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Examining the Effects of Sketch and Speak Intervention on Expository Discourse Utilizing SALT's ESS for Adolescents with Language-Related Learning Disabilities

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Examining the Effects of *Sketch and Speak* Intervention on Expository Discourse Utilizing

SALT's ESS for Adolescents with Language-Related Learning Disabilities

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Abstract

Purpose: The purpose of the current study was twofold: (a) to determine the distal effects of *Sketch and Speak* intervention on the use of taught note-taking strategies on a distal standardized expository task for adolescents with LLD when compared to pre-treatment; and (b) to determine the effect of *Sketch and Speak* intervention on the quality of oral performance on that distal expository task for adolescents with LLD when compared to pre-treatment. Oral rehearsal was not a formal research question, but independent use of this taught strategy was also examined. *Method*: Planning notes and oral explanations were obtained as part of a larger study. In the larger project, four students in junior high with LLD learned two types of note-taking strategies along with oral sentence formulation and rehearsal strategies to compose oral reports from novel informational texts, and then present those oral reports without use of notes. Pre- and posttest sessions included the standardized expository task in the current investigation. The standardized task involved making planning notes on a formatted notesheet similar to the notesheet used in treatment, and then using those notes to explain a familiar sport/game. The planning notes were scored using the investigator-designed notes scoring measure that involved four components: quantity, open/close/topic, format, and simplicity. The oral explanations were transcribed and scored utilizing the standardized holistic trait measure called the Expository Scoring Scheme (ESS). The ESS involved ten components: eight matching the planning notes categories (e.g. object of the game, rules, duration), plus terminology and coherence. Both the notes and explanation measures were independently scored by two researchers blind to pre/post status. Point-to-point inter-rater agreements for notes and report components were found to be satisfactory. The notes and explanation data were descriptively examined to determine changes from pretest to posttest which could logically be caused by transfer of taught note-taking and oral

practice strategies from the intervention. *Results:* One participant chose to use pictography notes in the transfer task at posttest. Three of the four participants demonstrated gains in simplicity of notes taken at posttest. None of the participants used the open/close/topic or bulleted note features. One participant implemented the taught note-taking strategy of pictography. No quantitative or descriptive gains were shown in the expository rubric scores for the oral explanations at posttest. *Conclusion:* Results of this study indicate that the taught note-taking strategy feature of simplicity emphasized in *Sketch and Speak* can transfer to a distal note-taking task involving familiar information. The pictography may also transfer. However, participation in *Sketch and Speak* does not appear to improve oral expository discourse as measured by the ESS while referring to planning notes. This study showed limited distal generalization of the taught strategies and raises questions about what tasks are suitable to show generalization of strategies involving learning, recalling, and using new information in expository discourse.

Introduction

Language-related learning disability (LLD) is an umbrella term that can encompass a wide variety of diagnoses that result or present with language related deficits. Disabilities that fall under this umbrella term include dyslexia, developmental language disorder and in some cases attention-deficit disorder (Alabbad et al., 2023). Students often demonstrate significant difficulty with comprehending passages, identifying key information within a passage, summarizing, and formulating oral presentations (Lundine & McCauley, 2016). These academic language difficulties emerge in the early school years and often persist into adulthood (McGregor et al., 2020).

Sketch and Speak intervention is intended to improve the ability of students with LLD to understand, recall, and express expository discourse from academic language texts. The current study, as part of a larger project, investigated whether the note-taking strategies and general benefit from repeated opportunities to formulate expository discourse using *Sketch and Speak* generalize to a standardized expository task involving explaining known information by examining performance at post-treatment as compared to pre-treatment (Ukrainetz et al., 2024d).

Sketch and Speak Intervention

Sketch and Speak is an intervention designed to improve a student's ability to effectively access the information in a text, gain an understanding of what it means, and use it to express coherent expository discourse. It teaches students to take helpful notes, and then formulate and rehearse oral sentences from the notes to facilitate the acquisition of language skills (Ukrainetz & Peterson, 2021).

As described in Ukrainetz and Peterson (2021), *Sketch and Speak* essentially involves "note an idea simply (in pictures or words), say it simply, and say it again" (p. 1359). This

process involves key aspects of learning information: repeatedly reducing, transforming, retrieving, expanding, and rehearsing ideas. *Sketch and Speak* teaches students to reduce statements from grade-level expository texts into succinct ideas, and transform the ideas into pictographs, which are iconic symbols representing an idea, and conventional brief written bulleted notes. Immediately following the creation of a note, the student then expands the idea noted into a corresponding oral sentence (paraphrased from the source text by the student with help from the clinician), which is then rehearsed. After all the notes are completed and the corresponding individual sentences are rehearsed, the student recalls all the sentences cued by their notes combined into an oral report. This oral report is then rehearsed to facilitate information synthesis into organized discourse in addition to immediate and delayed recall of information garnered from the reading.

Two distinct note-taking strategies are taught to participants during *Sketch and Speak*. These strategies of pictography and bullet notes are taught in paired sessions. In the first session, pictographs (pictos) are used to cue the student to formulate sentences and facilitate sentence rehearsal. In the second of the paired sessions, the student recalls the sentence they formulated and rehearsed from the pictograph and generates a brief bulleted note. The student then immediately rehearses the memorized sentence cued from the note. The paired session structure allows the student to focus on one note-taking strategy at a time and provides for twice the opportunity to practice sentence retrieval.

Sketch and Speak involves use of a formatted notesheet. The notesheet has concept categories labeled on the left (e.g. for animals, habitat, appearance, food) and notes space on right. This helps students understand the text information and promotes active learning by changing the order of information from the article to the report (Ukrainetz & Peterson, 2021;

Ukrainetz, 2024a, 2024b). Students identify memorable ideas from the provided text and then sort the information into categorically organized sections on the note sheet. After the student takes notes in each of the category boxes and rehearses associated sentences, the students can add opening and closing notes. These opening and closing notes are used to generate and practice an opening and closing sentence that help to unite the text into a complete unit of discourse authored by the student (rather than just a string of topically related sentences). Following this step, the entire report is rehearsed, resulting in a student-created fluent organized oral informational report based on their own notes.

Sketch and Speak can be adapted to fit different situations and fulfill various purposes so long as the core elements of simple notation and oral rehearsal remain (Ukrainetz 2024a, 2024b). After the student has learned the strategy set, the speech-language pathologist (SLP) can discontinue the paired session format and make other variations to the intervention, such as having students use only one notation format, giving the students their choice of notation format, using whisper rehearsal to unobtrusively practice when other students are there, presenting their oral reports to an audience, and turning their oral reports into written projects. Each of these variations has been part of Sketch and Speak in at least one study done to date and are explained further in clinical articles and chapters (Ukrainetz & Peterson, 2021; Ukrainetz, 2024a, 2024b). Studies evaluating Sketch and Speak have varied the number of paired sessions, activities in the subsequent sessions, and total length of intervention (Ukrainetz, 2019; Peterson et al., 2021; Peterson & Ukrainetz 2023).

