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Original Paper

Effect of Teaching Sequence on ESL Students' Learning of Syntactic Cohesive Devices Using Sentence Transformation

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Abstract

This research aims to investigate the effects of two teaching sequences – interleaving and blocking – on the participants' use of three types of cohesive devices (conjunctions, conjunctive adverbs and prepositions [thereafter CCPs]) in their argumentative essays. The participants included 50 native Cantonese-speaking university students taking an academic writing course. Interleaving refers to the teaching sequence in which learners practice several skills at one time whereas in blocking only one skill is practiced at one time.

Prior to essay writing, participants were taught CCPs using sentence transformation. One class was taught using interleaving and the other blocking. The first and the second drafts of the argumentative essay served as pre-and post-tests. The total numbers of CCPs used correctly both syntactically and semantically in their argumentative essays were counted for the pre-tests and post-tests for both groups. Results of Paired Samples and Independent t-tests suggest that neither of the two teaching sequences was more effective than the other in raising the participants' total instances of CCPs; however, blocking appears to be more effective in boosting the use of prepositions as linking words. Sentence transformation, whether administered in the interleaved or blocked sequence, was considered to have served the teaching purpose of providing an opportunity for the students to engage in serious thinking about the semantic relationship between two given sentences.

Keywords

interleaving, cohesive devices, sentence transformation, teaching sequence, teaching mode, academic writing

1. Introduction

1.1 Background

It is not uncommon that the academic essays written by many university students who learn English as a second language in Hong Kong include only a few basic conjunctions (e.g., *because, therefore, so),* which are often used repeatedly throughout their essays. The lack of variety in the choice of grammatical cohesive devices might be the manifestation of an underlying problem that the teaching and learning of grammatical cohesive devices has room for improvement. It seems that the lack of variety of cohesive devices at the grammatical level is not specific to students in Hong Kong. In Ahmad's (2019) study, the students at a university in Saudi Arabia demonstrated a very limited range of grammatical cohesive devices used their argumentative essays, although the usage is mostly correct. The seven linking words heavily used were *for example, however, but, on the other hand, because, so, in conclusion*. Based on the findings of his research, Ahmad (2019) recommended the explicit teaching of grammatical cohesive devices, especially the use of adversatives. Likewise, Marashi (2020) concluded that the treatment used in his study, which investigated explicit teaching of cohesive devices, significantly raised the mean score of the post-test, which was administered in the form of IELTs (Writing Task 2) to the Iranian student participants. The explicit teaching of grammatical devices also constitutes the research focus of the present study. According to Halliday and Hasan (1976), grammatical cohesive devices include such aspects as reference, substitution, ellipsis, conjunctions, yet the present study focuses on only three types of cohesive devices, namely, conjunctions (e.g., *and, because*), conjunctive adverbs (e.g., *moreover, hence*) and prepositions (e.g., *as a result of, because of*). It is hoped that the findings derived from the present study can contribute to the body of literature concerning whether interleaving or blocking will benefit students as well as teaching practitioners in their attempts to learn and to teach the syntactic and semantic knowledge of these linking words.

1.2 Literature Review

1.2.1 Interleaving and Blocking

One of the challenges concerns the pedagogical issue of whether to teach one category of linking words (e.g., conjunctions) one at one time or teach two categories of linking words (e.g., conjunctive adverbs and prepositions) at the same time for the purpose of contrasting two similar categories. The former teaching sequence is commonly known as blocking whereas the latter is termed interleaving. Interleaving tends to produce better long-term memory in the learning of mathematics (Barzagar & Ebersbach, 2019; Carpenter et al., 2012; Chen, et al., 2018; Dunlosky et al., 2013; Foster et al., 2019; Hopkins et al., 2016; Kang, 2017; Nagashima et al., 2022; Ostrow et al., 2015; Rau et al., 2013; Rohrer et al., 2015; Sana et al., 2017; Schutte et al., 2015; Soderstrom & Bjork, 2015; Tailor & Rohrer, 2010) and motor skills (e.g., Goode & Magill, 1986; Hall et al., 1994). However, in second language learning, interleaving has not shown robust advantages. So far, research findings have been inconclusive. For example, interleaving was found to be more effective than blocking in Nakata and Suzuki's (2019) study, which included 115 Japanese students learning five English grammatical structures. It was found that although the

interleaving group produced a higher number of incorrect responses during the training stage than the blocking group, the former was more effective than latter in the 1-week delayed post-test. The advantageous outcomes of interleaving might concern the spacing effect (Carpenter 2014) and the discriminative contrast hypothesis (Sana et al., 2017). Concerning spacing effect, Carpenter (2014) explains that given the same overall duration of practice, distributed practice results in better long-term retention than does massed practice. As regards the discriminative contrast hypothesis, Sana et al. (2017) points out that interleaving would benefit students more when categories have high between-category similarity, e.g., past tense and past perfect. Yet, Schneider et al. (2002) found that students in the blocked condition performed better on an immediate test than did students in the interleaved condition for college students learning French–English word translations using interleaving or blocking. Similarly, a blocking advantage for correct word pronunciation was consistently observed on immediate or 5-min delayed tests for college students learning French pronunciation rules (Carpenter & Mueller, 2013).

