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Writing instruction as an authentic context for targeting speech and language therapy goals for deaf and hard of hearing children.

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1 Running head: WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

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4 for Deaf and Hard of Hearing Children

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33 Conflict of Interest Statement:

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38 other conflicts of interest to report.

39 Note: Although ASHA supports the use of person-first language, the deaf community prefers
40 identify-first language. Since the population of students referenced in this manuscript involves
41 children who are deaf and hard of hearing, we will follow the preferences of that community and
42 refer to them as deaf/hard of hearing individuals.

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WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

49 Abstract

50 Purpose: This tutorial describes how a speech-language pathologist (SLP) might incorporate
51 writing-based principles into therapy sessions to target a variety of speech and language goals for
52 Deaf and Hard of Hearing (DHH) children in addition to writing. We present an illustrative
53 example of one SLP's experience implementing Strategic and Interactive Writing Instruction
54 (SIWI), an approach to writing instruction designed for DHH students, within a public
55 elementary school setting.

56 Method: We motivate this tutorial by first reviewing the literature related to the challenges for
57 SLPs in targeting written language within therapy settings and then discuss writing and
58 communication difficulties for DHH students. We describe the components of SIWI with
59 illustrative examples of how one SLP applied these principles within her therapy sessions with
60 DHH students. The SIWI instructional approach integrates well with the roles and
61 responsibilities of an SLP in providing therapy across a variety of communication domains for
62 the DHH students. This tutorial describes how the SLP scaffolds production of various
63 morphological and syntactic linguistic structures as a natural part of co-creating text with her
64 students. The highly interactive nature of SIWI allows for targeting pragmatic language goals
65 with student-student and student-SLP interactions. Students also have opportunities for
66 practicing articulation when generating or revising ideas for the co-created text and when
67 rereading the text.

68 Conclusions: SIWI provides a framework to address DHH students' speech and language goals
69 within authentic writing activities which may support increased generalization into classroom
70 academic tasks. We provide suggestions about how an SLP can incorporate the principles of
71 SIWI into therapy sessions to integrate writing instruction with the various speech and language

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

72 goals they already target as a part of implementing a student's Individualized Education
73 Program.

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75 *Keywords:* writing instruction, writing intervention, speech-language pathologist, clinical
76 practice, deaf

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WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

79 Writing Instruction as an Authentic Context for Targeting Speech and Language Therapy Goals
80 for Deaf and Hard of Hearing Children

81 Writing is a complex linguistic activity that relies on skills across a variety of language
82 domains including syntax, vocabulary and other areas of semantics, and metalinguistic
83 knowledge. It further requires application of other cognitive abilities such as considering the
84 audience, planning, and goal setting among other executive functions. There is a large degree of
85 overlap between the types of goals that speech-language pathologists (SLPs) work on in therapy
86 and the skills that are required for creating written text. Not only is there overlap, but the
87 American Speech-Language-Hearing Association (ASHA) has published a position paper
88 outlining the SLP's role in providing assessment and intervention for writing, indicating that
89 "SLPs play a critical and direct role in the development of literacy for children and adolescents
90 with communication disorders" (ASHA, 2001, para. 1).

91 Even so, many SLPs report inadequate training in graduate school for addressing writing
92 (Blood et al., 2010) or other barriers to implementing written language assessment or
93 intervention. Ehren and Ehren (2001) reported a number of personal and interpersonal barriers to
94 implementing written language assessment and treatment including the belief that some SLPs
95 may hold that their role is to specifically support spoken language. There is also the perceived
96 loss of autonomy if adhering to district or state guidelines for writing instruction, or unfamiliarity
97 with the guidelines. Further, SLPs are frequently expected to coordinate assessment and
98 treatment for increasingly complex and diverse caseloads with approximately 50 students on
99 average per SLP with a large range of students supported (i.e., between 10 and 96 students in one
100 study; Brandel, 2020). High caseload numbers and paperwork requirements may result in SLPs
101 questioning whether they have the time to integrate writing into their sessions (Katz et al., 2010;

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

102 Woltmann & Camron, 2009). Here we present the argument that structured writing instruction
103 can address some of these barriers, resulting in more streamlined work on the part of the SLP and
104 greater generalization of language skills for students with communication disorders, particularly
105 for Deaf or Hard of Hearing (DHH) children. While this is not the first time this suggestion has
106 been made (see Nelson et al., 2001), ASHA's recent report on SLP Caseload and Workload
107 Characteristics indicates that only 36% of SLPs regularly serve students in the area of reading
108 and writing and those SLPs serve, on average, a caseload of 13 students with reading and writing
109 goal areas (ASHA, 2020). There clearly remains a large number of SLPs for whom writing
110 instruction could play more of a role in their day-to-day clinical practice.

111 The Strategic and Interactive Writing Instruction (SIWI) approach to writing instruction
112 has been studied across a number of studies with DHH students who use a variety of
113 communication approaches (Bowers et al., 2018; Dostal et al., 2019; Wolbers, 2008; Wolbers et
114 al., 2015, 2022). Although it has been primarily used by teachers during classroom writing
115 instruction, we present here a case study describing how SIWI has been integrated into treatment
116 sessions by a speech-language pathologist in order to target a variety of speech and language
117 skills within the authentic functional activity of writing where authentic refers to the fact that the
118 activity of writing has a real purpose and a real audience

119 Communication Challenges for DHH Children

120 DHH children frequently present with communication challenges due to reduced access
121 to communication (e.g., Hall, M., Hall, W., & Caselli, 2019; Hall, W., 2017). High quality early
122 intervention and educational instruction as well as full access to communication is necessary for
123 DHH children to progress appropriately in language skills (Hall, M., Hall, W., & Caselli, 2019;
124 Lederberg et al., 2013; Meinzen-Derr et al., 2020; Moeller, 2000; Wolfe et al., 2021). Producing

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

125 the written form of a spoken language such as English is an area in which DHH children
126 frequently require additional instruction and practice due to a variety of factors. These factors
127 include limited first language competency seen in cases of language deprivation, approaching the
128 task as a second language learner (for those whose primary language is a signed language), or
129 through difficulties in accessing all of the spoken language phonemes via cochlear implants or
130 hearing aids (e.g., Hoffmeister & Caldwell-Harris, 2014; Lederberg et al., 2013; Wolbers et al.,
131 2014). Therefore, access to an evidence-based approach designed specifically with the needs of
132 DHH learners in mind provides professionals with confidence when implementing high quality
133 instruction. SIWI is one instructional approach to writing that has been tested with DHH students
134 in a variety of states, educational settings, communication styles, and hearing levels (e.g., Dostal
135 & Wolbers, 2014; Wolbers, 2008; Wolbers et al., 2013; Wolbers et al., 2015; Wolbers et al.,
136 2021).