An important part of Sketch and Speak is the alternative notation format of pictography. This notation strategy has been found be effectively implemented when used by students to plan narratives across a variety of age ranges and language abilities (McFadden, 1998; Ukrainetz,

1998). In these studies, student-generated pictography improved the length and quality of their

fictional stories compared to stories made from planning notes using writing or drawing. In

pictography note-taking, students create quick, easy sketches that cue them with "just enough"

information to recall associated material. This method of note-taking has been adopted by several

manualized narrative intervention programs used across grade levels (e.g., S. Gillam et al., 2020;

Spencer & Petersen, 2012). This strategy has also been successfully implemented for expository

discourse as part of the *Sketch and Speak* intervention, as will be explained next.

Sketch and Speak Research

Three studies have been conducted on *Sketch and Speak* intervention prior to the project

for which this study is involved. Ukrainetz (2019) was the first direct investigation of the

effectiveness of *Sketch and Speak*. In a group experimental study of 44 children in grades 4-6

with LLD, participants were assigned to groups balanced on multiple language and learning

features, then the groups were randomly assigned to a treatment or a control condition. Students

in the treatment condition received three sets of paired 30-minute sessions from their school SLP

using informational articles on unusual animals (Cassowary, Axolotl, Aye-Aye). Participants

were pre- and posttested on note-taking and giving an oral report from their notes on one of two

counterbalanced grade-level history articles (Apache Nation and Incan Empire) based on their

notes taken on a notesheet formatted the same as the treatment notesheet but using category

names suited to these history articles (e.g., shelter & transportation, preferred foods). The new

articles were read aloud to the students, then the students independently took notes from the

article and then gave an oral report from their notes. This was a proximal measure of

independent strategy use and resultant improvement in oral reporting. In a second posttest

session one to three days after the first, students were given back their planning notes and wrote

essays based on the notes.

       The results of Ukrainetz (2019) indicated that students that had received *Sketch and*

Speak intervention had statistically significant gains in the quantity and some quality features of

the written notes when compared to the control group, with effect sizes varying from small to

large. The post-treatment explanations of students in the treatment condition had more full

sentences, more openings/closings, more paraphrased sentences, and fewer extraneous

comments, and were rated as having better organization and fluency. In reflective essays

following treatment, the 11 SLP instructors in the study reported that they appreciated the

intervention as it provided a treatment for expository discourse. The SLPs indicated that the

students' knowledge and oral expression improved over time for the taught texts. It was reported

that the intervention procedure gave students a challenging yet achievable and engaging task, and

that the students were able to express themselves in an organized way through complete

sentences within oral reports. The SLPs also reported that their students demonstrated the ability

to recall their reports days after initially delivering it. The SLPs indicated that they thought the

gains their students achieved were attributable to the simplicity of the task, simple visuals,

reading their sentence aloud, practice, and visible progress. Nine of the 11 SLPs indicated that

they saw how the *Sketch and Speak* intervention was functional and could easily be integrated

into the mainstream classroom. This initial study showed potential for the *Sketch and Speak*

strategies to be used beneficially as SLP treatment tools and student learning tools.

       The second study investigating *Sketch and Speak* was conducted by Peterson et al.

(2021). A descriptive multiple case study was used to investigate an expanded version of the

treatment. The same process of *note an idea simply (in words or pictos), then say it fully then say*

it again was used on the same three treatment articles using the same procedures, then pre- and

posttested with the same articles but with the oral and written reports done in the same test

session. Other changes from Ukrainetz (2019) were: a different schedule of paired treatment

sessions, more emphasis on rehearsal, use of whisper rehearsal, varied activities for strategy use,

and measures of independent rehearsal and strategy awareness. Two fourth grade students and

one sixth grade student received sixteen 20-minute individual sessions of *Sketch and Speak* over

a period of nine weeks. Only half an article could be completed in these short sessions, so the

three rotations of the pictography and bulleted notes per article took four sessions per article.

Pretest and posttest measures included an analysis of the quality of note-taking, verbal

formulation, oral rehearsal, and strategy awareness. Results indicated that all three participants

made some gains on these proximal researcher generated measures.

    These two studies showed that SLPs could teach later-elementary grade students with

LLD the *Sketch and Speak* strategies, and the students would show some use and benefit from

them in proximal tests of independent use. They also showed the SLP instructors perceived that

their students could use the strategies effectively in treatment to learn information from

challenging articles and turn it into fluent, accurate, well-formed oral reports. However, to better

determine the utility of *Sketch and Speak* as independent student learning strategies, the research

moved to older students and added a distal measure of strategy generalization. In addition, the

researchers employed a time series experimental research design that allowed them to control

dependent, independent, and extraneous variables during treatment to investigate what the SLP

instructors in the prior studies had reported about student learning within the treatment sessions.

    Peterson and Ukrainetz (2023) conducted a multiple baseline across participants study

reporting on the efficacy of *Sketch and Speak* via teletherapy. Participants were three ninth grade

students with LLD. The purpose of the study was to determine the effects of *Sketch and Speak* on

note-taking and expressive expository discourse as measured by the ESS. Participants in this

study participated in three, six or nine baseline sessions. The number of sessions was determined

with data-based decision-making after the completion of three baseline sessions. In this study,

the participants took notes and used oral practice to learn about and present on an informational

article in the same paired session format as Ukrainetz (2019). Additional informational texts

were created on unusual animals, famous athletes, interesting objects, and historical peoples so a

new text could be used every baseline and for each paired treatment session. The participants

gave their oral reports without the presence of notes (called free-recall reports) to prevent the

false appearance of improvement due to directly reading notes that had been taken verbatim from

the text. Participants were tested on their note-taking and oral reporting in every baseline session

and treatment session on a combination of articles used in treatment and novel articles. At pretest

and posttest, participants completed the Systematic Analysis of Language Transcripts (SALT)

standardized expository task (Miller & Iglesias, 2020). The explanations were scored using the

SALT holistic trait scoring scheme. Results indicate that *Sketch and Speak* improved all three of

the students' note-taking and oral reporting when compared to baseline performance.

Additionally, all three participants in this study demonstrated gains in their notes and oral

explanations on the SALT expository task.

Distal Expository Task and Scoring Scheme

Before continuing to the larger *Sketch and Speak* research project description, the distal measure of independent strategy use employed in the current study will be explained. This was the SALT expository language sampling task and scoring scheme used in Peterson and Ukrainetz (2023).

Language sample analysis (LSA) is a process in which a language sample is collected from a student in order to assess their present level of performance. In younger children, LSAs are usually conducted on a conversational and narrative sample (Ukrainetz, 2024c). In older children, a LSA should also be conducted on their expository language as an emphasis is placed on non-narrative informational language skills in higher grades (Scott, 2020). While there is no single established procedure for eliciting a language sample, the well-known SALT software (Miller & Iglesias, 2020) has provided clinicians with semi-standardized computer-assisted procedures to collect and analyze language samples and compare to age-referenced data from preschool to high school.

One SALT task focuses on expository discourse. This task involves explaining a familiar sport or game with reference to planning notes (Miller & Iglesias, 2020). The explanations can be scored with investigator-designed codes or with a large number of standard measures, such as mean length of utterance, number of grammatical errors, or proportion of nonfluent statements (called mazes). The explanations can also be scored with a holistic trait measure called the Expository Scoring Scheme (ESS). All the standard measure data, including for the ESS, can be reported as raw scores or can be turned into standard scores by comparing to an age-reference database.

