing each other. May have a R or C for one character serving as an IE for another character.	5 points

Score for complete episodes

Complete (2pts)	Complex (3pts)	Embedded (4pts)	Interactive (5pts)	Total score

Score for Incomplete Episodes

Abbreviated episodes (1pts)	Incomplete episodes (1 pts)	Total

Appendix D

Coherence Rating Rubric

	Very Coherent 5	Coherent 4	Mostly Coherent 3	Somewhat Coherent 2	Incoherent 1
FLUENCY *The flow of the written text*	• Discourse flows smoothly with **no grammatical** errors to interrupt the reading process	• Discourse flows smoothly with **very few grammatical errors** to interrupt the reading process	• Discourse is rough **in some part** because of some grammatical errors which interrupts the reading process • Use of dialogue when past tense should be used	• Discourse is **mostly rough** because of many grammatical errors which interrupt the reading process of much of the text • Excessive use of dialogue • Insufficient writing to show that criteria is met	• Discourse flow **is very rough** because **the writer omits structure words** and makes numerous grammatical errors which interrupts the reading process • Insufficient writing to show that criteria is met
ELABORATION *The degree to which **the episodes** are elaborated by details, descriptions, and reactions. A complete episode is a behavior sequence which includes an initiating event, the character(s) response (goals, plans, actions) and the consequence resulting from his/her response.*	• **All episodes** developed by specific details; some episodes may be developed with more detail than others • **Some depth** as measured by the reflection of some of the events in the story	• **Most episodes** developed by specific detail; some may be less developed • **Limited depth** as measured by a reflection on the event of the story	• **Some episodes** developed by specific detail; some may be less developed (complete episodes include several IE and/or several A and/or several C) • **No depth** as measured by a reflection on the event of the story	• A list of complete and or incomplete episodes with no elaboration (complete episodes include only an IE, A, C)	• Elaboration is absent or confusing • Insufficient writing to show that criteria is met
ORGANIZATION *The clarity of the logical flow of the story and/or movement of an event through time*	• **Structure:** Narrative structure is clear sequence of episodes moves through time with beginning, middle and ending without noticeable gaps or with **no gaps** • Writing is organized according to a plan which is **sustained throughout the story**	• **Structure:** Narrative structure is evident- sequence of episodes move through time with a beginning middle and an end with **very few gaps** • Writing is organized according to a plan which is **sustained throughout most of the story**	• **Structure:** Narrative structure is evident- sequence of episodes move through time with a beginning middle and an end **with some gaps** • Some planning that **may not be sustained throughout the story**	• **Structure:** Some attempt but the reader must infer it; movement through time with **significant gaps** • Very little planning that is not sustained throughout the story	• **Structur**e: Confusing; little or no attempted structure • No organizational plan, writing is either a list or follows associative order

Appendix E

Parent/Legal Guardian Consent Form

Dear Parent/Guardian,

Ofra Aslan, a doctoral student from Concordia University under the guidance of her supervisor, Dr. Richard Schmid, in partnership with your child's school, is conducting an assessment of how technologies can be used to improve children's writing skills. This study was made possible through a grant awarded by the Ministry of Education, Leisure and Sport (MELS) to allow your school to purchase technologies for the project, as well as to offer additional teaching support.

Over the next three months, your child will receive special instruction in how to write stories using specific instructional strategies. Your child will listen to a story on his or her computer and tell the story in his/her own words. Your child may also use an on-line, secure website called VoiceThread to collaborate with his/her classmates and record their story. You can see a demo of the VoiceThread site at http://voicethread.com/#home. Use of this site is restricted to school-work only. Studies show that these instructional strategies will improve children's writing skills.

Your consent allows the researcher to:

- Observe your child over the course of the study
- Assess your child's writing skills prior to, during and at the end of the study

Please note that these assessments are typical in writing instruction, and will not interfere in any way with your child's learning. Indeed, they will help us to better support your child's learning.

All information that is collected in this study is **completely confidential.** Your child's name will not be released in any report. You are free to refuse permission for your child to take part in this project at any point without any negative consequences for you or your child. Your child's participation is completely voluntary. Non-participation means that we will not use any materials from your child for the study.