137 For this tutorial, we follow identity-first language to refer to DHH children. Although the
138 American Speech-Language-Hearing Association advocates for the use of person-first language
139 (e.g., an individual who is deaf or hard of hearing), the Deaf community in general prefers
140 identity-first language. There are different reasons and goals for each of these styles of language
141 (such as emphasizing the person over their disability vs. expressing cultural and identity pride)
142 and the American Psychological Association's publication manual, 7th edition (2020) allows for
143 either type of language to be used depending on the expressed preference of the people within
144 that disability group. Flink (2021) and Duncan and O'Neill (2020) discuss the issues of person-
145 and identity-first language in further depth, including how this discussion can relate to DHH
146 individuals. Since the Deaf community as a whole prefers identity-first language, we will follow
147 that style here. It is important to note that not all individuals who are deaf or hard of hearing

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

148 prefer identity-first language or identify as members of the Deaf community. While we
149 acknowledge this important fact, we also want to honor the expressed preference of Deaf
150 community to use identity-first language.

151 Structured and Interactive Writing Instruction (SIWI)*152 SIWI Principles*

153 SIWI follows guiding principles rather than a step-by-step or scripted curriculum. The
154 goal is to guide students through the writing process as students and teachers co-create, monitor,
155 and revise a text (Wolbers, 2008). SIWI is driven by three overarching principles within an
156 authentic and balanced framework: 1) Strategic, 2) Interactive, and 3) Linguistic/Metalinguistic
157 (Wolbers et al., 2021; see Figure 1). Strategic instruction describes the process of explicitly
158 teaching students about the writing process as a recursive rather than linear process. It involves
159 teaching strategies for genre-specific writing skills (e.g., recount/narratives, persuasive,
160 expository, information sharing). SIWI intentionally leverages visual scaffolds to represent the
161 writing process and various strategies. For example, students are taught the major elements of the
162 writing process using an acronym such as GOALS (Get Ideas, Organize, Attend to Language,
163 Look Again, Share) and are provided with a visual depiction of each of the stages both on the
164 classroom wall and their individual desk (see Wolbers & McGaughey, in press, for an example
165 of the GOALS visual scaffold). Further visual scaffolds are incorporated for each genre of
166 writing. For example, the acronym OREO represents the components of persuasive writing:
167 Opinion, Reason, Example, Opinion. The image of the cookie and cream layers of an oreo
168 cookie help reinforce students' understanding of these components.

169 The second SIWI principle is that the writing process is interactive. Students and teachers
170 co-create text based on thoughtful and authentic consideration of a specific purpose and

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

171 audience. This interactive writing process allows for students to share their thought processes,
172 help one another with problem solving, and explore genre- and grammar-related features. The
173 teacher facilitates these interactions but it is a student-led and interactive process. By posing
174 open-ended questions and thinking aloud, the teacher positions themselves as a member of the
175 learning community rather than the ultimate authority, and allows for the students to be actively
176 involved.

177 The third main principle involves developing linguistic and metalinguistic knowledge.
178 For bilingual students using American Sign Language (ASL) and English, this process often
179 includes comparing and contrasting linguistic structures in ASL and English, and engaging
180 translanguaging pedagogies (e.g., Swanwick, 2017). Translanguaging involves fluidly drawing
181 upon students' multiple languages and full linguistic repertoire to make meaning, produce
182 language, and interact with text. This complex phenomenon is a common process for DHH
183 individuals who use a variety of languages and modalities (e.g., spoken English, written English,
184 ASL, other signed systems). For students using spoken language, these metalinguistic processes
185 often involve clarifying conversations, understanding the processes of language, or implementing
186 techniques for elevating students' expressions (e.g., Garber et al., 2012; Most et al., 2010;
187 Paatsch & Toe, 2020). The metalinguistic/linguistic principle is often enacted in the language
188 zone, a physical space devoted to using, examining, and discussing language such as English and
189 ASL. Various tools (e.g., gestures, drawing, role play, pictures, or videos) can be employed in
190 the language zone to ensure shared understanding among teacher and students, and to practice
191 expressing, translating, or complicating languages (Dostal et al., 2019). The language zone can
192 be an area of the room with a white board or smart board with various visual aids and technology
193 accessible or it could be as simple as a large flip book of paper used to draw, write on, gesture

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

194 towards, act out or interact with. Students are encouraged to contribute their ideas to the group,
195 drawing on their full linguistic repertoires. The teacher captures students' expressed ideas in the
196 language zone at their initial level of contribution, regardless of the complexity of language, and
197 scaffolds language learning from there. If the student offers an expression that is a close
198 approximation of English (i.e., needing only minor revisions), the teacher will add the idea to the
199 written text, while using the language zone to guide students in enriching or expanding their
200 language output (e.g., adding figurative language or increasing descriptive sensory words).

201 If the student's initial contribution is clear but contains features of ASL, the discussion in
202 the language zone can focus on the grammatical differences between ASL and English, and how
203 to translate ideas into an equivalent English expression (c.f., Koutsoubou et al., 2007). The
204 teacher is able to support enrichment and expansion in their English writing after engaging
205 metalinguistic awareness that supports translation from ASL structures into written English.
206 Such an examination is in alignment with Cummins' framework of a common underlying
207 proficiency to language acquisition in bilingual learners (e.g., 1979, 2016). While the surface
208 features of each language may differ (e.g., syntax, vocabulary, morphology), building language
209 proficiency in either language supports cross-language transfer of language and metalinguistic
210 skills.

211 Finally, if the students' initial contribution is unclear (such as can be the case for students
212 with significant language deprivation), the teacher and student/s first work in the language zone
213 to arrive at a shared understanding of the idea through more concrete and accessible forms of
214 expression (e.g., artifacts, pictures, acting). Techniques such as expansion, recasting, and parallel
215 language are then used by the instructor to facilitate language development (Cruz et al., 2012).
216 The student's idea is expressed in either grammatically-correct ASL and/or spoken English,

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

217 which can be translated to written English, and also expanded and enriched. In all of these cases,
218 once new ideas have been added to the collaboratively-generated text, the instructor will prompt
219 students to reread, which promotes familiarity with new language forms that came out of the
220 language zone work (Skerrit, 2017).