The SALT expository task is used with students in the later elementary to high school grades to evaluate expository discourse skills. Students are asked to explain a favorite sport or card/board game that they think they know a lot about. They are given time to think about the sport or game before explaining it. Students are given a planning sheet to take notes or draw a diagram to support them in their subsequent explanation of the sport or game. For the ESS, explanations are scored using a six-point holistic scoring scheme across 10 elements (Miller et al., 2019). The explanations are evaluated using a 0-5 scale on the following indicators, which are also categories on the note sheet: object, preparations, start, course of play, rules, scoring, duration, strategy, terminology, and cohesion. Heilmann and Malone (2014) suggest that the separation of these content and organization related categories allows for greater characterization of the disorder as well as the ability to outline the strengths and weaknesses of the student. Cohesion falls into the category of organization, while object, preparations, start, course of play, rules, scoring, duration, strategy, and terminology fall under content of the explanation. These scores can then be compared to a database designed to compare the expository discourse level of students with developmental language delays to their typically developing peers. The SALT manual indicates that although the scoring system is inherently subjective, with repeated exposure, a clinician can become reliable with themselves (Miller et al., 2019).

Heilmann and Malone (2014) examined the properties for the database of the SALT expository task. They collected 235 expository samples from typically developing students in grades 5, 6, 7, and 9. They examined a number of language measures, including the ESS. They examined the interrater reliability for those measures using rank order procedures with 12 randomly selected transcripts from a larger sample of 70 transcripts. Research assistants rescored the 12 randomly selected transcripts and found that interrater reliability was for morphemes, C-

unit segmentation, and mazes were all above 95%. The researchers determined that the degree of

difference in coding of the total ESS score was accounted for using Krippendorff 's alpha (α =

.81) (Krippendorff, 1980). They found that language performance, including on the ESS,

increased across age. They also found there were different results by topic (team, individual,

card/board game) but the differences were not large. From these results, Heilmann and Malone

concluded this was a valid, functional way to examine expressive expository language skills.

      Kay-Raining Bird et al. (2016) compared the performance of monolingual and bilingual

students across two age groups to evaluate whether the ESS could account for developmental

change. Three scorers evaluated the performance of 24 students, twelve 7–8-year-olds and

twelve 11–12-year-olds. Each of these age groups consisted of six monolingual English speakers

and six bilingual French speakers. Each of the children completed the SALT expository task in

English. Their explanations were scored using the ESS. Although the scores differed minimally,

the following components had statistically significant differences across age groups regardless of

the language group: object, starting, scoring, duration, and cohesion, as well as the total score.

The significant differences across these measures indicate that the ESS is sensitive to

developmental change. The investigators also examined the inter- and intrarater reliability of the

total and each component score. An interclass correlation coefficient calculation (ICC) was

completed to examine both inter- and intrarater reliability per category and as a total score. ICC

values were determined to have good reliability if they were equal or greater than .75. The

following ICC values for interrater reliability were reported: Object = .846, Preparation = .758,

Start = .737, Course of Play = .586, Rule = .540, Scoring = .505, Duration = .592, Strategy =

.730, Terminology = .529, Cohesion = .484, and Total = .771. Using the criterion established of

.75 or greater the only categories that achieved good reliability were Object, Start, Course of

Play, Strategy, and Total score. The following ICC values for intrarater reliability were reported:

Object = .831, Preparation = .687, Start = .841, Course of Play = .772, Rule = .576, Scoring =

.702, Duration = .593, Strategy = .872, Terminology = .613, Cohesion = .441, and Total = .893.

Using the same criterion as with interrater reliability Kay-Raining Bird et al. (2019) determined

the following categories to have good interrater reliability: Object, Start, Course of Play,

Strategy, and Total scores. From these results, the investigators judged that both inter- and

intrarater reliability was high for the total score on the ESS measure, the individual component

scores were found to be less reliable. Kay-Raining Bird et al. (2016) suggest that because the

total scoring results were reliable, clinicians should be able to use the SALT ESS to inform a

diagnosis. However, with the lower reliability of the individual category results, the investigators

concluded they should only be applied cautiously to determining treatment targets.

One final study that has investigated whether the SALT expository task is a useful part of

language sampling for older students for diagnostic and treatment decisions is Westerveld and

Moran (2011). Westerveld and Moran compared expository discourse of 61 children ages 6-7

years to 20 students aged 11 years. Through examining age-related differences and the level of

expository language performance, the authors determined that in a typically developing school-

aged population, the favourite game or sport task was useful for eliciting extended expository

discourse. However, Westerveld and Moran (2011) noted the high amount of individual variation

in language performance within age levels and that many of the older children had a similar

mean length of C-unit (MLC) to their younger peers. However, despite having a similar MLC,

the older children had more grammatically correct sentences and more fluent explanations of

information than the children in the younger group, so there were still some developmental

differences. This study examined current level of participant performance and did not use the

expository task to measure response to an intervention. This study did not evaluate the ESS, but it showed that this SALT language sampling task is a useful way to elicit expository discourse for younger and older children.

The Larger Study of *Sketch and Speak* Intervention

The fourth study completed on *Sketch and Speak*, Ukrainetz et al. (2024d), used the SALT expository task to test distal generalization like Peterson and Ukrainetz (2023). This is the larger project of which this study is part. In the larger project, four students in junior high with LLD participated in a multiple baseline across participants single-case study with pre/posttesting in the summer and then a descriptive-qualitative study in the fall of carryover into subject areas of science and social studies. Following baselines of varying lengths, students participated in ten 45-minute individual sessions of *Sketch and Speak* intervention with informational texts. Data was collected in baseline and treatment sessions on the quality of bulleted and pictographic notes, quality of free-recall oral reports, accuracy of short answer questions, and strategy awareness. At pretest and posttest, to examine proximal transfer of independent use, the same outcome measures were collected on a novel informational text. To determine distal transfer of independent use, at pretest and posttest, the SALT expository task was also administered.

Results of Ukrainetz et al. (2024d) showed that the four participants learned the pictography strategy, improved their written notes strategy, and had better quality free-recall oral reports at the end of the sessions. They showed awareness of the taught strategies but did not improve on the short answer content questions. The proximal measure of independent use showed improved note-taking, oral reports, and strategy awareness for three participants. One participant used pictography and one showed some independent rehearsal behavior on this proximal measure. These results added to the evidence base that *Sketch and Speak* can be

effective in treatment and the strategies can show some transfer to distal independent use measures.

Current Study

The results of the prior feasibility and early efficacy studies indicate that *Sketch and Speak* may meaningfully impact a student's ability to take notes and understand and produce expository discourse. Yet only one study thus far has investigated the extent to which *Sketch and Speak* improves expository language using a distal measure from the structure that was targeted during intervention. Further research is needed to examine how *Sketch and Speak* impacts outcomes such as distal measures of generalized use of note-taking and oral rehearsal and their effects on very different types of expository discourse. This study does so as part of the larger investigation described previously into the effects of *Sketch and Speak* on note-taking, oral rehearsal, strategy awareness, and oral reporting.

The purpose of this study was to examine whether *Sketch and Speak* intervention improves note-taking skills and performance on an expository language sample as measured by SALT ESS. The following research questions were investigated:

1. What is the effect of *Sketch and Speak* intervention on generalization of taught note-taking strategies for adolescents with LLD when compared to pre-treatment?