If you have any questions, or need more information, please call Ms. Aslan at (514) 831-3309 or email her at o_aslan@education.concordia.ca

If you have any questions about your child's right as a research participant, please contact Adela Reid, the Concordia Ethics officer, at (514) 848-2424 ext. 7481 or at adela.reid@concordia.ca.

Please read and complete the form below and return it to your child's teacher.

Sincerely,

Ofra Aslan
Ph.D. student, Department of Education
Concordia University

Dr. Richard F. Schmid
Chair - Department of Education
Concordia University

INFORMED CONSENT AGREEMENT

- I have read the above letter and am informed about the project
- I understand that I am free to withdraw my child at any time for any reason
- I understand how confidentiality will be maintained
- I understand how the data will be presented in an anonymous form at all times.

I DO give permission for my child (please print name below)

_____

I DO NOT give permission for my child (please print name below)

_____

to participate in the research study.

Name of Parent/Guardian (please print) _____

Signature: _____Date: _____

Appendix F

Students' Oral Consent Form to Participate in Research

Instruction: Prior to the beginning of the study, the researcher will orally explain to the students the purpose of the study and the procedures which will be employed during the course of the study. The researcher will then explain that their parents were given a letter to sign called a Consent form. The researcher will explain the consent form in a manner consistent with the age of the children (age 10-11). The researcher will explain that a consent form means that the researcher has the right to use all of the data collected for research purpose so that it could be analyzed. The researcher will explain that all students in the classroom will receive the intervention but it is only the data of the students who parents agreed for them to participate in the study will be used. The researcher will then explain that all the information is confidential. That means that no one except the researcher will know or have access to their work.

The researcher will explain to the students that they have the right as well to say if they do not want to participate in the study even if their parents may have said that they can. Again the researcher will explain that it means that they will continue with the classroom's activities but their data will not be used. The researcher will then obtain an oral consent from the students. The researcher will inform the students that if they do not want to participate at any time during the research they are to let her know orally prior to or after class.

The researcher will ask students if they have additional questions.

Appendix G

Teacher's Consent

Dear Teacher,

Ofra Aslan, a doctoral student from Concordia University under the guidance of her supervisor, Dr. Richard Schmid, in partnership with your school, is conducting a study on how technologies incorporated into specific instructional strategies can be used to improve children's writing skills. This research was made possible through a grant awarded by the Ministry of Education, Leisure and Sport (MELS) allowing your school to purchase technologies that will be allocated for the research.

Your feedback regarding the interventions is most valuable, as it will help us identify the effectiveness of the interventions in a classroom environment. Due to the fact that this is a research project we require your consent to document your perception of the instructions' effectiveness in improving children written narratives and the appropriateness of the instructional strategies for regular classroom's applications.

All information that is collected in this study is confidential so your name is not associated with the information. You are free to refuse permission to take part in this project at any point without any negative consequences for you. Your participation is completely voluntary and you may withdraw at any time.

If you have any questions, or need more information, please call Ofra Aslan at (514) 848-2424 ext. 2005 or email her at o_aslan@education.concordia.ca

If you have any questions about your right as a research participant, please contact Adela Reid at (514) 848-2424 ext. 7481 or at adela.reid@concordia.ca.

Please read and complete the form below and return it to researcher.

Sincerely,

Ofra Aslan
Ph.D. student, Department of Education
Concordia University

Dr. Richard F. Schmid
Chair - Department of Education
Concordia University

INFORMED CONSENT AGREEMENT

- I have read the above letter and am informed about the project,
- I understand that I am free to withdraw at any time for any reason,
- I understand how confidentiality will be maintained,
- I understand how the data will be presented in an anonymous form at all times,

☐ I agree to participate in the research study.

☐ I do not agree to participate in the research study.

Signature_____ Date _____

Your School _____

Appendix H

Folktales Transcription

The Wise Old Woman

Long ago in the wooded hills of Japan, a young farmer and his aged mother lived in a village ruled by a cruel young lord.

"Anyone over seventy is no longer useful," the lord declared, "and must be taken into the mountains and left to die."

When the young farmer's mother reached the dreaded age, he could not bear to think of what he must do. But his mother spoke the words he could not say. "It is time now for you to take me into the mountains," she said softly.