221 One supporting principle of SIWI involves the creation of authentic texts that have a
222 meaningful purpose and an authentic audience. For example, students might recount an event
223 that happened on the playground in a letter to their principal, or they may write a persuasive
224 letter to a radio station advocating for closed captioning on their online video content (see Dostal
225 et al., 2015). Additional activities include recounting a shared event with a grandparent and
226 sharing the final narrative with them. With purposeful writing, students are motivated by
227 communicating with authentic audiences (Magnifico, 2010), and they also have the advantage of
228 practicing all aspects of language, including morphology, semantics, syntax, and
229 microstructure/macrostructure features. One important principle of SIWI is that instruction gives
230 balanced attention to word-, sentence-, and discourse-level skills.

231 SIWI was developed for DHH students and designed to be responsive to student's
232 specific language experiences. Many DHH students start school without a fully-developed
233 foundation in a first language due to limitations in access to spoken language (e.g., Yoshinago-
234 Itano et al., 2010) or signed language (W. C. Hall, 2017; M. L. Hall, 2020; W. C. Hall et al.,
235 2017). It is important to note that these limitations are not universally present. For instance, some
236 DHH children have considerable auditory access to spoken language through hearing aids and/or
237 cochlear implants. Additionally, children who are deaf ASL signers have full access to language
238 if their caregivers are also deaf ASL signers. However, the vast majority (90-95%) of DHH
239 children are born to hearing parents (Mitchell & Karchmer, 2004) and, without an early

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

240 commitment from families to learn and use sign language, many children can experience
241 language deprivation due to limited language access to both signed and spoken languages (W. C.
242 Hall, 2017; M. L. Hall, 2020; W. C. Hall et al., 2017; Yoshinago-Itano et al., 2010). DHH
243 students who present with language deprivation face a daunting task of learning to read and write
244 while also developing language.

245 The writing performance of secondary DHH students ranges from emerging to grade
246 level, and such wide variation is largely attributed to mild to severe experiences of language
247 deprivation (Wolbers et al., 2021). Students with varying levels of proficiency in ASL draw on
248 their full linguistic repertoire (including ASL lexicon and grammar) to express their ideas in
249 writing, showing some similarities to the writing of other English Learners (Kibler, 2010;
250 Wolbers et al., 2014). DHH children with varying levels of language deprivation tend to exhibit
251 phrasal errors in their writing which are unintelligible expressions in both ASL and English
252 (Bowers et al., 2018). Additional characteristics of writing among DHH students include errors
253 with function words (Singleton et al., 2004) and limited vocabulary (Singleton et al., 2004; Scott
254 & Hoffmeister, 2018), although vocabulary appears to be mediated by first language proficiency
255 in ASL (Singleton et al., 2004). A writing approach must consider these areas of need as well as
256 language development unique to DHH learners.

257 SIWI demonstrates a number of strengths in facilitating linguistic output across a variety
258 of student needs. It is powerful for bilingual individuals as it allows students to leverage
259 strengths in both of their languages during the co-constructing and writing phases (Wolbers,
260 2008). It is also effective for DHH students who use spoken English, as they receive frequent
261 language scaffolding through interactive exchanges in which their teacher and peers are creating
262 meaning together. The language scaffolding is contextualized within meaningful communication

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

263 which can work to ameliorate limitations in DHH students' incidental language learning from
264 situations in which the auditory signal is not optimal (e.g., with background noise, if their
265 equipment is not functioning properly; Dostal et al., 2017). For instance, if a student has missed
266 out on a concept that others have acquired incidentally, for example, that the possessive 's' is
267 used to convey ownership, the instructor can incorporate this explicitly during writing activities
268 coupled with visual aids to support multimodal access to the information. Additionally, through
269 explicit language instruction, students increase metalinguistic knowledge related to syntax and
270 vocabulary, and regarding the appropriateness of their language for the intended audience.

271 *SIWI Evidence of Efficacy*

272 In an initial investigation, SIWI was implemented for an eight-week intervention period
273 in a middle school setting to compare performance of DHH students in one classroom (SIWI
274 classroom) with DHH students in a different classroom in which the teacher continued with the
275 standard writing instruction curriculum (Business-As-Usual classroom; BAU; Wolbers et al.,
276 2008). Instruction in both groups consisted of approximately 2.5 hours per week spent on writing
277 instruction. Students in the SIWI classroom made statistically-greater gains on an informative
278 writing task than the BAU group in both higher-level writing traits (such as introduction to the
279 topic, topic development, paragraph development, etc.) as well as lower-level traits (such as
280 number of compound sentences, use and correctness of infinitives/prepositions/conjunctions,
281 verb consistency, etc.; Wolbers, 2008).

282 More recently, SIWI was tested against a BAU comparison group in a randomized
283 control trial involving 15 teachers (8 in the SIWI group) and 79 students (43 in the SIWI group)
284 in grades 3-5. Students in the SIWI group were taught writing strategies associated with three
285 different genres (recount, information report, and persuasive) across three 9-week periods, one

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

286 for each genre (Wolbers et al., 2021). Students in the BAU group participated in their standard
287 writing curriculum which consisted of tasks such as prewriting activities, grammar instruction,
288 and ASL-English language contrasting, but they did not approach the tasks with the
289 apprenticeship model and writing for authentic audiences that SIWI employs. In SIWI, the
290 apprenticeship model refers to the concept that students do not learn about writing passively
291 from lectures or lessons but instead learn through doing – they actively engage in writing with
292 peers and instructors and learn how to think about, structure, formulate, and revise through
293 actively doing these tasks with support from others. The BAU group in this study targeted
294 language structures within decontextualized practice or lessons and used additional drafts rather
295 than recursive writing practices. Recursive writing involves continually reading and rereading
296 previously-written text even as the authors work to add additional sentences and paragraphs. The
297 approach of writing additional drafts involves writing a draft from start to finish before editing
298 and revising the draft in order to form a next draft.

299 Writing samples were scored for genre-specific elements as well as language features
300 (e.g., T-units consisting of independent clauses and related dependent clauses) and students were
301 given standardized tests of writing including a measure of broad written language from the
302 Woodcock-Johnson III Tests of Achievement (Woodcock et al., 2007). Students in the SIWI
303 group made statistically higher gains in the genres of recount and information report writing
304 which were maintained through the 9-week maintenance period after instruction ended on those
305 genres (see Wolbers et al., 2021 for statistical calculations and report of findings). Students made
306 numerical (but not statistically significant) gains in persuasive writing (the genre targeted in the
307 last treatment period). Results indicated that language clarity was statistically higher in the
308 information-report writing genre with moderate to large effects in all three genres for the post-

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

309 SIWI group as compared with the BAU group. Language clarity was reflected by a word
310 efficiency measure calculated by adding the number of words in correct T-units, T-units with
311 minor errors, and correct word strings of three or more words in sequence without errors divided
312 by the sum of the total words in the sample. Non-significant numerical gains in words per T-unit
313 were additionally observed in the SIWI group but this trend was not observed in the BAU group.