Given that the findings on the superiority of interleaving over blocking or vice versa is inconclusive and that little is known regarding the teaching of grammatical cohesive devices at university level in the Hong Kong setting, this research aims to focus on the teaching and learning of three types of linking words – that is, conjunctions, conjunctive adverbs and prepositions (therefore *CCPs*) – for academic writing with respect to the genre of argumentative essays written by fifty native Cantonese-speaking university students taking an academic writing course offered by the City University of Hong Kong in 2020. In particular, the research question is as follows:

- Which of the two teaching sequences will be more effective in terms of helping students to produce a greater number of linking words (conjunctions, conjunctive adverbs and prepositions) that are syntactically and semantically correct when administered in the context of sentence-combining exercises?

1.2.2 Sentence-Combining

Sentence combining (SC) constitutes one of the teaching tools to improve L2 learners' syntactic performance (Chomsky, 1965). Strong (1973, 1986, 1996) provided numerous examples of sentence combining. The basic concept is that shorter sentences are embedded and recombined into more complex syntactic structures. The essence of the approach of SC is to provide exercises to language learners to practice. As stated by Strong (1986), "to develop writing performance …requires practice" (p. 10). The exercises are also intended to require students to exercise their mental grammatical judgments, which thus might add an element of fun or mental challenge to the language learners. "SC exercises provide a practical way of activating playful attention to written language" (Strong, 1986, p. 10).

The effects of SC on writing quality appear to be affirmative although not conclusive. O'Hare (1973) maintains that it is important to avoid the use of transformational rules/grammatical terms when developing SC exercises; kernel sentences with signals/explicit linking words of how to combine them were provided instead. Broadhead and Berlin (1978) investigated 98 college students. The experimental group was provided with a graduated sequence of source sentences, transformation models and exercises

before they started to write essays. The finding suggested that the experimental treatment increased the syntactic variety in their essays as well as the percentage of appropriate punctuation. Rice's (1983) study reported that 427 students from Grades 7-11 engaged in SC practice over a ten-week period produced an average gain of 15 percentile points on measures of syntactic maturity. Hillocks (1984) concludes that SC is "more than twice as effective as free writing as a means of enhancing the quality of student writing" (p. 161).

SC exercises can mainly be classified into two types: Cued and Open (also termed "No Cues"). Concerning cued SC exercises, researchers such as Mellon (1969) and O'Hare (1973) provided a large number of examples, the cued words of which are illustrated below:

- Something seems to suggest something.
- Bill finished his lessons in less than an hour. (fact)
- He had received help from another student. (fact)

(From Mellon, 1969)

- Something should make you avoid him.
- He is an absolute nut. (The fact that)

(From O'Hare, 1973)

Tomlinson and Straehley (1978) focused on the incremental or cumulative technique, in which a kernel sentence (e.g., *the storm brewed ominously*) is provided first. Then other instructions (e.g., adding a prepositional unit, adding modification, adding a second independent clause, adding a subordinate clause) are provided to learners.

For the Open SC exercises, the underlying principle is to break a whole discourse into kernel sentences without providing signals except the provision of such general instructions as recombining the sentences based on voice and theme. Jenkinson (1999) states that students can combine kernel sentences in any way they desire as long as they retain the original meaning of the sentences. Strong (1986) points out that "open" combining typically generates a range of grammatical responses. The aim of Open SC is to help students explore stylistic options (p.13). See the example below provided by Strong (1986):

Sentences to be combined:

- SC is a means to an end.
- The end is clear syntax.
- The end is controlled syntax.
- SC is not an end in itself.

(From Strong, 1986, p. 13)

Answers illustrating stylistic options:

- SC is a means to an end, not an end in itself; that end is clear, controlled syntax.
- SC is a means to an end--clear syntax that is under control and not an end in itself.
- Rather than being an end in itself, SC is a means to an end: syntactic control and clarity.