So early the next morning, the farmer lifted his mother to his back and reluctantly set off up the steep mountain path. Up and up he climbed—until the trees hid the sun, and the path was gone, until he could no longer hear the birds, but only the sound of the wind shivering through the trees. On and on he climbed. But soon he heard his mother breaking off small twigs from the trees they passed. "I'm marking the path for you, my son," she said, "so you will not lose your way going home."

The young farmer could bear it no longer. "Mother, I cannot leave you behind in the mountains," he said. "We are going home together, and I will never, ever leave you."

And so in the dark shadows of night, the farmer carried his mother back home. He dug a deep cave beneath the kitchen, and from that day, the old woman lived in this secret room, spinning and weaving. In this way two years passed, and no one in the village knew of the farmer's secret.

Then one day, three fierce warriors in full armor galloped into the small village like a sudden mountain storm. "We come from the mighty Lord Higa to warn you," they shouted to the young lord. "When three suns have set and three moons have risen, he will come to conquer your village."

The cruel young lord was not very brave. "Please," he begged, "I will do anything if you will spare me." "Lord Higa knows no mercy," the warriors thundered, "but he does respect a clever mind. Solve the three impossible tasks written upon this scroll and you and your village will be saved." Then, tossing the scroll at the young lord, they galloped off as quickly as they had come.

"First, make a coil of rope out of ashes," the young lord read. "Second, run a single thread through the length of a crooked log. And third, make a drum that sounds without being beaten." The young lord quickly gathered the six wisest people of his village and ordered them to solve the impossible tasks. They put their heads together and pondered through the night. But when the stars had vanished and the roosters began to crow, they still had no answers for the young lord.

They hurried to the village shrine and sounded the giant bronze bell." "Help us," they pleaded to the gods. But the gods remained silent.

They went next to seek the clever badger of the forest, for they knew that animals are sometimes wiser than men. "Surely, you can help us," they said eagerly. But the badger only shook his head. "As clever as I am," he said, "I see no way to solve such impossible tasks as these."

When the six wise people returned to the young lord without any answers, he exploded in anger. "You are all stupid fools!" he shouted, and he threw them into his

darkest dungeon. Then he posted a sign in the village square offering a bag of gold to anyone who could help him.

The young farmer hurried home to tell his mother about the impossible tasks and Lord Higa's threat. "What are we to do?" he asked sadly. "We will soon be conquered by yet another cruel lord." The old woman thought carefully and then asked her son to bring her a coil of rope, a crooked log with a hole running through the length of it, and a small hand drum.

When the farmer had done as she asked, she set to work. First, she soaked the coil of rope in salt water and dried it well. Then, setting a match to it, she let it burn. But it did not crumble. It held its shape. "There," she said. "This is your rope of ash."

Next, she put a little honey at one end of the crooked log, and at the other, she placed an ant with a silk thread tied to it. The farmer watched in amazement as the tiny any wound its way through the hole to get to the honey, taking the silk thread with it. And the second task was done.

Finally, the old woman opened one side of the small hand drum and sealed a bumblebee inside. As the bee beat itself against the sides of the drum trying to escape, the drum sounded without being beaten. And the third task was done.

When the farmer presented the three completed tasks to the young lord, he was astonished. "Surely a young man such as you could not be wiser than the wisest people of our village," he said. "Tell me, what person of wisdom helped you solve these impossible tasks?"

The young farmer could not lie, and told the lord how he had kept his mother hidden for the past two years. "It is she who solved each of your tasks and saved our village from Lord Higa," he explained.

The farmer waited to be thrown into the dungeon for disobeying the lord. But instead of being angry, the young lord was silent and thoughtful. "I have been wrong," he said at last. "Never again will I send our old people into the mountains to die. Henceforth they will be treated with respect and honor, and will share with us the wisdom of their years."

Whereupon the young lord freed everyone in his dungeon. Next he summoned the old woman and gave her three bags of gold for saving the village. Finally he allowed the farmer to march with his finest warriors to Lord Higa's castle. The long procession wound slowly over the mountain roads carrying its precious cargo. And it was the young farmer who carried the lord's banner fluttering high in the autumn wind.

When they presented to Lord Higa the rope of ash and the threaded log and the drum that sounded without being beaten, he stroked his chin thoughtfully. "I see there is much wisdom in your small village," he said, "for you have solved three truly impossible tasks. Go home," he directed the young farmer, "and tell your lord that his people deserve to live in peace."