314 In addition to overall increases in language clarity and complexity, SIWI instruction has
315 been shown to positively impact the quality of DHH students' written expression. The cross-
316 linguistic transfer of ASL features onto written English productions was shown to be reduced
317 following SIWI instruction across DHH students using a variety of communication approaches
318 including those who use primarily ASL, primarily English-based sign systems such as Signed
319 English, primarily spoken English, and those who use a combination of approaches (Wolbers et
320 al., 2014). After SIWI instruction, students were better able to produce English-specific sentence
321 structures when writing in English as compared to their pre-treatment writing samples, indicating
322 a better understanding of the differences in the grammar and structure of each language.

323 Even a 5-week instruction period using SIWI principles resulted in statistically-
324 significant gains in the genre-specific features of 4th-6th grade DHH students' information report
325 writing samples (in the areas of establishing a topic, providing details of events, and
326 organization) that were not observed following five weeks of regular writing instruction for the
327 same students administered before the SIWI period (see Dostal & Wolbers, 2016 for a report of
328 the statistical tests and results). Gains have been seen for DHH students engaged in SIWI
329 regardless of their starting language proficiency across both recount and information report
330 writing, even though students were only instructed in the elements of recount writing using the
331 SIWI principles (and not information report writing). The observed generalization from one

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

332 genre to an untreated genre was also seen in a study that varied order of presentation of genres
333 (recount/information writing/persuasive vs. recount/persuasive/information writing; Dostal et al.,
334 2021). They found that students were able to generalize what they had learned during recount
335 and persuasive genre instruction when producing information writing text prior to direct
336 instruction on that genre.

337 Qualitative analysis of DHH students' experiences across a one-year SIWI instructional
338 program indicated that they were more positively oriented toward writing after SIWI instruction
339 (Dostal et al., 2015). They were more inclined to participate in writing activities voluntarily and
340 expressed more self-efficacy towards writing: "...We know what authors do. We are authors" (p.
341 11). They knew how to attack the task of writing and felt confident in the process of producing
342 written work.

343 SIWI Compared to Other Approaches to Writing Instruction

344 Although there are other approaches to writing instruction such as Self-Regulated
345 Strategy Development (SRSD; e.g., Graham & Harris, 1999; 1993) and Cognitive Strategy
346 Instruction in Writing (CSIW; e.g., Dole et al., 2014), SIWI is unique in that it is designed for
347 DHH students and does not require the same adaptation that is typically required of programs
348 designed for typically-hearing children (e.g., Vostal & Ward, 2015). SIWI combines elements
349 from second language acquisition research (e.g., Ellis, 1994), strategic instruction based on
350 cognitive theories of composing (e.g., Flower & Hayes, 1981), and interactive approaches (e.g.,
351 Englert et al., 2001; Englert et al., 2006). There are a number of ways in which SIWI overlaps
352 with SRSD and CSIW including use of strategies for composing and revising as well as
353 metalinguistic approaches to writing. The SIWI approach is different from these other
354 approaches in that 1) texts are co-created by the student(s) and instructor, 2) it utilizes

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

355 metalinguistic strategies during authentic writing activities, and 3) instructors incorporate the
356 language zone to facilitate understanding language differences between American Sign
357 Language (ASL) and English and how to use translanguaging pedagogies to facilitate written
358 expression. SRSD emphasizes use of strategies for planning, writing, and revision as well as
359 procedures for regulating the use of these strategies (e.g., goal setting, self-monitoring, and self-
360 instructions) but does not focus on multilingual components, instruction of linguistic components
361 that are taught and applied during authentic activities written with the audience in mind, or co-
362 creating texts during interactive writing tasks. While SIWI and SRSD (or other writing
363 programs) may employ similar linguistic and metalinguistic strategies, SIWI has been studied
364 with DHH children (both those who use sign language and those who use spoken language) and
365 thus has an evidence base of efficacy with DHH students.

366 Use of SIWI with DHH Students Who Use Spoken Language

367 Although SIWI has been most frequently studied with DHH students who use ASL (e.g.,
368 Dostal et al., 2016, 2019; Wolbers et al., 2015, 2021), it has also been shown effective for DHH
369 students who use spoken English for communication (Wolbers et al., 2012, 2014, 2015). DHH
370 students are highly variable in their language experience and in fact, students who are reported as
371 using only speech or only sign language may have had early language experience in another
372 communication modality (Hall & De Anda, 2020). Such early (or informal) experience with ASL
373 likely influences the writing of DHH students who use spoken language as ASL features were
374 observed in their written productions that subsequently reduced in frequency following SIWI
375 instruction and practice in the language zone (Wolbers et al., 2014). The language zone is an
376 important element of SIWI for DHH students who use spoken language as well as sign language.
377 These students appear to benefit from linguistic and metalinguistic discussions that arise from

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

378 the interactions in the physical space of the language zone (e.g., Wolbers et al., 2014). While
379 further investigation is necessary to more fully understand the unique effects of SIWI for DHH
380 children who use spoken language, the few studies thus far have suggested positive outcomes.

381 *SIWI Professional Development*

382 The professional development (PD) training for SIWI involves a week-long summer
383 workshop where attendees learn about the driving principles and practice co-constructing a text
384 with students. During the school year, researchers provide biweekly online support to SIWI
385 instructors, discussing students' progress and problem-solving implementation questions. SIWI
386 instructors also video-record their SIWI lessons throughout the year for researchers to conduct
387 fidelity checks and for the educators' own self-reflection. First year instructors additionally
388 attend a three-day training during the fall semester to reflect on their own teaching by watching
389 their recorded instruction and integrating modifications as appropriate. They also receive support
390 with reviewing their students' writing samples and setting appropriate writing and language
391 objectives for the next genre they planned to teach. After one year of PD, instructors are, on
392 average, enacting SIWI at 70-75% instructional fidelity, and this level has been shown to impact
393 students' writing and language outcomes to a degree of statistical significance compared to
394 students who are receiving regular language and literacy instruction (Wolbers et al., 2021). By
395 the end of the 3-year PD program, instructors are demonstrating 95% instructional fidelity on
396 average (Wolbers et al., 2016). While this tutorial cannot provide sufficient explanation and
397 practice to implement SIWI with fidelity, it will illustrate how elements of SIWI can be
398 incorporated into an SLP's therapy session in order to target a variety of speech and language
399 goals.