Strong (1986) also suggests some ideas for developing a variety of SC exercises including:

- Cloze technique
- Imitation
- Dewriting (a dewritten passage is prepared from a target text, usually literature or professional nonfiction)
- Reorganizing sentences and/or select relevant information from fact sheets
- Generative exercises to help students create their own details (e.g., dramatization)
- Recombining exercises based on the prose of professional writers
- Exercises focused on style and mechanics

The aforementioned review of previous findings about the development of SC exercises as a teaching and learning tool is primarily intended to support the adoption of the SC approach by the present researcher when designing teaching materials for this research study investigating the effectiveness of interleaving and blocking. Yet, it is worth pointing out that the design of the present study is not intended to argue that SC is a useful approach in raising the participants' use of CCPs because of the non-inclusion of another type of grammatical exercises (e.g., multiple choices) in the same study for comparison.

2. Methodology

2.1 Participants

The participants of this study included two classes of Year 1 students taking the academic writing course entitled *University English* offered by the City University of Hong Kong in the summer term of 2020. Two 2-hour lessons were conducted per week spanning 6.5 weeks totaling 13 lessons. The participants scored Level 4 out of the 5 levels in the Kong Diploma of Secondary Education (HKDSE), which classifies candidates' performance into Level 1 to Level 5, with 5 being the highest. The level 5 candidates with the best performance are awarded a 5** (Hong Kong Examinations and Authority, 2021). By coincidence, all the students in both classes were native Cantonese speaking students, so homogeneity of the two groups of students in this study in terms of their first language was ensured.

The course *University English* adopted the approach of process writing—that is, each participant wrote three drafts of an argumentative essay of his/her own topic. Draft 1 was used for peer-review and was not assessed; Draft 2 and final Draft each accounted for 20% of the course mark. On a random basis, one of the classes (Class A) was assigned to be the interleaving group and the other one (Class B) the blocking group. The teaching of conjunctions, conjunctive adverbs and prepositions to link up two sentences took place between the submission of Draft 1 and the submission of Draft 2; namely, after Draft 1 was submitted and before Draft 2 was due. Draft 1 was used as the pre-test while Draft 2 was used as the post-test. The final draft was excluded from this research study because students were supposed to submit the final draft based on the class teacher's written and oral feedback provided on the scripts of Draft 2 and during individual teacher-student consultations.

Out of the twenty-five students from Class A, only fourteen of them submitted both Drafts 1 and 2. To match the fourteen sets of usable scripts obtained from Class A, another 14 sets of scripts from Class B were randomly selected.

2.2 The treatment

The teaching of the three categories of linking words (conjunctions, conjunctive adverbs and prepositions) using interleaving/blocking was conducted in Zoom classrooms. The treatment was applied in the three lessons (a total of 6 hours) between the pre-test and the post-test. The three categories of linking words covered in the teaching are shown in Handout A (Appendix A).

Stages of teaching

Stage 1: The use of conjunctions was taught briefly using Handout A with a special focus on explaining subordinate clauses and main clauses as a revision for both the interleaving Group and the blocking Group.

Stage 2 for the Interleaving Group: The nine categories of conjunctive adverbs included in Handout B (Appendix B) were introduced to the interleaving group. Immediately after this, the use of prepositions to link up two sentences was explained to the students using Handout A again. Subsequently, the interleaving group started to complete an exercise (Handout C) in which they were instructed to combine the same two sentences twice, first using conjunctive adverbs and then using prepositions (Appendix C). Finally, the class teacher showed the students suggested answers, highlighting important grammatical features of using both conjunctive adverbs and prepositions to connect sentences.

Stage 2 for the blocking Group was different from that for the interleaving group in two ways. First, students in the blocking group were instructed to work on the exercise for practicing the use of conjunctive adverbs immediately after the teacher's explanations about conjunctive adverbs; second, that exercise focused on only conjunctive adverbs without mentioning prepositions—the third category of linking words investigated in the present study. To achieve the best possible effect of the blocking sequence, the teaching of prepositions started only after the unit on conjunctive adverbs was totally completed. See Handout D (Appendix D) for the exercises developed for the blocking group to combine sentences using conjunctive adverbs. See Handout E developed for the Blocking Grouping to practice the use of prepositions (Appendix E).

3. Results

Paired-t test and Independ-t test (IBM SPSS Statistics 22) were used for data analysis.

The effectiveness of interleaving and blocking was judged by counting the scores of grammatical cohesive devices, as measured by the total instances of conjunctions, conjunctive adverbs and prepositions used correctly syntactically and semantically in the participants' argumentative essays.

Finding 1:

Both the blocking group (Mean: 20.07 vs. 15.86) and the interleaving group (Mean: 21.79 vs. 18.14) scored significantly higher in the post-tests than in the pre-tests at $p<0.05$ for the measure used in this study (Table 1).