From that day on, Lord Higa never threatened the small village again. The villagers prospered, and the young farmer and his mother lived in peace and plenty for all the days of their lives.

The Name of the Tree

A long, long time ago in Africa when the animals could still talk to each other like people, there was a terrible famine in the land. The sun shone day after day, hot and merciless without a drop of rain. And the grasses turned yellow and died. And the animals were hungry. Now in the middle of that land there was a tree. And on this tree there grew the most delicious looking fruits.

And so as the famine got worse, the animals came from east and west and north and south to wait under the tree for the fruits to ripen. But when at last the fruits were ripe, the animals realized they couldn't pick them, for the tree was so high that not even the tallest giraffe could reach the branches. And the trunk of the tree was so smooth and slippery that not even a monkey could climb it. Then one of the animals said, "I remember this tree. My grandmother told me that we must say the name of the tree in order to harvest its fruits." So the animals all turned to each other. "Do you remember the name of the tree?" But nobody did.

So the animals had a council and they decided to send one animal to the top of the mountain to ask the chief who lived there for he would remember the name of the tree. And they sent the hare for he was swift and would come back quickly. The hare bounded up the mountain in no time at all. And when he got to the top, the wind was blowing and there was the chief warming his hands by his fire. And the hare said, "Please, what is the name of the tree?" The chief replied, "The name of the tree is Oowangalema." The hare turned and ran down that mountain as fast as his legs could carry him. But he was running so fast that he didn't notice that there was a root crossing the path. And he tripped and fell and tumbled down the mountain banging his head as he went. When he

sat up at the bottom, the name of the tree had fallen right out of his head. All the way back he tried to remember. It was, "Walangamomo, no, no, Avlogomema, no, Wolangameso." But when he got to the foot of the tree, he had to admit that he had forgotten the name of the tree.

So the animals sent the gazelle, for she was both swift and sure of foot, and would not trip on a root. When the gazelle got to the top of the mountain, there was the chief warming his hands by the fire. And she called out, "Please, what is the name of the tree?" And the chief replied, "The name of the tree is Oowangalema." The gazelle turned and ran down the mountain, but she was running so fast she wasn't looking where she was going and she didn't notice a branch that was hanging low over the trail. And her antlers got stuck in the branch. She shook her head back and forth, and back and forth, and back and forth, and right and left, and back and forth, and right and left. And finally she freed her antlers from the branches, but she had shaken her head so hard, that she had shaken the name of the tree right out of her head. All the way down the mountain she tried to remember, but when she got to the bottom, all she could say was, "Uh…uh uh….uh." And that was no use at all. And the fruits were getting riper, and the animals hungrier.

And at last the lion said, "Let me try for I will not forget the name of the tree." The lion ran up the mountain in no time at all. And when he saw the chief he cried out, "What is the name of the tree?" And the chief replied, "The name of the tree is Oowangalema." The lion turned and ran down the mountain, and he didn't trip on the root, and he had no antlers to get stuck in the branches. But when he was about halfway down the mountain, he saw a cool, shady spot under a tree. And he was very hot, and

very tired, and he thought, "I will rest just for a moment in the shade." And so he lay down. But the breeze was blowing, and the bees were buzzing. And pretty soon…the lion fell asleep. When he woke up the sun was low on the horizon, the shadows were long. He realized he'd slept all afternoon. He ran, oh how he ran down that mountain but while he was running, he was thinking, "what was it?" And don't you know? He had slept the name of the tree right out of his head. When he got to the foot of the tree, he was too ashamed to admit he'd forgotten. And so he made up a name. "The name of the tree is Aglaglabobo," he said. But the fruits didn't fall. "Uh, no, no," he said, "it's Awoongalego, uh, uh, I mean Molengemalamamagemabolobebebo." But though he said names all evening, the fruits didn't fall and finally the animals said, "You're like the others. You've forgotten, and now we're going to die."

Just then, they heard a small voice, "Let me try." Do you know who it was? It was the tortoise. Oh how the animals laughed! They laughed, and they laughed. "If the swift hare, and the sure-footed gazelle, and the brave lion can't bring back the name of the tree, what makes you think you can, you old slowpoke?" they said. But the lion said, "Wait. We have all tried, and failed. It is only right that the tortoise, too, should have a chance to try."