400 **SIWI Instruction**

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

401 SIWI instruction has been implemented in periods ranging from 5-9 weeks per genre type
402 with standard implementation involving 2-2.5 hours of instruction per week on average (Dostal
403 et al., 2016; Wolbers et al., 2021). The SLP reported on here (pseudonym “Candace”) was able
404 to negotiate 45 minutes per session, four times per week because of her involvement in this
405 research; however, she stated that in her clinical judgment, SIWI instruction could still be
406 implemented within a standard 30-minute session, three times per week but might require longer
407 than the 9-week period to sufficiently teach the genre. Candace reported that she has used SIWI
408 principles in therapy sessions for groups of three to 10 students, but reported that 10 is not ideal
409 because of the cognitive effort to hold all of the students’ goals in mind during the lesson and to
410 be able to provide each student with sufficient individualized attention. Therefore, she viewed
411 group sizes between three and six students as ideal for SIWI implementation.

412 Genres are typically covered in the following order: recount (or narratives), information
413 report, and persuasive (Wolbers et al., 2021). Each genre has associated visual scaffolds that help
414 students learn and remember the organization for each genre such as the oreo image described
415 previously for persuasive writing (Wolbers & McGaughey, in press). Genre-specific elements
416 are taught during each of the periods dedicated to that genre (see Table 1). For example, during
417 instruction on the recount genre, the SLP described what an orientation statement is - that it
418 conveys who is involved and when/where it occurred. She used this opportunity to provide direct
419 instruction on various wh- question words (see Table 2). She used exemplary texts (i.e., a mentor
420 text) to illustrate how the orientation statement is used in authentic texts such as *Alexander and
421 the Terrible, Horrible, No Good, Very Bad Day* (by Judith Viorst). After identifying orientation
422 elements in the mentor text, the students practiced co-creating an orientation for their own
423 recount writing (e.g., a recount of how the principal demonstrated appropriate playground

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

424 behavior). The SLP used the visual scaffold of a hamburger to illustrate how to organize recount
425 writing: the top bun indicating the orientation, the bottom bun indicating concluding with a
426 personal comment, and the different toppings indicating the events. She incorporated instruction
427 and practice throughout the therapy session on developing vocabulary and rich descriptions with
428 sensory details. Instruction for subsequent genres followed a similar pattern including the use of
429 mentor texts and visual scaffolds. Candace was able to incorporate each student's individual
430 speech and language goals into these authentic writing activities.

431 In order to explicitly target specific linguistic components (e.g., a particular grammatical
432 structure), Candace incorporated focused mini-lessons (called "NIP-it lessons" within the SIWI
433 framework) where appropriate, such as illustrated in Table 3 with regular past tense. She would
434 'N-notice' when a student or several students were having difficulty with a particular linguistic
435 structure. In this case, the student omitted the -ed morphological marker. She would then pause
436 the collaborative writing or the editing and would 'I-instruct' the students on the specific
437 linguistic structure. They might study that item in isolation before returning to the group writing
438 and incorporating or 'P-practicing' the structure within the authentic communicative context. In
439 this instance, the students had an immediate opportunity to practice what they had learned by
440 applying this knowledge to another regular past tense word in the same sentence: "squeeze."
441 Pairing this in-the-moment, strategic instruction with immediate contextual application helped
442 the students internalize the structure and they responded positively to these NIP-it lessons.

443 Candace apprenticed her students in the metalinguistic tasks involved in planning out
444 different genres of writing, how to consider the audience, and how to structure the text to be
445 logical and complete. She walked them through the processes used to create and organize each
446 component of the text for that genre. As the students became more confident and independent,

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

447 she slowly removed the amount of scaffolding and support she offered to allow them to become
448 more independent. She further used both direct questions and think alouds to guide the students
449 in discovering and applying the morphological and syntactic rules of forming grammatically-
450 correct sentences. With each co-constructed sentence, Candace prompted the students to reread
451 and continually revise their work by providing additional questions to consider (e.g., Will the
452 audience understand this? Is this work missing any words or grammatical features? Do you want
453 to add any additional descriptive details?).

454 The language zone is a powerful tool in the SIWI approach in which the instructor can
455 explicitly target metalinguistic instruction. Candace used the language zone to focus on shaping
456 students' English productions into more detailed or grammatically-correct utterances while
457 clarifying the intended meaning. For example, Table 4 relays a portion of a recount lesson
458 describing the principal's instructions on how to play appropriately on the playground. The
459 interaction illustrates how Candace took advantage of a naturally-occurring opportunity to focus
460 on expanding the student's metalinguistic understanding of verb tense. She wrote exactly what
461 the student dictated and then directed attention to the verb to clarify whether it was occurring in
462 the present or had occurred in the past. She described how -ed can be added to indicate past
463 tense. As she did not include a lengthy description of how regular past tense is constructed by
464 adding a -d or -ed, it is likely that Candace had previously introduced this topic with additional
465 explication and this was a reminder and expansion of that lesson. Candace then demonstrated
466 how there are multiple ways to correctly say the same thing and let the author decide the final
467 form (e.g., "grabbed" and "was grabbing"). This exchange also provides an example of the
468 interactive nature of the SIWI lessons – all three students were involved in editing and
469 suggesting content and one student even corrected the other student's articulation with the plural

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

470 -s on “bars.” The integrated and recursive nature of the SIWI approach seamlessly blends
471 linguistic instruction within the context of making meaning clearer to the audience.

472 Because the SIWI practice is to write with the audience in mind, Candace guided the
473 students in selecting the audience for this written text. The students decided that the recount
474 writing of this experience would be given to the principal. Candace frequently referred to the
475 audience when they were deciding what to include in the text. She further asked if the principal
476 would understand certain descriptions that were unclear or grammatically incorrect. This
477 reminder that a real person would be reading their text gave the students motivation and context
478 when formulating their writing and encouraged their cognitive perspective taking, an additional
479 known area of difficulty for DHH students (e.g., Peterson, 2004).

480 Because of the very flexible, student-driven approach used in SIWI, Candace was able to
481 tailor the feedback and conversations during the co-construction process to meet the individual
482 needs of each of the students. Students naturally asked for clarification on various linguistic
483 structures, which may have contributed to students generalizing these learned skills due to the
484 contextualized nature of the writing. In follow up interviews, Candace reported that the
485 integrated SIWI approach appeared to support better carryover of these skills to the classroom.
486 Students saw the benefit of understanding the reason behind the language goals because they
487 were actively and interactively engaged in authentic application. Candace reported that they
488 seemed to make progress toward their language and articulation goals faster than when she had
489 used a more traditional approach to therapy.