Table 1. Change in Overall Improved Scores in Each of the Two Groups (Paired-t test)

		Mean	Std. Deviation	Sig. (2-tailed)
Interleaving	Pre-test	18.14	5.333	0.001*
	Post-test	21.79	5.740	
Blocking	Pre-test	15.86	5.641	0.000*
	Post-test	20.07	5.595	

* significant at $p\leq0.05$

Finding 2:

There was no significant difference across the interleaving group and the blocking group in terms of the change of overall scores of cohesive devices measured before and after the treatment at $p<0.05$ (Table 2). The score difference between the pre- and post-tests for the interleaving group was 3.65, and the score difference between the pre- and post-tests was 4.21 for the blocking group.

Table 2. Comparing the Improvements in Overall Scores Across the Two Groups (independent t-test)

	MEAN DIFFERENCE	Std. Deviation	Sig. (2-tailed)
Sample 1 (Interleaving)	3.65	3.225	.643
Sample 2 (Blocking)	4.21	3.215	.643

Not significant at $p\leq0.05$

Finding 3:

3a. As can been seen in Table 3, the blocking group used significantly more prepositions in the post-test (mean=2.86) than in the pre-test (mean=2.0).

3b. As can been seen in Table 3, the interleaving group showed no significant difference between the pre- (mean=3.29) and post- tests (mean = 3.29) in the number of prepositions used as linking words at $p<0.05$.

Table 3. Comparing the Change in the Number of Prepositions Used as Linking Words for Each of the Two Groups (paired-t test)

		MEAN	Std. Deviation	Sig. (2-tailed)
Interleaving	Pre-test	3.29	1.684	1.000
	Post-test	3.29	2.400	
Blocking	Pre-test	2.00	1.240	0.001*
	Post-test	2.86	1.512	

*significant at $p \leq 0.05$

4. Discussion and Conclusion

This study aimed to investigate the effects of interleaving and blocking, applied in the context of sentence-combining exercises, on the teaching of grammatical cohesive devices in the argumentative essays written by native Cantonese-speaking Year 1 students at the City University of Hong Kong. In particular, the present researcher hopes to contribute to the body of literature with respective to the effectiveness of interleaving and blocking in helping students produce a higher number of CCPs that are correct syntactically and semantically. Results suggest that both interleaving and blocking, when applied in the context of sentence combining, were useful in boosting the participants' use of the three types of linking words, but neither interleaving nor blocking was found to be more superior to the other in terms of efficacy when teaching CCPs. However, the blocking group was found to use significantly more prepositions as cohesive devices than did the interleaving group in the post-test.

Concerning the sentence-combining exercises used in the present study, the finding that both groups improved their post-test scores might suggest that the SC exercises used in the present study as a teaching tool served the purpose of providing an opportunity for the students to engage in thinking at a deeper level about the semantic relationship between the two sentences provided in a question in the student handouts. The SC exercises used in this study were of the Open type, in which learners can freely decide how to combine the given two sentences in a question. This favorable observation concerning the use of SC exercises might be seen as lending some referential information to some researchers in support of using SC exercises to enhance learners' syntactic maturity (e.g., Broadhead & Berlin, 1978; Hillocks, 1984; Rice, 1983). Nevertheless, it is equally important to note that the higher overall post-test scores of the interleaving and blocking groups might have been a result of the constant questions asked to the participants by the class teacher about the typical syntactic and semantic features of the CCPs rather than the direct result of SC exercises per se. Another intervening variable possibly helping to boost the total scores of CCPs might have been the participants' constant exposure to the target structures displayed systematically in the student handouts through analyzing the usage of CCPs during the six hours' teaching.

As regards another statistically significant finding about the blocking group's more use of prepositions as cohesive devices in the post-test than in the pre-test, two possible explanations might account for the significant difference. First, in general, the blocking practice might cause less confusion to students who do not have a strong level of English proficiency when learning similar grammatical structures. Such explanations are also available in some previous studies (e.g., Carpenter & Mueller, 2013; Schneider et al., 2002). Second, there might be a limitation of what six hours' explicit teaching can do to raise students' use of prepositions as linking words after students have acquired a basic level of proficiency in using prepositions to connect sentences. It seems possible that the interleaving group had already mastered the correct usage of a few basic prepositions such as *because of, due to* even before the treatment whereas the blocking group did not have the same knowledge of using these basic prepositions as linking words prior to the intervention. Hence, it would be easier for the blocking group to improve from a comparatively low threshold to a higher level. As such, it remains uncertain whether the higher number of prepositions used in the essays written by the blocking group in the post-test was indeed the direct result of the blocking practice or whether a much longer time of practice would be needed for the teaching of less commonly used prepositions as linking words to take effect.