2. What is the effect of *Sketch and Speak* intervention on generalization of oral exposition for adolescents with LLD when compared to pre-treatment?

Method

Participants

The participants in this study were four students with LLD who had recently completed seventh grade and were invited to participate in the study by their current school SLP. An additional participant completed pretesting procedures but did not return for any additional sessions. In order to meet inclusion criteria for this study, the participants had to have an identified language-related learning impairment and an active IEP addressing reading, writing, or academic language concerns. Diagnostic categories could be Speech-Language Impairment or Specific Learning Disability. Participant demographics and characteristics are outlined in Table 1. The names used for the participants in this study are pseudonyms.

In order to further describe participants, the student's cognition, memory, and current language skills were evaluated using a battery of standardized assessments as part of the larger study. This testing battery consisted of the Kaufman Brief Intelligence Test (KBIT-2, Kaufman & Kaufman, 2004), Digit Span Forward and Backward subtests of the Test of Integrated Language and Literacy Skills (TILLS, Nelson et al., 2016), and the Core Language composite of the Clinical Evaluation of Language Fundaments (CELF-5, Wiig et al., 2013).

Table 1. *Participant Demographics and Characteristics*

	Dallin	**Allie**	**Riana**	**Jordan**	**Jack***
Age	13;9	13;3	14;2	12;8	12;10
Ethnicity	White	White	Hispanic	White	Hispanic
Sex	Boy	Girl	Girl	Boy	Boy
CELF-C	64	80	64	93	81
KBIT V	77	88	71	90	75
KBIT NV	105	97	92	66	72
TILLS FD	7	7	8	6	11
TILLS BD	3	6	6	8	9
Eligibility	LD/SL	LD/SL	LD	LD	LD/SL

Note: Age = age at pretest; CELF-C = Core Language composite of the Clinical Evaluation of Language Fundaments (CELF5, Wiig et al., 2013); KBIT V & NV = Verbal and Nonverbal composites of the Kaufman Brief Intelligence Test (KBIT2, Kaufman & Kaufman, 2004); TILLS FD & BD = Forward and Backward Digit Span subtests of the Test of Integrated Language and Literacy Skills (Nelson et al., 2016); LD = Specific Learning Disability; SL = Speech or Language Impairment * Jack = only completed pretesting.

Pre- and Posttesting

During pre- and posttest the Systematic Analysis of Language Transcripts (SALT; Miller & Iglesias, 2020) standardized expository task was administered using the standard protocol as outlined in the manual (Miller et al. 2019) with three minor modifications. In the standard administration, the examiner instructs the participant to provide an explanation of a game or sport of their choosing as if they are explaining it to someone with no previous knowledge of the chosen game or sport. The student is informed that they are expected to talk for at least five minutes. The examiner provides the student with the SALT note-taking sheet and instructs them to organize their thoughts using the list of provided topics. The student is told not to "waste time writing sentences" (Miller et al. 2019, p. 253) but to write key words in the provided boxes. The

student is told they can use the back of the note-taking sheet to make a graphic organizer or draw a diagram. The student is provided sufficient time to make notes within each topic. The student is then asked to provide their oral explanation and if the student indicates they have finished their explanation prior to the five-minute expectation the examiner is instructed to prompt the student by asking if there is anything else they would like to include in their explanation.

The first of the three modifications was that at pretest, instead of asking for a single favourite activity, the students were asked to select three games or sports that they thought they could speak on for five minutes. These games/sports were written on three separate cards. The student was asked to randomly select a card at pre- and posttest to reduce the risk of the student picking the game or sport they know the most about at pretest and choosing one they know less about at posttest based on comfort level. The second modification was that the participants were told that they could take notes "in words or pictures." The third modification to the standard instructions was that the students were explicitly told that they could review their notes prior to delivering the explanation. Though this step is not forbidden in the administration of the SALT expository task, it is not explicitly stated.

Pre- and posttest procedures were administered by an experienced SLP researcher as part of the larger study using the SALT expository task and the ESS (Peterson & Ukrainetz, 2023). This member of the research team had previously completed the SALT ESS online certification (SALT, n.d.). The certification provided the administrator with knowledge sufficient to accurately administer the ESS task.

Following SALT expository task procedures, a planning note sheet was provided to each participant. The note sheet consisted of two columns and 10 categories. The tester read aloud each category label and provided an explanation of each category. The participants were allotted

five minutes to fill out the note-taking sheet provided by SALT (Appendix A). The student was

then asked to explain the game or sport for at least five minutes using their notes. The entire

procedure, including making the planning notes, was video and audio recorded.

Testing Fidelity

I developed a procedural fidelity checklist to assess the inclusion of key elements within

the pre- and posttest administration. This checklist, consisting of 16 features (Appendix B), was

made to reflect the procedures outlined in the SALT administration guide and testing

modifications made for this study. Procedural fidelity ranged from 88-100% across the nine

samples collected with an average of 93% across all pre- and posttest administrations of the ESS.

SALT Expository Task Notes

Notes Scoring and Training Procedures

Student notes were taken on a blank copy of the note-taking sheet provided by SALT

(Miller et al., 2019). The notes are not evaluated in the SALT task, so the scoring procedure

developed by the research team for the current larger project was used. This scoring procedure

had been utilized on all participant notes collected at baseline, during treatment, and pre/post

note scoring. Scoring on the notes was carried out by myself and an RA completed reliability

scoring. We both had previously completed training on the scoring method and practice scoring

on data separate from those included in this study (Peterson & Ukrainetz, 2023). Both the RA

and myself had done the notes scoring for the larger study, so we were experienced in this

scoring procedure. During training, we read the established scoring procedures and

independently applied them to pre-existing data used for training. We then discussed differences

in scoring, regardless of the effect on reliability, and then scored additional pre-existing data to

improve reliability before beginning to score those data relating to this study.

The notes were evaluated on four features: Quantity, Open/Topic/Close (OTC), Format, and Simplicity. I led the pre- and posttest scoring procedure for the notes collected during the distal expository measure on the SALT expository task. We were blinded to whether the data came from a pre- or posttest data collection session. File names were blinded to myself and the reliability scorer by my mentor. Files were named by participant ID and the sport/game being explained. Following the completion of scoring, the files were unblinded.

The Quantity score directly reflected the number of notes located on the note sheet. The participant was awarded one point for every note on the page. Longer written notes or notes linked using the word "and" were counted as one complete thought. Pictographic notes with multiple elements were determined to be one idea and therefore one note. Multiple notes were identified when they contained separate bullets or were distinguished by large spaces.

Open/Topic/Close Notes were typically found above or below the main category boxes provided on the note sheet. The purpose of these notes was to cue the student to produce opening, closing, or topic statements. A student could achieve a maximum score of three in this category for the inclusion of all three elements.

For Format, one point was awarded for each note that used either a bulleted or pictographic note format. To be considered a bulleted note, the idea had to be preceded by a dash or a dot. Students were awarded a point for the inclusion of a pictographic element for a single or multi element representations.

Both bulleted and pictographic notes were evaluated for Simplicity. Bulleted notes were considered to be simple if they included fewer than five words or were slightly longer but considered telegraphic. In order for a pictograph to be considered simple, the image had to be a simple sketch with "just enough" detail to be representative of an idea within the article but not

take any amount of prolonged drawing or sketching time. The student was awarded one point for each note deemed to be simple.