490 Candace worked closely with an educator of DHH children in her school who was also
491 trained to implement SIWI in order to facilitate continuity across environments for her students.
492 This is an important collaborative opportunity in situations where the SLP and teacher of DHH

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

493 students both are able to approach language and writing instruction similarly. Although Candace
494 opted to follow a push out model for implementing her therapy sessions that involved SIWI
495 principles, both push in and push out models are likely to be beneficial for students working on
496 these types of language and writing goals and activities. SLPs must weigh the benefits of each
497 approach in light of their particular students and intervention goals to determine which approach
498 is the best fit for their students.

499 Targeted Skills of SIWI Lessons

500 This section describes how specific areas of communication typically targeted by an SLP
501 might be incorporated into lessons following the SIWI approach to writing instruction.

502 **Articulation/Phonology.** Candace incorporated articulation and phonology intervention
503 within SIWI lessons during group conversations when co-constructing text, and also through the
504 rereading of the text aloud for editing purposes. If one of the students had a specific articulation
505 goal, she would be sure to have that student reread the text containing that phoneme to provide
506 an opportunity to practice. Such practice often occurred with the pronunciation of the regular
507 past tense morpheme (-ed), plural (-s), and possessive ('s), which can change the phonetic
508 realization depending on the context of its use. For example, when discussing recount writing,
509 the student stated, "Last week, Dr. [Name] taught us about the rule on the playground." Candace
510 guided the student in differentiating whether their intended form was 'rule' or 'rules.' Because
511 the student intended to produce the plural form, she further probed what that plural -s should
512 sound like (either pronounced as /s/ or /z/ depending on the voicing of the final consonant of the
513 uninflected noun). Candace marked which allomorph matched that particular word with a
514 colored marker and practiced pronouncing the word in isolation and in context. This is
515 particularly important for Candace's students as these word-final endings, particularly fricatives

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

516 such as /s/ and /z/ are generally difficult for DHH individuals to perceive and produce
517 (McGuckian & Henry, 2007; Moeller et al., 2007). Candace reported that this type of integration
518 of articulation and morphology within an authentic writing context appeared to result in better
519 generalization because the students were motivated to include the correct morphological marker
520 in their own generated writing. They seemed to understand the grammatical significance with
521 greater completeness due to the contextual nature of its usage in meaningful writing.

522 Candace was also able to include practice with phonological awareness by presenting
523 some words as individual phonemes and allowing the students to blend the phonemes together
524 (e.g., /s/ /i/ /v/ /i/ /l/ forming 'civil'). The students also requested this segmented presentation of
525 words at times suggesting that they were engaged with this phonological awareness activity. Not
526 every student blended with perfect accuracy when presented with the segmented phonemes
527 suggesting that even in middle to upper elementary school, they were still in the process of
528 learning this phonological awareness skill. Providing support in this manner during the SIWI
529 lessons created an authentic opportunity to seamlessly integrate practice in articulation and
530 phonological awareness.

531 One important point to note is that for DHH students who use spoken language and
532 produce a number of articulation errors, they might need additional therapy time dedicated to
533 teaching specific sounds before those sounds can be practiced in context during co-construction
534 of texts. Utilizing a SIWI approach does not mean that every encounter with a student is limited
535 to writing instruction, but rather that writing instruction as presented with SIWI can form an
536 authentic context for learning and practicing speech and language goals in context. Individual
537 students' needs drive goals and services, and students may require therapy time devoted to other
538 goals presented in an alternate manner.

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

539 **Morphology and syntax.** Capturing students' productions in written form allows for
540 them to critically reflect on their own syntax in concrete ways as compared to transient speech.
541 They could read and reread their sentences to ensure they produced all the words in the correct
542 order. For example, while editing and revising, Candace asked students where they might add
543 "the small word 'on'" in the following student-generated sentence: "Dr. Martin Luther King Jr.
544 was born in Atlanta, Georgia January 15, 1929." After some consideration, the student correctly
545 identified that it sounded better with "on" added between Georgia and January. Because the text
546 was visible and static, the student was better able to evaluate what component of the sentence
547 was missing.

548 Candace was able to target a variety of morphological structures during the writing
549 process including verb tenses such as third person singular and regular past tense verbs,
550 possessives, and regular and irregular plurals. For example, the students generated the following
551 sentence about Martin Luther King Jr. with an error in the possessive morpheme: "His wife name
552 is Coretta Scott King." Candace was able to guide the students to fixing the error through
553 questioning: "Do we need to change anything? Where?" When the student correctly identified
554 how to fix the error, Candace followed up with an explicit explanation of why that morpheme is
555 needed: "The name belongs to her." She additionally used the opportunity to revisit the
556 vocabulary label for this type of linguistic structure by asking, "And what do we call the
557 apostrophe 's'?" When the student incorrectly answered "proper noun" she provided a phonemic
558 cue and several of them identified the correct term "possessive." There were additional
559 discussions about 'be' verbs prompted by the student's contribution to the writing of "He
560 arrested." Candace used that opportunity to ask if the student thought they needed to add any
561 more words. She then inquired from the other students what they thought should be added. In

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

562 this way, Candace encouraged discovery and peer editing rather than simply telling the student
563 the right answer.

564 Table 5 illustrates the interactive nature of co-constructing a text while additionally
565 focusing on morphology and syntax. In this portion of the lesson, all three students who were
566 present provided suggestions for editing. The interactive format of collaborative writing
567 encouraged students to be actively thinking about and contributing to the group text, and to
568 receive various levels of scaffolding from the instructor and their peers. After Candace wrote
569 down the student's initial expression verbatim, "Tom Siwa father doctor," she asked for input on
570 what words need to be added. Two different students suggested adding "is" and "a" to the
571 sentence, making it "Tom Siwa father is a doctor." Candace at that point suggested they move
572 the location of the word "father". When students appeared unable to problem solve this piece, the
573 SLP modeled the expression for students and used a think aloud strategy. She said, "Her father,
574 Tom Siwa. So we can put it here." This dialogue shows the SLP adjusting the amount of
575 scaffolding needed by students – providing less scaffolding through open questions in areas
576 where students are building independence and more scaffolding through modeling in less
577 familiar areas.