And so, the tortoise set out. But before she left, she went to see her grandmother. She said, "Grandmother, what is a good way to remember a very difficult word?" And her grandmother replied, "You must say it over and over, without stopping, no matter what happens, my child." And so the tortoise made her way up the mountain. And when she got to the top, there was the chief warming his hands by the fire. "Please," said the tortoise, "what is the name of the tree?" "The name of the tree is Oowangalema."

Instead of saying thank you, the tortoise said, “Oowangalema,” and she turned and she began walking slowly down the mountain, saying over and over, “Oowangalema, Oowangalema, Oowangalema.” And when she came to the root where the hare had tripped, she said, “Oowangalema,” and she took the long way round. And when she came to the branch that was hanging low over the path, she simply said, “Oowangalema,” and she crept underneath for she was very small. And when she came to the shady spot where the lion had slept, although she was very hot and very tired, she said, “Oowangalema,” and she kept on going. And at last she came to the foot of the tree. The animals could barely lift their heads. “What is the name of the tree?” they whispered. “The name of the tree is Walan…ah, Melenge…ow.” Then the tortoise took a deep breath. “The name of the tree is Oowangalema,” she said. And when she said the name, the branches of that tree came down, down, down, until they reached the ground. And the fruits rolled off the tree and opened by themselves. And the animals leapt on that fruit, and they ate and they ate. And it was juicy like watermelon, and sweet like mango, and filling like banana. And they ate until their chins were dripping with juice and their paws were sticky. And when they had eaten their fill, they picked up the tortoise, and they walked her around and around the tree and they said, “We shall make the tortoise the queen of all the animals, for it is she who has brought back the name of the tree.”

The Wisdom Bird

King Solomon could answer any question. He could solve any problem. Even the birds talked about his wisdom. They flew all the way to Africa telling everyone, "King Solomon is the wisest man in the world." They even told the queen of Sheba, who was also very wise. Some say she was the wisest woman in the world.

When the queen heard about King Solomon she said, "I want to meet this clever man." She called together her servants, her warriors, and her nobles. She told them, "We are going to Jerusalem."

They sailed by ship across the Red Sea. Then they traveled by camel caravan through the Negev Desert. Finally, they reached the high gates of Jerusalem. Her servants sang and drummed. Her warriors danced and shook their spears. Her nobles brought forward gifts of gold and silver, spices, and incense, and the many wonderful creatures of Africa. But the gates stayed shut.

Finally, the queen called out, "I am the queen of Sheba. I have come to meet King Solomon." For a moment, everything was still and silent. Then, from inside the city, a hundred trumpets blew, the high gates of Jerusalem opened wide, and out came Solomon. "Great Queen," he said, "you have traveled so far and you have brought me so much. What can I give you in return?" "Teach me something important," she replied, "something worth all these gifts and all my time and trouble."

King Solomon invited her to sit beside his throne. She watched as he solved every problem that his people brought him. She listened as he read to her from his book, *The Song of Songs*. She asked him many questions and he answered every one. "Now," said Solomon, "have I taught you something worth all your gifts and all your time and

trouble?" She shook her head. "No," she said. "You have great knowledge, but show me what you can do with it." "Name anything," said Solomon. "If it can be done, I promise I will do it."

"Build me a palace out of bird beaks," she said. Everyone was shocked. That would take all the beaks of all the birds of the world. "I have promised," said Solomon, "so I must do it."

He led her to the top of the highest tower in the city. He called out to the birds of the north and the south, the east and the west. "Come to Jerusalem. Give up your beaks to me." Hour after hour, the sky grew darker and darker with beating wings. It grew louder and louder with chirps and caws, hoots and trills, until all the birds of the world had arrived, except for one: the hoopoe, a small, colorful bird with a long thin beak. "It has disobeyed me," said Solomon, and he called to the eagles and owls, the falcons and hawks, "search for the hoopoe. Find the hoopoe. Bring the hoopoe here."

They searched and found the hoopoe bird and quickly brought it back. The little bird begged Solomon, "Please do not punish me. I was on my way but I stopped to find you a gift. I found three gifts, three things you do not know. "King Solomon knows everything," the other birds called out. "How can a bird know more than the wisest king?" "Little hoopoe," said Solomon, "if you can teach me one thing I do not know, I will set you free."