Scoring Reliability

Reliability scoring was completed on all SALT expository task notes (N = 9). I acted as the primary scorer and a second RA scored for reliability. Reliability of the scores on the notes was conducted using an independent session-blind point-to-point agreement procedure. This means that I checked the occurrence of each feature within the notes to determine if the reliability scorer and I agreed on for which note the participant was receiving each point within a category. Notes were evaluated on the following categories: Open/Topic/Close, Quantity, Format (bulleted or pictographic), and Simplicity. The mean independent session-blinded point-to-point inter-rater agreement was determined to be 87-95% across participants. Discrepancies in Simplicity were noted (75% agreement). This discrepancy was attributable to different interpretations of telegraphic notes taken by Jordan. In this case, the reliability scorer and I agreed only on 5/10 scoring opportunities for simplicity. The results from Jordan's notes were still included in overall calculations because the other scoring features were determined to be reliable.

SALT Expository Task ESS

ESS Scoring and Training

Sport explanations were scored using the SALT ESS Scoring rubric (Miller et al., 2019). I was the primary scorer, and had assistance from an RA. We both completed the ESS training through the SALT education system (SALT, n.d.). Following the completion of our ESS certification, the scorers then completed training using data from a previous study (Peterson & Ukrainetz, 2023). The rubric provided by SALT consists of 10 categories which are scored on a

ranking system of 0-5 (Appendix C). The ten categories consist of course of play, rules (and penalties), scoring, terminology, and what SALT calls cohesion (for more on this, see Discussion). A second RA and I assigned scores to two explanations as a scoring team. We then scored two explanations independently and met together to discuss scoring differences. We then scored two additional practice files and met to discuss differences. Any disagreements were resolved through consensus. Once the training process was completed, we used the ESS (Miller et al., 2019) to evaluate the explanations provided at pre- and posttest by the participants.

ESS Scoring Reliability

Reliability for the participants' explanations was evaluated using a session-blind holistic trait scoring. This means that each of the ten categories identified on the ESS (Miller et al., 2020) was evaluated on a scale of 0-5 and reliability was examined for each trait and not on where they occurred during the explanation. Plus or minus one procedure was determined to be "essential agreement." SALT suggests the use of a plus or minus one procedure for determining reliability during the completion of the virtual training (SALT, n.d.). File names were blinded to myself and the reliability scorer by my mentor. Files were named by participant ID and the sport/game being explained. Following the completion of scoring, the files were unblinded. Essential interrater reliability for the explanations was determined to be within 90-95% per category with the exception of explanations completed by Allie which received 75% interrater reliability.

In review of the reliability outcomes, I, as the primary scorer noticed discrepancies regarding factual errors in explanations provided by Allie which were initially missed by the reliability scorer. The SALT ESS rubric indicates that factual errors should be marked down on the scoring rubric in the category in which the error was made. As the primary scorer, I redirected the reliability scorer with instructions to pay particular attention to factual accuracy

surrounding the games/sports used in all the participants' explanations. The reliability scorer

revaluated the explanations provided by all participants and adjusted the scores accordingly. The

primary scorer then rechecked the reliability for all explanations. Reliability was not found to

improve following this rescore.

<div align="center">**Results**</div>

Performance on the ESS tasks were examined and are described in detail for all four

participants. The data that will be examined consist of scores from the researcher-designed note-

taking rubric scores and the total and component ESS obtained at pretest and posttest.

SALT Expository Notes

Dallin

At posttest on the SALT expository task, Dallin had 7 interpretable pictographic notes

and one brief strategically designed written note of letters and a symbol (A & B for the two

teams). This contrasts with pretest where he made all written notes which were primarily

illegible. At pretest, Dallin was awarded 9 points for note quantity and 9 points for simplicity. At

posttest Dallin was awarded 8 points for quantity and 7 points for simplicity. Dallin did not

demonstrate the use of opening, topic, or closing statements. Results are reported in Table 3.

Table 3. SALT *Expository Note Results by Participant*

	Quantity-Pre	Quantity-Post	Format-Pre	Format -Post	Simplicity-Pre	Simplicity-Post	OTC-Pre	OTC-Post
Dallin	9	8	0	7	9	7	0	0
Allie	8	9	0	0	1	1	0	0
Riana	8	9	0	0	3	9	0	0
Jordan	8	10	0	0	3	9	0	0

Note: Quantity = note quantity; Format = number of bulleted or pictographic notes; Simplicity = points awarded for simple pictos or short, simple phrases; OTC = opening, topic, and closing statements; Pre = pretest; Post = posttest

Allie

At pretest and posttest, Allie provided only written notes. At pretest, Allie was awarded 8 points for note quantity and 1 point for simplicity. While at posttest Allie was awarded 9 points for quantity and 1 point for simplicity. Allie's notes were long sentences at both testing points, however, at posttest, she did drop some unnecessary pronouns (they, it). Allie did not demonstrate the use of opening, topic, or closing statements. Allie did not demonstrate independent use of the taught note-taking format strategy.

Riana

At both pretest and posttest, Riana provided only written notes. At pretest, Riana was awarded 8 points for note quantity and 3 points for simplicity. At posttest Riana was awarded 9 points for quantity and 9 points for simplicity. The improvement in Riana's notes was evidenced by a transition from longer sentences containing whole ideas to shorter telegraphic phrases that provided cues to recall the larger idea. Riana did not demonstrate the use of opening, topic, or closing statements, or the use of taught note-taking strategies. Riana demonstrated independent simplification of her notes, but not the other taught features.

Jordan

At both pretest and posttest, Jordan made only written notes. At pretest, Jordan was awarded 8 points for note quantity and 3 points for simplicity. At posttest Jordan was awarded 10 points for quantity and 9 points for simplicity. Jordan's note simplicity improved to short, telegraphic phrases at posttest. Notes often consisted of 1-5 word phrases that communicate the main message of the idea noted. Jordan did not demonstrate the use of opening, topic, or closing statements. Jordan demonstrated independent simplification of his notes, but not the other taught features.

SALT Expository Task ESS

Dallin

On his pretest explanation using the SALT Expository task, Dallin achieved an overall score of 9 out of 50 possible points across ten categories. Dallin was awarded 1point for explaining game preparations, 1 point for explaining the course of play, 1 point for including a description of the rules, 1 point for explaining the scoring system, 3 points for inclusion of strategies to win, 1 point for terminology, and 1 point for cohesion.

At posttest, Dallin's explanation had an overall score of 8. He scored 1 point for each of preparations, start of game, course of play, rules and procedures, an explanation of scoring, strategy, terminology, and cohesion. Results are reported in Table 4. This shows that no gains were made on the distal Expo task as measured by the ESS following treatment.