578 One thing to note is that Candace verbally provided the correct grammatical form on two
579 separate occasions (e.g., "Her father, Tom Siwa, is a doctor" and "Her father") but when she
580 asked the same question just moments later, the students were unable to provide a
581 grammatically-correct sentence. However, after they had co-constructed the sentence with the
582 correct morphology and syntax, they were then able to produce the correct grammatical
583 structures. Following this activity, the students continued co-constructing additional descriptive

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

584 sentences while they repeatedly read and reread the previous sentences multiple times providing
585 additional exposure and practice to morphosyntactic forms that were less familiar to students.

586 **Semantics and vocabulary.** Vocabulary knowledge is one area in which the SIWI
587 writing activities provide rich context and discussion opportunities, which is important given that
588 vocabulary is a known area of need for many DHH children (Moeller et al., 2007). Sibold (2011)
589 suggests an effective way to present new academic vocabulary following this pattern: 1)
590 Introduce the word, 2) Provide synonyms, 3) Describe or explain the word, and 4) Use the word
591 in a sentence. Candace demonstrated these principles in the exchange depicted in Table 6 during
592 a lesson focusing on information report writing. She used a variety of approaches in building the
593 students' understanding of *strong* versus *strongly*. She provided links to previous learning, an
594 example of it in context, and also provided a non-example. The exchange provides opportunities
595 for students to make connections and deepen their vocabulary knowledge as well as
596 metalinguistic knowledge regarding adjectives and adverbs. Because the instruction was
597 presented within the authentic task of information report writing, students were able to
598 immediately incorporate the new vocabulary word into a functional setting.

599 Other areas of semantics were seamlessly integrated into SIWI instructional lessons.
600 Table 2 illustrates how Candace integrated direct instruction on the meaning of various wh-
601 question words within the context of an authentic writing task. Across numerous days, Candace
602 reiterated what kinds of information answered each wh- question, asked students to provide the
603 answers to these wh- questions for new orientation sentences, and asked which wh- question a
604 given component addressed. In this way, students had a number of contextualized opportunities
605 to understand the meaning of each type of wh- question.

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

606 In many instances Candace was able to target semantics and vocabulary while also
607 targeting articulation and morphology simultaneously during co-construction due to the amount
608 of language generated, the metalinguistic discussions, and the interactive exchanges. Candace
609 would often provide definitions of words while collaboratively co-constructing text with
610 students. In doing this, she could easily link the new vocabulary terms with their pronunciation
611 to allow students the opportunity to integrate their articulation goals in this process. Vocabulary
612 words would then be repeated and reinforced through reading and rereading the generated text.

613 Additional ways in which Candace targeted semantic aspects of language include
614 incorporating descriptive words and sensory details. She included a discussion on the different
615 senses and modeled how to include more descriptive language into their writing during the
616 interactive co-construction of text. She provided examples from a mentor text (e.g., *Alexander
617 and the Terrible, Horrible, No Good, Very Bad Day* by Judith Viorst) and discussed how details
618 allow the reader to “make a movie in their head” of what they are reading. She modeled how to
619 incorporate figurative language such as “flew” or “raced” instead of “ran” and how they could
620 add words like “delicious” and “hot” to the orientation sentence: “They ate (delicious) ice cream
621 on the (hot) playground.”

622 One final example of how Candace incorporated semantic instruction during the SIWI
623 activities was illustrated by targeting the production of prepositions. DHH children tend to have
624 an atypical pattern of acquisition and production of prepositions and determiners which may
625 require additional explicit instruction (see Cannon & Kirby, 2013 for review; Kavar, 2021).
626 Throughout the SIWI lessons, students had opportunities to produce sentences containing these
627 types of structures within an authentic context. These opportunities allowed for group discussion
628 of these “small words” as the SLP referred to them. For example, a student stated a sentence

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

629 about “gum in his shoe” when he meant “gum on his shoe” and Candace used that opportunity to
630 discuss how the different preposition changes the meaning of where the gum is located and how
631 gum *in* his shoe was less desirable than *on* the bottom of his shoe.

632 **Pragmatics.** Participation in the group effort to co-create texts provided ample
633 opportunities for students to interact with each other and practice their pragmatic skills such as
634 repairing conversational breakdowns, providing on-topic comments, taking conversational turns,
635 asking and answering relevant questions, responding to feedback and constructive criticism, and
636 thinking flexibly about the content of the writing. Because the group worked to create the text
637 together, students had to adapt to others’ ideas and consider their perspectives. Additionally,
638 because of the authentic nature of the text, the students had to consider the perspective and
639 knowledge of the intended audience in order to structure their writing with the appropriate
640 amount of details and information. For example, they needed to not be overly explanatory if the
641 audience had a fair amount of working knowledge of the topic, but if the content was unfamiliar
642 to the audience, the students had to consider how many additional clarifying details they needed
643 to include.

644 **Discussion**

645 We have presented examples of how one SLP (“Candace”) was able to target therapy
646 goals across a variety of speech and language areas within the framework of Strategic and
647 Interactive Writing Instruction (SIWI). Candace integrated intervention in a number of areas of
648 speech and language including articulation/phonology, morphology/syntax, semantics, and
649 pragmatics within writing instruction lessons and supported practice for writing. When language
650 and metalinguistic knowledge were targeted in an authentic context with explicit instruction,
651 students were able to quickly and thoroughly integrate that knowledge. The main principles of

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

652 SIWI meshed seamlessly with the SLP's practice by encouraging interactive peer-to-peer
653 interactions while using strategic approaches to guide the organization of their writing at the
654 sentence, paragraph, and discourse levels of communication.

655 Figure 2 depicts additional ways in which various speech and language goals can be
656 integrated within the principles of SIWI. The metalinguistic principle is often utilized throughout
657 SIWI instruction to guide students in making meaning through various linguistic structures.
658 Students learn about how language works, why an author might choose a specific linguistic
659 structure, and what different language elements convey (e.g., -ed is used for actions that have
660 already occurred). SLPs can utilize the inventory of grammatical structures presented in
661 Kilpatrick and Wolbers (2019) to help guide morphological and semantic instruction. They
662 present three tiers of linguistic structures organized in a written language inventory for DHH
663 students' writing. Structures span a variety of components from plural nouns and present tense
664 verbs (Tier 1) to object pronouns and a noun plus a relative clause (Tier 2) to the most difficult
665 level containing structures such as perfect verb tense and question word noun phrases as seen in
666 the sentence 'The house where I live' (Tier 3).