Several limitations were observed. The sample size of 14 sets of scripts for each of the two groups has restricted the generalizability of the conclusions derived from the findings. The second limitation is that the relationship between the number of linking words and the overall writing quality has not been investigated because of the constraint of human resources. The third limitation concerns the possible subjectivity that might have existed in the process of data analysis. Only one researcher determined whether a linking word was used correctly syntactically and semantically. Lastly, the score of cohesive devices was measured by counting only the total instances of conjunctions, conjunctive adverbs and prepositions used correctly both syntactically and semantically in a participant's argumentative essay while the number of types of linking words actually used was disregarded. Preliminary inspection of the data revealed that all three types of linking words existed in most post-scripts, with prepositions being the category of the lowest occurrences. Therefore, counting the number of types of linking words does not seem likely to yield significant findings.

Recommendations for future research are suggested as follows: a) increasing the sample size would enhance the generalizability of findings to be obtained; b) correlating the number of linking words used in an argumentative essay with the overall writing quality would justify the objective of boosting the number of linking words used; c) involving students who possess a lower or a higher level of English proficiency (e.g., HKDSE Level 3 or Level 5 students would further reveal the compatibility/incompatibility of SC exercises with such a group of students); and d) ensuring the homogeneity of the initial ability of participants to use prepositions as linking words appears necessary before the application of the intervention. This would allow the establishment of a stronger claim concerning whether blocking or interleaving is found to be more effective in terms of teaching two groups

of students to use prepositions to link up two sentences. One way of doing this might involve participants to write on the same topic within a specified amount of time.

In conclusion, both interleaving and blocking appear to be effective in enhancing L2 learners' use of conjunctions, conjunctive adverbs and prepositions as grammatical cohesive devices in the context of sentence-combining exercises. However, interleaving practice does not seem to surpass the blocking practice in terms of boosting the participants' use of the three types of cohesive devices and vice versa. Yet, the blocking practice might be considered as a more effective teaching sequence in helping intermediate students use prepositions as linking words. As regards the sentence-combining exercises used in the present study as a teaching tool, they seem to have served the purpose of providing an opportunity for the student participants to engage in deeper thinking about the semantic relationship between two given sentences. This favorable observation might be seen as lending some referential information to researchers in support of using sentence-combining exercises to enhance learners' syntactic maturity.

References

Ahmad, Z. (2019). Differences between students' linguistic knowledge and text production ability: A case of the use of cohesion as a resource of texture in academic writing. *World Journal of English Language, 9*(2), 55-63. (ERIC Number: ED602725) https://doi.org/10.5430/wjel.v9n2p55

Hong Kong Examinations and Assessment Authority. (2021, March 31). *Assessment information.* Retrieved from https://www.hkeaa.edu.hk/en/hkdse/assessment/the_reporting_system/

Barzagar, N. K., & Ebersbach, M. (2019). Distributing mathematical practice of third and seventh graders: Applicability of the spacing effect in the classroom. *Applied Cognitive Psychology, 33*, 288-298. https://doi.org/10.1002/acp.3485

Broadhead, G. J., & Berlin, J. A. (1978). *Teaching and measuring sentence skills: The importance of length, variability, variety, and punctuation.* ERIC Number: ED208409.

Carpenter, S. K. (2014). Spacing and interleaving of study and practice. In V. A. Bensassi, C. E. Overson, & C. M. Hakala (Eds.), *Applying science of learning in education: Infusing psychological science into the curriculum* (pp. 131-141). Society for the Teaching of Psychology.

Carpenter, S. K., Cepeda, N. J., Rohrer, D., Kang, S. H. K., & Pashler, H. (2012). Using spacing to enhance diverse forms of learning: Review of recent research and implications for instruction. *Educational Psychology Review, 24*, 369-378. https://doi.org/10.1007/s10648-012-9205-z

Carpenter, S. K., & Mueller, F. E. (2013). The effects of interleaving versus blocking on foreign language pronunciation learning. *Memory & Cognition, 41*, 671-682. https://doi.org/10.3758/s13421-012-0291-4

Chen, O., Castro-Alonso, J. C., Paas, F., & Sweller, J. (2018). Extending cognitive load theory to incorporate working memory resource depletion: Evidence from the spacing effect. *Educational Psychology Review, 30*, 483-501. https://doi.org/10.1007/s10648-017-9426-2

Chomsky, N. (1965). *Aspects of the Theory of Syntax*. MIT Press. https://doi.org/10.21236/AD0616323

Dunlosky, J. (2013). Strengthening the student toolbox: Study strategies to boost learning. *American Educator*, Fall, 12-21.