So the hoopoe asked Solomon three questions. "Here's my first question," said the hoopoe. "What was made the longest time ago and meant to last the longest time from now?" Solomon answered easily, "It is the world and all its creatures. You birds were made at the beginning of time and meant to last till the end of time." He asked the

birds, “Am I right?” They all agreed. The geese and ducks, the swans and pelicans, the cormorants and cranes, “Oh yes, oh yes!” they said. Solomon thought, “The birds are meant to last forever, but I am changing them.”

“Here is my second question,” said the hoopoe. “What is so gentle, it is used to feed a baby, yet so strong, it is used to break through earth and wood, to build a home, and to fight off enemies?” Solomon answered easily, “A bird’s beak. Birds use their beaks to gently feed their young. Yet they also use their beaks to dig through earth and trees for food, to build their nests, and to protect their families.” Solomon asked the birds, “Am I right?” All the birds agreed. The parrots and woodpeckers, the crows and kingfishes, the hummingbirds and jays, “Oh yes, oh yes!” they said, and sadly lowered their beaks. Solomon thought, “Their beaks are so important. What will they do without them?”

“Here is my third question,” said the hoopoe. “What drop of water does not rise from the ground or fall from the sky?” Again, Solomon knew the answer, “A tear. It rises from an unhappy heart. It falls from a sad eye.” He asked the birds, “Am I right?” Again, they all agreed. The morning doves and meadow larks, the nightingales and chickadees, the peacocks and parakeets, “Oh yes, oh yes!” they said, and their tears began to flow. Solomon thought, “The birds are crying because I am taking away their beaks.” He felt so sad for them that a tear came to his eye.

“Great King,” said the hoopoe bird, “you have answered all my questions. I have failed.” King Solomon lifted the hoopoe onto his finger. “Little bird, you did not fail,” he said. “I knew the answers, but I did not understand what the answers meant. Now I do.”

Solomon called to all the birds. "Now I understand that you are important, and your beaks are important, and your tears are important. I will not hurt you or any creature just to show my power. I will not punish this bird of wisdom, and I will not take your beaks." What a celebration! Those millions of birds rose into the sky, soaring and swooping and calling out the happy news. Yet just as quickly, they returned and settled into silence, for Solomon had turned to Sheba.

"Great Queen," said Solomon, "I promised to build a palace of bird beaks. I have failed." The queen smiled. "You did not fail," she said. "I wanted you to teach me something important and you did. You taught me that it is better to break a promise than to do something that is wrong." "Will you free me from my promise?" asked Solomon. The queen shook her head. "Not yet," she said. "Then what do you want me to do?" he asked. "Think of a way to reward the hoopoe bird," she said, "for it has taught a king and queen, and it has saved all the birds of the world."

"You are so very wise," said Solomon to Sheba. "Let us reward this bird together." Together, Solomon and Sheba made a crown of gold. Wonder of wonders, as they placed it on the hoopoe's head, the gold turned into feathers. The hoopoe bird sang out in joy, "A crown! I have a crown of golden feathers!"

From that day on, every hoopoe bird was born with a crown of golden feathers. So it was, and so it is, and so the whole world can see and understand that no matter who we are we all have great things to learn, even from a little bird.

The King's Ring

There once was a village in Africa where hunger came for a visit. Why did hunger choose this village? We don't know, but it did. The crops died and the wells dried up. The cows gave no more milk. Hunger made itself at home. It sat in the sad eyes of the old people, the weak arms of the men and women who could no longer work, and the swollen bellies of the children.

There was one little girl in that village who thought, "I will not die. I will go searching for life." So she left that village. She walked and walked until she arrived at a village where people were bustling about, preparing for market day. There were stalls laden with squash and yams, fish and chicken. She went up to a man who was putting out some fish and asked for work. But when he saw her, he laughed. "How can you work?" he asked. "You can barely hold up your own head."

The little girl went from one person to the other, but the answer was always the same. "Look at you," the people laughed, "work? How can you work, bone bag, skeleton, swell-belly? You spoil the view. Get out of our town!" And they picked up sticks and stones and chased her away.