667 The interactive principle of SIWI encourages peer-peer questions, answers, repairing
668 communication breakdowns, and considering others' perspectives and knowledge. They can
669 monitor their own productions as well as the verbal and nonverbal cues from their
670 communication partner(s) in order to identify and repair communication breakdowns. For
671 example, while co-constructing text for the recount genre, a student said, "Can I get
672 [unintelligible phrase omitted] to train" referring to getting on a train, but the SLP misheard it as
673 "to China." This opened up an opportunity for Candace to ask for clarification and the student to
674 repair the conversational breakdown. The structured principle of SIWI guides students in

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

675 planning, organizing, prioritizing, and self-monitoring during both verbal discussions and
676 production of written language. Using visual aids (such as a hamburger or oreo cookie) allows
677 for students to be reminded of the components of well-formed recount/narrative or persuasive
678 text.

679 Candace demonstrated a variety of techniques for building the students' vocabulary
680 including examples and non-examples. SIWI provides ample opportunities to dive into task-
681 related vocabulary such as 'orientation' and 'adverb' but also vocabulary related to the topic
682 (e.g., udder). This approach is in alignment with the recommendations from a literature review of
683 approaches for developing academic language for DHH students (Strassman et al., 2019). They
684 found that teaching academic language within accessible but content-rich texts was an important
685 feature of effective language development, as well as teaching new vocabulary through multiple
686 modalities (e.g., reading, writing, speaking), teaching across a variety of purposes (e.g.,
687 information sharing, persuasive, narrative/story-telling), and creating an engaged community of
688 writers to provide feedback throughout the writing process. Candace reported that one of the
689 strengths of SIWI in her experience is that the students are exposed to a lot of different
690 vocabulary as well as sentence structures and grammar.

691 **Conclusion**

692 We have described one way in which authentic writing experiences can form the context
693 for working on various student goals from a holistic, language-centered perspective for DHH
694 students. Although incorporating the SIWI principles into therapy was challenging at first,
695 Candace reported that after a number of years, these practices became second nature to her and
696 ultimately have saved her time by not having to prepare numerous individual materials and
697 lessons. Rather, students' individualized goals were addressed in a contextually-dependent way

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

698 that in her experience resulted in greater carryover to classroom and academic tasks than with
699 typical approaches to therapy. This approach also provided continuity in content across therapy
700 sessions promoting repetition and recall of key concepts and vocabulary. Candace was able to
701 target all the same goals she would have with traditional therapy. By situating the speech and
702 language practice within a topic area selected by the students, she achieved a high degree of
703 motivation and “buy in” from the students. Because of this structured and interactive approach,
704 the students learned about the writing process and benefited from application practice with the
705 linguistic and metalinguistic skills involved in generating texts and communication interactively
706 with peers.

707 The SLP that was interviewed and observed for this study mentioned she has taken a
708 number of different professional development and continuing education courses over the years in
709 order to maintain her Certificate of Clinical Competence (CCCs), but reported that SIWI has
710 been “the single most effective tool I’ve been taught in my practice.” ASHA’s position statement
711 on the roles and responsibilities of SLPs with respect to reading and writing with children and
712 adolescents is clear: SLPs are critical members of the assessment and intervention team
713 (American Speech-Language-Hearing Association, 2001). We have presented one SLP’s
714 response to that call to provide evidence-based, authentic individualized therapy within the
715 context of a strategic writing instruction framework resulting in positive outcomes for all
716 stakeholders.

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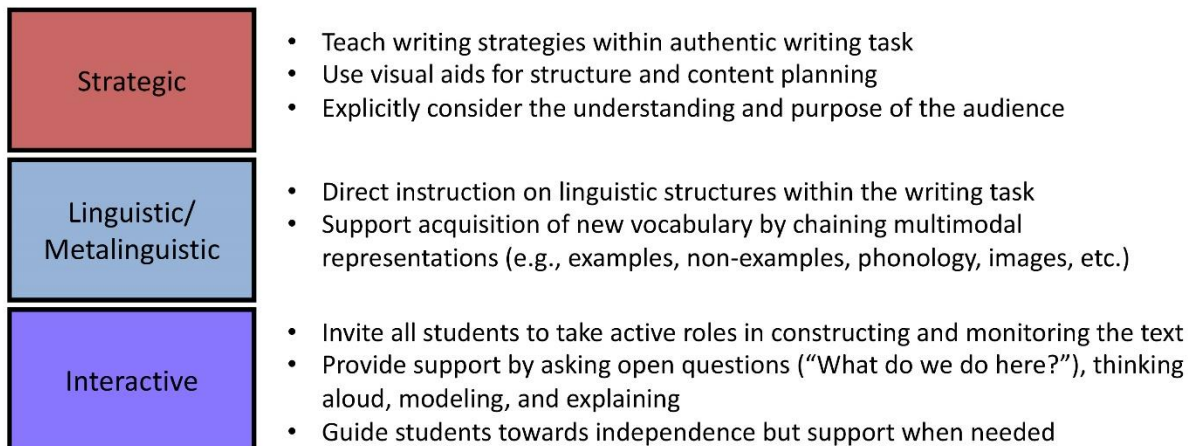
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Figures

908 *Figure 1. SIWI Principles For Speech-Language Pathologist Implementation.*

SIWI Principles for Speech-Language Pathologist Implementation



909

910 *Figure 2. Alignment Between Sample SLP Activities and SIWI Principles.*

WRITING INSTRUCTION IN THERAPY FOR DEAF CHILDREN

	<u>Strategic</u>	<u>Metalinguistic</u>	<u>Interactive</u>
Articulation			
• Reread text aloud to target any speech sound	✓		
• Select topics that will contain target sounds	✓	✓	✓
• Collect data on students' own sound production	✓	✓	
Morphology/ Syntax			
• Discuss verb tenses that naturally arise in the writing process		✓	✓
• Include direct instruction of derivational morphemes	✓	✓	
• Target regular and irregular plurals in context	✓	✓	
Semantics			
• Integrate sensory details and other descriptive language	✓	✓	✓
• Expose to new linguistic and metalinguistic vocabulary and knowledge	✓	✓	✓
• Explore contextually-dependent meanings of multiple meaning words	✓	✓	✓
• Discuss correct prepositions given the target context	✓	✓	✓
• Expand vocabulary knowledge in depth and breadth	✓		✓
• Include transition words for building discourse cohesion	✓	✓	
Pragmatics			
• Practice asking and answering questions	✓	✓	✓
• Experience accepting and offering feedback	✓		✓
• Engage in repairing communication breakdowns	✓	✓	✓
• Infer others' knowledge or reactions	✓	✓	✓
• Adjust register depending on context	✓	✓	
Metalinguistics			
• Identify components of different genres (e.g., narrative vs. expository)	✓	✓	
• Implement executive function skills such as planning, prioritizing, and self-monitoring	✓	✓	