Table 4. *SALT Expository ESS Results by Participant*

	Dallin	Allie	Riana	Jordan
Object-Pre	0	2	1	3
Object-Post	0	3	0	1
Prep-Pre	1	2	1	3
Prep-Post	1	1	0	1
Start-Pre	0	2	0	5
Start-Post	1	4	1	1
Course-Pre	1	5	1	1
Course-Post	1	2	1	0
Rules-Pre	1	2	0	0
Rules-Post	1	2	1	2
Scoring-Pre	1	2	1	1
Scoring-Post	1	1	0	1
Duration-Pre	0	1	0	1
Duration-Post	0	1	0	3
Strategy-Pre	3	1	2	1
Strategy-Post	1	3	1	1
Terminology-Pre	1	1	1	0
Terminology-Post	1	1	0	0
Cohesion - Pre	1	4	1	3
Cohesion-Post	1	1	1	3
Total Score - Pre	9	22	8	18
Total Score - Post	8	19	5	13

Note: Prep = preparations; Course = course of play; Pre = pretest; Post = posttest

Allie

At pretest, Allie achieved an overall score of 22. Allie was awarded 2 points for the inclusion of the object of the game, 2 points for preparations, 2 points for explaining the start of play, 5 points for the course of play, 2 points for rules, 2 points for scoring procedures, 1 point for duration, and 4 points for cohesion.

At posttest, Allie scored 19 total points. With points awarded in the following areas: 3 points for the object of the game, 1 point for preparations, 4 points for the start of play, 2 points for the course of play, 2 points for the inclusion of the rules, 1 point for a description of scoring, 1 point for an explanation of game duration, 3 points for strategies, 1 point for terminology, and 1 point for cohesion. An analysis of Allie's results on the Expo task indicates that no gains were made in the participant's expository skills following treatment as measured by the ESS.

Riana

At pretest, Riana achieved an overall score of 8. Riana was awarded the following points in the corresponding categories; 1 point for object of the game, 1 point for preparations, 1 point for course of play, 1 point for scoring, 2 points for strategy, 1 point for terminology and 1 point for cohesion.

At posttest, Riana received an overall score of 5. Riana received 1 point for start of game, 1 point for a description of the course of play, 1 point for inclusion of rules, 1 point for strategy, and 1 point for cohesion. These results indicate that Riana made no observable gains in expository discourse following treatment as measured by the ESS rubric.

Jordan

At pretest, Jordan achieved an overall score of 18. Jordan was awarded 3 points for the inclusion of the object of the game, 3 points for preparations, 5 points for the start of play, 1 point for a description of the course of play, 1 point for a description of scoring, 1 point for explaining the duration, 1 point for including strategies, and 3 points for cohesion.

Jordan had an overall score of 13 at posttest. Jordan received 1 point for the inclusion of the object of the game, 1 point for preparations, 1 point for explaining the start of play, 2 points for rules, 1 point for a description of scoring, 3 points for a description of duration, 1 point for inclusion of strategies, and 3 points for cohesion. A comparison of Jordan's scores at pre- and posttest show no evidence for gains in expository discourse as measured by the ESS rubric.

Discussion

This study examined the effects of *Sketch and Speak* on generalization of taught note-taking strategies and quality of expository discourse evaluated using the ESS for adolescents with LLD after treatment compared to before treatment.

Sketch and Speak is a contextualized language intervention that involves teaching students to understand ideas from informational articles and express them in fluent, well-formed oral reports. Students are taught a strategy combination of note-taking and systematic oral sentence formulation and rehearsal. Note-taking was taught using the two distinct strategies of pictography and bulleted notes. In pictography, students were instructed on taking short, simple iconic notes that would provide them with sufficient cues to formulate and recall a rehearsed sentence. Bulleted notes were taught to consist of short words or phrases containing "just enough" to promote the production and rehearsal of an oral sentence. This study examined whether the four adolescent participants with LLD independently applied the taught note-taking format to a distal standardized measure. The measure used was the SALT expository task of

writing planning notes then using them to explain a familiar sport or game.   Three study participants showed improvements in note-taking from pretest to posttest yet did not show improvements on the expository distal outcome.

Distal Use of the Note-Taking Strategy

The results of this study on note-taking align with previous research on note-taking (Peterson & Ukrainetz, 2023). This study adds to the evidence base that *Sketch and Speak* meaningfully improves a student's ability to take notes and thus, access the information contained in expository texts. Research has found that note-taking can have an impact on a student's ability to understand what they read (Faber et al., 2000).

Three students demonstrated improved simplicity in their written notes on the posttest measure when compared to pretest. Gains in simplicity were observed as shorter sentences and phrases within written notes for two of the participants. One participant, Allie, was not scored as having reduced simplicity because she continued to write long sentences, but she did eliminate some unnecessary pronouns. In her case, her writing was very clear and legible, so she may not have seen the need to write *quick and easy* short notes.

At posttest, Allie did not demonstrate independent use of the taught note-taking format strategy. This could be attributed to a lack of need to further organize her notes as Allie primarily read the long notes verbatim and then verbally added relevant information following the idea represented in the note. Additionally, Allie may not have included the use of taught note-taking strategies because her writing was well organized, legible, and often separated by periods so it is possible that she may have been able to easily identify separate ideas without the use of an additional strategy.

One participant, Dallin, switched to the new visual strategy of pictography. In Dallin's case, points for simplicity were awarded when pictographs appeared as simple sketches that could be completed quickly. Dallin demonstrated consistent use of pictography in the distal expository task. In addition, the only written note he had reflected what he had learned in treatment by strategically using letters and symbols (A&B) instead of trying to write largely indecipherable notes as he did at pretest. This logically suggests a treatment effect as neither Dallin's pretest nor baseline notes consisted of pictographic elements.

There were other elements of the taught note-taking strategy that did not show up on this distal measure. One was starting each note with a bullet mark to indicate it was just a quick and easy note, not a full sentence with correct punctuation and spelling. That reason for using the bullet may not have been salient to the students. The bullets also helped separate multiple items within a box. However, the students mostly wrote just one note per category, so the bullet separator was not needed.

Another set of taught note-taking features was adding topic, opening, and closing notes. The SALT planning guide did not have a topic line to fill in, or even space to add it. Since this task was just about explaining a familiar sport and not giving a formal oral report on it, and there was no space to add those parts, it is reasonable they were not used either.

In sum, the layout and task purpose may have worked against the students using some of the taught note-taking strategies. However, strategy generalization of simplification of written notes and use of the novel strategy of pictography occurred for all but the strongest writer.

SALT Expository Task ESS

 The students gave sport or game explanations from their notes. In this study, the four participants did not demonstrate gains on this distal expository task. Expository discourse samples were collected at both pre- and posttest using the SALT ESS measure. In this task, the student provided an explanation on a selected sport after filling out a provided note-taking sheet. This explanation was then evaluated using the SALT ESS rubric (Miller et al., 2019). The explanations were transcribed by myself and an RA. We awarded each transcript a score from 0-5 on the following categories: object, preparations, start, course of play, rules, scoring, duration, strategy, terminology, and cohesion.

 While the students involved in this study demonstrated improvements in their note-taking, no gain was observed in their oral explanations. At both pretest and posttest, participants' explanations in the SALT Expo task consisted of brief, incomplete descriptions, limited use of specific terminology, low coherence, and short length.

 At pretest, Allie, Riana, and Jordan appeared to read their written sentences to facilitate their oral explanations. At pretest, Dallin appeared to have difficulty reading his limited personal notes and using them to create an oral explanation. At posttest, Allie and Jordan appeared to utilize their notes to cue them on the information they were to include in their reports and expand on what was written. Riana appeared to read her notes and provide very little expansion on the information she presented. Examples of notes taken, and excerpts of oral explanations can be viewed in Table 5. The use of simplified notes did not appear to benefit or hinder the students in their oral explanations.