She went to another town, and another, and another, but always it was the same thing. People laughed and taunted her and chased her away. Finally, the little girl's legs gave out beneath her and she fell to the ground by the side of the road. As she lay in the dirt, she heard a voice. Looking up, she saw a tall man richly dressed in a fine red cloak, walking down the road and calling, "Hear ye! Hear ye! His Majesty the King has lost his favorite ring. It is made of gold. On it there are three snakes. The one in the middle has

a diamond in its mouth. A rich reward will be offered to anyone, man, woman, or child, who returns this ring."

Just then, the little girl saw something shining in the dirt by her hand. She picked it up. It was a ring. It was made of gold with three snakes on it. The middle one held a diamond in its mouth. Slowly, she stood up and walked all the way to the palace of the king. But when she got there, she saw the palace was surrounded by a huge wall and there was only one gate to get in. And blocking that gate stood a man. Now when I say tall, you must think tall as a tree. His legs were as thick as logs and at the end of his arms his fists bloomed like huge cabbages.

The little girl was frightened, but she bravely looked up at him and said, "Excuse me. I would like to be let in to see the king." The great man roared with laughter, "You think the king lets beggar girls into his court? Go away before I smash you with my fist!" "But I have found the king's ring," she said and opened her hand to show it to him. The gatekeeper scratched the scab on his cheek and smiled a nasty smile and leaned down to look her in the eye. "Sure, I'll let you pass through this gate, but on one condition: you must promise to give me half the reward the king will give you for returning his ring."

Did the little girl want to share her reward with him? No, but she could well see that she would not get through the gate otherwise. And thinking at least she would have the other half, she gave him her word. "And if I don't get my share, I'll crush you like a pumpkin," he snarled as he opened the gate. She passed through and he closed it behind her.

Once inside the gate, the little girl saw the palace was surrounded by fields of grain and gardens and grazing cattle and goats. She walked and walked up a great

avenue until at last, exhausted and starving, she arrived in front of the palace. It was a big square building with no windows and there was only one door to get in. And there standing in front of it was the doorkeeper. As much as the gatekeeper was huge, the doorkeeper was small. He was all dressed in black; black robe, black boots, black bracelets around his wrists. He looked right through her as if she weren't even there.

"Excuse me. I would like to be let in to see the king," said the little girl. The doorkeeper looked at her. "Look at you, huh, skeleton, moon belly, bag of bones. Go away before I feed you to my cat!" "But I have found the king's ring!" cried the little girl and she held out her hand to show him. The doorkeeper looked down at the ring and a greedy look came into his eyes.

"Well, well," he said, "so today is your lucky day, swell belly, and it's mine too because you must promise to give me half your reward before I let you through." "But I've just promised the other half to the gatekeeper. There will be nothing left for me." The doorkeeper picked her up by the collar and threw her down onto the ground. "I will make your skull into a flower pot," he hissed.

The little girl looked behind her. The road back was long and there was only hunger and death waiting for her there. So thinking she would like to see the king's palace once before she died, she agreed to give him half the reward and he opened the door and pushed her through.

She found herself in an enormous hall. At the end of the hall sat the king, surrounded by his counselors. As she slowly walked towards him, they all stopped talking and stared. She was so thin her bones went click clack as she walked. She knelt before the king and held out the ring. "I believe this is yours," she said. The king took

the ring and put it on his finger. It fit perfectly. He laughed out loud and said, "Little girl, you have earned your reward and never have I been happier to give one. Now what do you want? Do you want food? Land? Cattle? Gold and silver? Whatever you ask for is yours." There were many things that little girl wanted, but whatever she asked for, she would have to give to the gatekeeper and the doorkeeper and she didn't want to do that.

Then, she had an idea. "Do you promise to give me whatever I ask for?" "Of course, child," said the king. "Then all I want as a reward is for you to beat me one hundred times with the biggest, heaviest stick in your kingdom." "What?!" cried the king. "I never would've thought a little girl would ask for such a reward. Are you sure that is what you want, child?" "You gave me your word," she said, "and that is what I want." The king sadly turned to his guard. "Take her and beat her as she has asked since I gave her my word. But do not do it here, I cannot watch."

The guard grabbed the little girl by the arm and was about to pull her outside when she cried out, "Wait! This reward does not belong to me. It belongs to the gatekeeper and the doorkeeper because I promised to share it between the two of them," and she told the king the whole story. And when the king heard the story, he laughed and laughed until tears streamed down his face.