Foster, N. L., Mueller, M. L., Was, C., Rawson, K. A., & Dunlosky, J. (2019). Why does interleaving improve math learning? The contributions of discriminative contrast and distributed practice. *Memory & Cognition, 47*, 1088-1101. https://doi.org/10.3758/s13421-019-00918-4

Goode, S., & Magill, R. A. (1986). Contextual interference effects in learning three badminton serves. *Research Quarterly for Exercise and Sport, 57*, 308-314. http://dx.doi.org/10.1080/02701367.1986.10608091

Hall, K. G., Domingues, D. A., & Cavazos, R. (1994). Contextual interference effects with skilled baseball players. *Perceptual and Motor Skills*, *78*, 835-841. http://dx.doi.org/10.1177/003151259407800331

Halliday, M. A. K., & Hasan, R. (1976). *Cohesion in English.* London: UK, Longman.

Hillocks, G., Jr. (1984). What works in composition: A meta-analysis of experimental treatment studies. *American Journal of Education*, *93*, 133-170. https://doi.org/10.1086/443789

Hopkins, R. F., Lyle, K. B., Hieb, J. L., & Ralston, P. A. (2016). Spaced retrieval practice increases college students' short-and long-term retention of mathematics knowledge. *Educational Psychology Review, 28(*4), 853-873. https://doi.org/10.1007/s10648-015-9349-8

Jenkinson, A. (1999). *Improve Student Reading and Writing. Sentence-Combining Activities for Elementary and Secondary Teachers*. Working with Language Series. ERIC Publications. **(**ERIC Number: ED 430 256)

Kang, S. H. K. (2017). The benefits of interleaved practice for learning. In J. C. Horvath, J. Lodge, & J. A. C. Hattie (Eds.), *From the laboratory to the classroom: Translating science of learning for teachers* (pp. 79-93). Routledge.

Marashi, S. M. (2020). Impact of Teaching Cohesive Devices to Iranian EFL learners: Case of IELTS writing task 2 examination. *Journal of Linguistics, Literature and Language Teaching, 6(*2), 115-126. https://doi.org/10.32505/jl3t.v6i2.2050

Mellon, J. C. (1969). *Transformational Sentence Combining*. NOTE Research Report, no. 10. National Council of Teachers of English.

Nagashima, T., Ling, E., Zheng, B. V., Bartel, A. N., Silla, E. M., Vest, N. A., … Aleven, V. (2022). Scaffolding Help Learners? A Classroom Study with an Intelligent Tutoring System. Paper presented at the Annual Meeting of the Cognitive Science Society (44th, 2022). (ERIC Number: ED623401)

Nakata, T., & Suzuki, Y. (2019). Mixing Grammar Exercises Facilitates Long-Term Retention: Effects of Blocking, Interleaving, and Increasing Practice. *The Modern Language Journal*, *103*(3), 629-647. https://doi.org/10.1111/modl.12581

O'Hare, F. (1973). Sentence Combining: Improving Student Writing Without Formal Grammar Instruction. *National Council of Teachers of English.* (ERIC Document: ED073483)

Ostrow, K., Heffernan, N., Heffernan, C., & Peterson, Z. (2015). Blocking vs. interleaving: Examining single-session effects within middle school math homework. In *Artificial Intelligence in Education* (pp. 338-347). Springer, Cham. https://doi.org/10.1007/978-3-319-19773-9_34

Rau, M. A., Aleven, V., & Rummel, N. (2013). Interleaved practice in multi-dimensional learning tasks: Which dimension should we interleave? *Learning and Instruction*, *23*, 98-114. https://doi.org/10.1016/j.learninstruc.2012.07.003

Rice, P. H. (1983). *A study of the effectiveness of sentence combining in increasing the syntactic maturity of student writing at Grades 7 through 11*. Ph.D. dissertation., University of Cincinnati.

Rohrer, D., Dedrick, R. F., & Stershic, S. (2015). Interleaved practice improves mathematics learning. *Journal of Educational Psychology*, *107*, 900-908. https://doi.org/10.1037/edu0000001

Rohrer, D., Dedrick, R. F., Hartwig, M. K., & Cheung, C. N. (2020). A randomized controlled trial of interleaved mathematics practice. *Journal of Educational Psychology*, *112*, 40-52. https://doi.org/10.1037/edu0000367

Sana, F., Yan, V. X., & Kim, J. A. (2017). Study sequence matters for the inductive learning of cognitive concepts. *Journal of Educational Psychology*, *109*(1), 84-98. https://doi.org/10.1037/edu0000119