Table 5. *Note Examples and Excerpts from Posttest SALT Expository Task*

	Notes Taken	**Corresponding Report Excerpts**
Allie	Object: "You have to shot the ball in your opnits basket as many more time as you can"	C You have to shoot as many (ba* ba*) UH the ball in the basket of the other opponents basket because that's your goal. C And you have to do as many as you can before the (t*) buzzer goes off cause there/s a few rounds or quarters.
Riana	Rules: "Don't push or kick." Duration: "whatever score it ends at"	C And don't push or kick. C And whatever score it ends at.
	Strategies: "playing fair"	C And playing fair
Jordan	Duration: "10 to 1 hour"	C How long the contest like goes on for is like usually an hour. C But different if like if you are a professional it could go on for a couple hours.
	Course of Play: "anyplace"	C Um you can play any place if nobody's in that spot. C You can take it and then play from there really.

Note: Course of play, Duration, Rules, and Start indicate the box on the note sheet where the student recorded the note. C = C unit segmentation. Spelling errors are reflective of the notes the participant recorded on the provided note-taking sheet.

At posttest, Dallin demonstrated increased ability to independently cue the recall of

information through the use of pictography. Dallin expanded on the pictographs he had drawn

and created sentences based on his simple graphic notes. The following excerpt shows the

sentences Dallin produced at posttest based on the pictographic notes in Figure 1.

C We make a touchdown to get points.

C And they cannot be disrespectful to the refs.

Figure 1. *Dallin's Posttest Pictographic Notes*

What to Talk About
When Explaining a Game or Sport

Topic	What's Covered	Notes
Object	What you have to do to win	
Preparations	Playing Area and Setup Equipment and Materials What players do to get ready	
Start	How the contest begins, including who goes first	
Course of Play	What happens during a team or player's turn, including any special plays, positions, or roles, both offensive and defensive	
Rules	Major rules, including penalties for violations	
Scoring	Different ways to score, including point values	
Duration	How long the contest lasts, including how it ends and tie breaking procedures	A and B
Strategies	What smart players do to win, both offensively and defensively	

Please use the backside of this page for an optional diagram or graphic organizer, or for additional notes.

The topic of the sport/game explanation appeared to have a large impact on the student's ability to generate an oral report. When students drew a card with a sport or game, they indicated they were less familiar with, the student demonstrated difficulty creating notes, generating corresponding sentences, and providing longer reports. While SALT calls this the "favourite" game or sport task, the use of drawing a previously selected sport or game off of a randomly selected card more closely illustrates difficulties that practicing clinicians may encounter if using this task multiple times to monitor progress. Students may not be familiar multiple games or sports. Alternatively, students may think they know enough about the chosen sport or game, however they may experience difficulty when asked to explain the intricacies of the sport. In both of these situations, a student may provide an explanation that does not accurately reflect the student's current expository discourse skills. The barrier of lack of familiarity with a selected sport or game is illustrated in this example from Riana's posttest below. At pretest, Riana had indicated that basketball was a sport she was able to discuss for five minutes. However, after beginning her explanation, Riana indicated that she was less familiar with the chosen sport than she had originally thought.

C Um and when it starts it depends on what the coach says.

E Okay.

C I don't know anything about basketball anymore if I am honest.

Students were required to provide a note in each in each categories' corresponding box, no pattern emerged to suggest that one category was more difficult for students to generate notes in. Additionally, the ESS rubric indicates that inaccurate information results in a lower score than what may have been assigned to similarly detailed accurate information. This suggests that if a

student was providing information on a less familiar topic, there would be an increased number of inaccuracies, resulting in lower performance on the ESS rubric.

Strong interrater reliability was difficult to achieve across the SALT ESS. Reliability calculations using exact holistic trait scoring did not lead to sufficient reliability for each category or for the total score. As a result, a plus or minus one point procedure was implemented. Fortunately, this scoring method is an acceptable variation for the holistic scoring of both oral reports and written essays (Gillam & McFadden, 1994). SALT also suggests the use of plus or minus one point procedure for reliability during the ESS online training (SALT, n.d.).

Comparison with Previous *Sketch and Speak* Research using SALT ESS

The finding of lack of improvement contrasts with Peterson and Ukrainetz (2023), who found gains in student performance on the SALT ESS outcome. Independent oral rehearsal was not examined in Peterson and Ukrainetz (2023), but perhaps those older students did it.

It is possible that the lack of gains in the current study was due to a lack of oral rehearsal. Videos of the participants were informally examined to identify the use of oral rehearsal strategies during both note-taking and note review. The students were not observed to participate in oral rehearsal during the completion of the SALT expository task at pretest or posttest. This lack of rehearsal at posttest may contribute to the lack of gains in their explanations.

One possible contributing factor to the lack of rehearsal is that SALT expository task allows the students to keep their notes to refer to them during the sport/game explanation. Allowing the participants to do this means that, if they write full sentences, they are able to read them aloud during the explanation task. This ability to potentially read these preformulated sentences logically reduces the need for the participant to participate in oral rehearsal. However,

students also referred to their notes for their sport and game explanations in Peterson and

Ukrainetz (2023), so that also does not account for the difference.

Another difference from Peterson and Ukrainetz (2023) is about reliability. Peterson and

Ukrainetz did not conduct an inter-rater reliability check while this study did one at a high level

of control with independent scorers blinded to pre/post status of the reports. This study achieved

a satisfactory level of reliability even for the component categories. This suggests that the total

score resulting from adding these components should be dependable, which is consistent with

other studies reporting ESS reliability (Heilman & Malone, 2014; Kay-Raining Bird et al., 2016).

A final difference between this study and Peterson and Ukrainetz (2023) is that those

students were two years older. The age range for these two studies was moved up from the later

elementary grades used in Ukrainetz (2019) and Peterson et al. (2021) to improve strategy

awareness and independent use. Perhaps high school students benefit more from *Sketch and

Speak* for explanations of familiar sports and games. Despite their LLD, the three high school

students in Peterson and Ukrainetz (2023) seemed to be quite capable learners as demonstrated

by how well they managed the technology at their end of this study that was delivered fully

remotely, through online telepractice.

Limitations and Future Directions

Although the larger study of Ukrainetz et al. (2024) included a multiple baseline design

which provides experimental control and accounts for multiple threats to internal validity, this

study only examined pretest and posttest data from that study, and therefore causal inferences

between the intervention and the outcome cannot be made with confidence.

There were several additional limitations to this study. One limitation was that

maintaining motivation of the participants across the duration of the study proved to be difficult.

The clearest case of this was Jordan who had to go through eight baseline sessions before the ten

treatment sessions. At the beginning of the study, Jordan said he was only doing it "for the

money." He continued to make comments like that in the sessions. This decreased motivation

appeared to have a significant impact on Jordan's level of effort and likely had a negative impact

on his SALT ESS outcomes due to an observable reduction in effort.

Another limitation was that the SALT expository task was only about card games and

team sports. This restriction on content has the potential to impact student performance on the

outcome measures if they do not have an interest, exposure, or a well-developed understanding

of games or sports.