And when he was finished laughing, he called the two men. They stood looking down at their boots. "Is it true," said the king, "that it is to you I must give the great reward I offered this little girl?" "Yes, your majesty." "Then take them outside and give them their reward," yelled the king. And they were very surprised indeed when the

soldiers dragged them outside, pulled down their pants, and beat them each fifty times with the biggest, heaviest stick you have ever seen.

As for the little girl, the king said to her, "That was my reward for returning the ring. And now, I would like to give you a reward for bringing justice to my palace." So he kept her with him for many days, feeding her until she was strong again. And then, he sent her back to her village with wagons and wagons loaded full of grain and vegetables and cattle and goats and sheep and seeds to plant for the following year. And when the people of her village saw her coming, they welcomed her with open arms and together they chased hunger away from that place. And hunger did not come back to that village for seven times seven generations.

And if you don't believe me, you can go to that village. That little girl's granddaughter's granddaughter is still there. And she is the one who told me this story

Appendix I

Checklists for Retelling

The Wise Old Women- Retelling Checklist

Setting

I described where the folktale took place.	
I talked about the cruel lord and his declaration about old people.	
I talked about the young farmer, his aged mother, and what happened when she turned seventy.	
I talked about why the farmer brought his mother back home.	

Initiating Event

I described what happened when Lord Higa's warriors came to the village.	
I described the three tasks.	

The Young Lord's First Response

Badger

I described the cruel lord's reaction.	
I described the three attempts of the wise men to solve the tasks	
I described the cruel lord reaction to the wise men failure.	
I described the cruel lord second attempt to solve the tasks.	

The Young Farmer's Response

I described what the young farmer did when he heard about the threats.	
I described how the old women solved the tasks.	

The Cruel Lord's Reaction When the Farmer Came to him

I described the cruel lord's reaction when the farmer presented him with the tasks.	
I described the three good things that happen when the young lord realized that the old women solved the tasks.	

The Wisdom Bird Check List

I described the setting of the folktale. I described <u>how</u> Queen Sheba heard about King Solomon's wisdom. I described <u>why</u> Queen Sheba wanted to meet King Solomon. I described Queen Sheba's travel to Jerusalem. I described what Queen Sheba brought with her to meet the King. I described how King Solomon greeted Queen Sheba. I wrote King Solomon's question to the Queen. I wrote Queen Sheba's response. I described King Solomon's response to the Queen's question. I described why the Queen was unhappy with the King's attempts.	
I described the initiating event – The Queen's request of King Solomon.	
I described King Solomon's plan.	
I described the King's reaction when the hoopoe bird does not show up.	
I described the hoopoe's bird response when she saw how angry the King was.	
I described what King Solomon told the hoopoe bird when he heard about the gifts she had for him.	
I described all of the questions posed by the bird and all of the answers given by the King. I described all of the bird's reaction after each time King Solomon solved a riddle. I described what King Solomon thought after each time he answered a question.	
I described what the Hoopoe bird told the King after he answered all the questions.	
I described King Solomon's response to the bird.	
I described all of the birds' reaction when they were set free.	
I described what the King told the Queen after he set the birds free.	
I described Queen Sheba's reaction.	
I described the Queen's demand.	
I described how the hoopoe bird was rewarded.	

The King's Ring Checklist

I described the setting of the folktale.
I described why the girl left the village (initiating event).
I described the next village the girl arrived to.
I described the reaction of the villagers when the girl asked for work.
I described what happened to the girl when she went to the next towns.
I described what happened after the girl fell down.
I described the messenger's announcement about the king's ring.
I described how the girl found the ring.
I described the ring.
I described what happened when the girl arrived to the king's castle.
I described the man that blocked the gate to the castle.
I described the gatekeeper's reaction when the girl asked him to get inside and see the king.
I described the gatekeeper's reaction when he found out the girl had the ring.
I described why the girl decided to give the gatekeeper what he wanted.
I described What happened inside the castle gates.
I described the doorkeeper.
I described the doorkeeper's reaction when the girl asked him to get inside and see the king.
I described the doorkeeper's reaction when he found out the girl had the ring.
I described the girl's reaction to the doorkeeper's request.
I described what happened when the girl walked to see the king.
I described the king's reaction.
I described what the girl wanted for a reward.
I described the king's reaction to the girl's request.
I described the king's reaction when he heard the girl's story.
I described the end of the story.