Schneider, V. I., Healy, A. F., & Bourne, L. E. (2002). What is learned under difficult conditions is hard to forget: Contextual interference effects in foreign vocabulary acquisition, retention, and transfer. *Journal of Memory and Language*, *46*, 419-440. https://doi.org/10.1006/jmla.2001.2813

Schutte, G. M., Duhon, G. J., Solomon, B. G., Poncy, B. C., Moore, K., & Story, B. (2015). A comparative analysis of massed vs. distributed practice on basic math fact fluency growth rates. *Journal of School Psychology*, *53*, 149-159. https://doi.org/10.1016/j.jsp.2014.12.003

Soderstrom, N. C., & Bjork, R. A. (2015). Learning versus performance: An integrative review. *Perspectives on Psychological Science*, *10*, 176-199. http://dx.doi.org/10.1177/1745691615569000

Strong, W. (1973). *Sentence combining and paragraph building.* Random House.

Strong, W. (1986). *Creative Approaches to Sentence Combining.* The ERIC Clearinghouse on Reading and Communication Skills and the National Council of Teachers of English, Urbana, Illinois. ED274985.

Strong, W. (1996). *Writers' toolbox: A sentence combining workshop*. McGraw-Hill.

Taylor, K., & Rohrer, D. (2010). The effect of interleaving practice. *Applied Cognitive Psychology*, *24*, 837-848. https://doi.org/10.1002/acp.1598

Tomlinson, B., & Straehley, M. (1978). *Developing and Measuring Mature Syntax.* Paper presented at the 11th Annual Meeting of the Western College Reading Association. (ERIC Document: ED158224). https://doi.org/10.1080/24699365.1978.11669680

Appendix A Handout A – Overview of Three Types of Linking Words

LINKING WORDS

	CONJUNCTIONS	**CONJUNCTIVE ADVERBS**	**PREPOSITIONS**
	PATTERN: *Although* John Chan has only one year's working experience, I highly recommend him for the post. I highly recommend John Chan for the post a*lthough* he has only one year's working experience.	PATTERN: John Chan has only one year's working experience; however, I highly recommend him for the post. John Chan has only one year's working experience. *However,* I highly recommend him for the post.	PATTERN: *Despite* his one-year working experience, I highly recommend John Chan for the post. *Despite* his having one-year working experience, I highly recommend John Chan for the post.
GROUP A	because since as so* for*	; in the meantime, ; meanwhile, ; afterwards, ; subsequently, ; prior to this, ; as a consequence, ; as a result, ; thus, ; therefore, ; in addition, ; moreover, ; furthermore, ; on the contrary,	Showing cause and effect: *Because of, due to, as a result of* Showing concession: *despite, in spite of, regardless of* Showing addition: *in addition to, besides (informal)* Showing time order: *before, after*

		; conversely, ; however, ; yet, ; still, ; nevertheless, ; on the other hand, ; otherwise,	
GROUP B	though although even though even if while whereas no matter what/how/where… but* yet*		
GROUP C	while before after		

*coordinating conjunctions: *for, and, nor, but, or, yet, so* (FANBOYS)

Coordinating Conjunctions vs. Subordinating Conjunctions

Coordinating Conjunctions (Two clauses – equally important)	**Subordinating Conjunctions** (Main clause – more important)
1a. John Chan has only one year's working experience, **but** I highly recommend him for the post. 2a. I am overjoyed **for** I have passed the driving test.	1b. **Although** John Chan has only one year's working experience, I highly recommend him for the post. 2b. I am overjoyed **because** I have passed the driving test.

3a. Co-ed schools might be better than single-sex schools in terms of providing more opportunities of boys and girls to cooperate, **but** students in single-sex schools have been found to outperform those in co-ed schools in public examinations.	3b. **Although** co-ed schools might be better than single-sex schools in terms of providing more opportunities of boys and girls to cooperate, students in single-sex schools have been found to outperform those in co-ed schools in public examinations.
4a. The content is informative, **but** grammatical accuracy needs improving.	4b. The content is informative **although** grammatical accuracy needs improving.

TASK: IDENTIFY THE MAIN AND SUBORDINATE CLAUSES IN THE EXAMPLES PROVIDED.

Sample sentences illustrating the use of conjunctions:

1) Although dislikes chemistry, he has decided to take this subject as his major at university.
2) We must pay our taxes, otherwise we will be fined.
3) While their new house was being built, they were staying in a hotel nearby.
4) The children were enjoying their outdoor activities until a sudden downpour forced them indoors.
5) Before television appeared in people's home in the fifties, the radio had been the chief sources of home entertainment.
6) Some people spend their leisure time readings, whereas others prefer to watch television.
7) If Mary had not cheated, she would not have been sentenced to jail.
8) The house must be very quiet, otherwise David cannot concentrate.
9) No matter whether my friend will keep me company or not, I will visit Canada this year.