Finally, one of the SALT ESS rubric categories is identified as cohesion. SALT defines

this outcome as following a logical order, the complete coverage of one topic before

transitioning to another, and smooth transitions between the topics (Miller et al., 2019). These

descriptors more accurately define coherence (Ukrainetz & Gillam, 2024). Cohesion is more

accurately defined as the use of linguistic elements to link sentences together and create meaning

for a reader (Ukrainetz & Gillam, 2024). The confusion of these terms may lead to

misinterpretations by clinicians.

Future research initiatives into *Sketch and Speak* could examine teaching *Sketch and*

Speak in a classroom setting to support note-taking and expository discourse for all students in a

group experimental design. Use of this design would allow researchers to examine small effect

sizes that are not observable in a small sample pre/post comparison. Completing the intervention

in the classroom setting might further increase generalization. A smaller change could be to

examine degree of transfer of taught skills to an explanation of an unfamiliar informational

article. This would reduce the knowledge barrier that was identified when using the distal

expository task. This barrier would be avoided by eliminating the need for background knowledge and understanding of a sport or game by having the student demonstrate use of expository discourse on an unfamiliar informational text.

Conclusion

The current study answered the primary research objectives of whether *Sketch and Speak* intervention improves independent use of note-taking and performance on a distal expository measure for four adolescents with LLD. The results of this small sample descriptive study indicate that the taught note-taking strategies taught in *Sketch and Speak* – simplified written and pictographic notes – may be used by adolescents with LLD. However, results indicate that participation in *Sketch and Speak* may not generalize to improved expository discourse, as evidence by performance on the SALT expository task. An evaluation of the SALT ESS indicates that adequate interrater reliability is achievable when using the plus or minus one procedure recommended by SALT. Results suggest that performance on the SALT ESS may be cautiously used to evaluate student's expository discourse skills and monitor progress. A caution about the findings of this descriptive study is that further research in a different research design is required to generate causal inferences between the treatment targets of *Sketch and Speak* and the outcome measures, plus to make statements about generalizing the findings to the population of adolescents with LLD. In conclusion, this study provides further evidence that *Sketch and Speak* may have a meaningful impact on a student's independent use of taught note-taking strategies and thus, their ability to access important information within an informational text.

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Appendix A

What to Talk About
When Explaining a Game or Sport

Points	What's Covered	Notes
Object	What you have to do to win	
Preparations	Playing Area and Setup Equipment and Materials What players do to get ready	
Start	How the contest begins, including who goes first	
Course of Play	What happens during a team or player's turn, including any special plays, positions, or roles, both offensive and defensive	
Rules	Major rules, including penalties for violations	
Scoring	Different ways to score, including point values	
Duration	How long the contest lasts, including how it ends and tie breaking procedures	
Strategies	What smart players do to win, both offensively and defensively	

Please use the reverse of this page for an optional diagram or graphic organizer, or for additional notes.

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Appendix B

ESS Administration Checklist

Participant: Session: Instructor: AP   Scorer:

Y/N	Treatment Session Elements	Hit/Miss/Comments
	1. Student selects a sport card. 2. Inform the student they will tell you everything they need to know how to play the sport. 3. Place the planning sheet in student view 4. Say that the student can use either side of the planning sheet and take notes using key words or drawings in any order. 5. Say that they are to explain an idea from each category on the organizer. 6. Read aloud each note category and say what it means. 7. Assure student it is okay to not remember everything about the sport or game, just do the best they can. 8. Allow the student time to take notes. 9. Video recorder going for entire period to view oral practice during and after notes creation. 10. Tell the student they can look at their notes while they talk or leave notes in student view so that student is aware they can be used during report. 11. If the student does not take notes, prompt student to include a note in each category. DO NOT teach or tell the student what to write. 12. Tell the student they will do all the talking and that the examiner will listen. 13. Tell the student that they can take as much time as they need for the explanation but to talk for at least five minutes. 14. Demonstrate attentive listening (e.g. look at student, backchannels) while the student gives the report but give no specific feedback. 15. If less than 5 minutes of talk: *Is there anything else you can tell me?* Ask if the student has completed their explanation if student does not indicate they are done. 16. Reassure student on the report provided (*great job, I think I know how to play that after your explanation*).	
	Total for ESS administration: /16 = % correct	

Appendix C

Expository Scoring Scheme (ESS) Rubric

Characteristic	Proficient (5)	Emerging (3)	Minimal/Immature (1)
Object	Full description of the main objective	Mention of the main objective	Mention of winner but no or limited description how that is determined **OR** Description of another aspect of the contest, such as strategy or scoring
Preparations	**1) Playing Area** Labels place and provides details about shape & layout **AND/OR** **2) Equipment** Labels items and provides detailed description, including function **AND/OR** **3) Player Preparations** Provides detailed description	**1) Playing Area** Labels place and provides limited details about shape & layout **OR** **2) Equipment** Labels items with limited description **OR** **3) Player Preparations** Provides some description	**1) Playing Area** Labels place but no details about shape & layout **OR** **2) Equipment** Labels items with no description **OR** **3) Player Preparations** Provides limited description
Start	Describes initial situation and how play begins	Describes initial situation or how play begins, but not both	Limited description of the initial situation or how play begins
Course of Play	Detailed description of: A unit of play **AND/OR** Major roles **AND/OR** Major plays	Some description of: A unit of play **OR** Major roles **OR** Major plays	Limited description of: A unit of play **OR** Major roles **OR** Major plays
Rules	Clear statement of major rules and, when applicable, consequences for violations	Mentions major rules and, when applicable, consequences for violations but without full detail	Minimal or no mention of major rules or consequences for violations
Scoring	Full description of ways to score and point values	Incomplete description of ways to score and point values	Limited description of ways to score or point values
Duration	Clear description of: How long the contest lasts, including, when applicable, the units in which duration is measured **AND/OR** How the contest ends **AND/OR** Tie breaking procedures	Some description of: How long the contests lasts **OR** How the contest ends **OR** Tie breaking procedures	Limited description of: How long the contests lasts **OR** How the contest ends **OR** Tie breaking procedures
Strategy	Full description of some ways to win the contest that are not required by the rules but are what competent players do	Mention of some ways to win the contest that are not required by the rules but are what competent players do	Vague or incomplete mention of some ways to win the contest that are not required by the rules but are what competent players do
Terminology	Terms of game are clearly defined whenever introduced	Some terms of game defined, but not consistently or clearly	Terms of game introduced but not further defined
Cohesion	Topics follow a logical order **AND** Topics are completely covered before moving on to another; **AND** Smooth transitions between topics	Topics follow a logical order **OR** Topics are completely covered before moving on to another **OR** Smooth transitions between topics	Little discernable order to topics; Much jumping between topics; **AND** Abrupt transitions between topics

Scoring: Each characteristic receives a scaled score 0-5. Proficient characteristics=5, Emerging=3, Minimal/Immature=1. Scores in between (e.g., 2, 4) are undefined, use judgment. Significant factual errors reduce the score for that topic. Scores of 0, NA are defined below. A composite is scored by adding the total of the characteristic scores. Highest score=50.
A score of 0 is given for student errors, e.g., not covering topic, explaining a different game or sport, not completing/refusing task, student unintelligibility, abandoned utterances).
A score of NA (non-applicable) is given for mechanical/examiner/operator errors, e.g., interference from background noise, issues with recording (cut-offs, interruptions), examiner quitting before student does, examiner not following protocol, examiner asking overly specific or leading questions rather than open-ended questions or prompts.