Appendix B Handout B—Nine Categories of Conjunctive Adverbs

CONJUNCTIVE ADVERBS

Please note that the conjunctive adverbs put in the same categories below are not exactly equivalent in meaning despite some similarity.

1). ADDITIONAL CONJUNCTIVE ADVERBS

in addition	**moreover**	**besides**	**furthermore**

- Hong Kong is a famous city: it is a shopper's paradise; in addition, it is also an international financial centre.

2). CONCESSIVE CONJUNCTIVE ADVERBS

however	**yet**	**still**	**on the other hand**	**nevertheless**	**nonetheless**

- Hong Kong is a shoppers' paradise; yet, some shops overcharge tourists.
- Some students studying overseas may benefit tremendously; on the other hand, some students may find the experience frustrating.

3). CONTRASTING CONJUNCTIVE ADVERBS

on the contrary	**conversely**

- The gambling industry in Macau does not seem to be improving; on the contrary, it appears to on the decline.

4). LOGICAL CONJUNCTIVE ADVERBS

thus	**therefore**

- Some teenagers lack self-control; thus, they may easily become addicted to computer games if not supervised by their parents.
- All insects have six legs. A spider has eight legs; therefore, a spider is not an insect.

5). RESULT CONJUNCTIVE ADVERBS

as a result	**as a consequence**	**for this reason**	**hence**	**consequently**

- The house prices have become unreasonably high; as a consequence, many young adults lose hopes of buying their own properties.

6). ENUMERATING CONJUNCTIVE ADVERBS

first	**second**	**in the first place**	**in the second place**	**finally**	**lastly**

7). ILLUSTRATIVE CONJUNCTIVE ADVERBS

for example	**for instance**

- One should make preparation before an interview, for example, thinking about the questions that may be asked.

- One should make preparation before an interview; for example, one should think about the questions that may be asked.

8). CLARIFYING CONJUNCTIVE ADVERBS

after all	**at least**	**in fact**	**as a matter of fact**	**indeed**

rather	**instead**

- "Jurassic Park" is not considered suitable viewing for young children; after all, it contains a great deal of violence.
- Alcohol consumption increases personal popularity; at least, this is what many manufacturers believe.
- Most domestic workers are not lazy; rather, they are hard-working.
- The exchange programs last year did not include Japan universities; instead, they covered universities in South Korea.

9). SEQUENTIAL CONJUNCTIVE ADVERBS

afterwards	**subsequently**	**prior to this**	**in the meantime**	**meanwhile**

- A flyover was first built; afterwards, a tunnel was completed.
- A meeting to discuss the use of the donated money will be held in two months' time; prior to this, consensus will be sought from board members.
- The post of the new department head is being advertised in local newspapers; in the meantime, daily internal emails are posted via the company intranet.

Appendix C Handout C – Exercise Developed for the Interleaving Group

Task: Combine sentences for each question below first with a <u>conjunctive adverb and then with a preposition/prepositional phrase</u>:

1) He dislikes chemistry. He has decided to take this subject as his major at university.

1a. (Conjunctive adverb) _____

1b. (Preposition): _____

2) We must pay our taxes. We will be fined.

1a. (Conjunctive adverb) _____

1b. (Preposition): _____

3) Their new house is being built. They are staying at a hotel nearby.

1a. (Conjunctive adverb) _____

1b. (Preposition): _____

4) The children were enjoying their outdoor activities. A sudden downpour forced them indoors.

1a. (Conjunctive adverb) _____

1b. (Preposition): _____

5) Television appeared in people's home in the fifties. The radio had been the chief sources of home entertainment.

1a. (Conjunctive adverb) _____

1b. (Preposition): _____

6) Some people spend their leisure time readings. Others prefer to watch television.

1a. (Conjunctive adverb) _____

1b. (Preposition): _____

7) If May had not cheated. She would not have been sentenced to jail.

1a. (Conjunctive adverb) _____

1b. (Preposition): _____

8) The house must be very quiet. He cannot concentrate.

1a. (Conjunctive adverb) _____

1b. (Preposition): _____

9) My friend will not keep me company. I will travel to Canada.

1a. (Conjunctive adverb) _____

1b. (Preposition): _____

Appendix D Handout D – Exercise on Conjunctive Adverbs Developed for the Blocking Group

Task 1: Combine sentences for each question below with a <u>conjunctive adverb</u>:

1) He dislikes chemistry. He has decided to take this subject as his major at university.
2) We must pay our taxes. We will be fined.
3) Their new house is being built. They are staying at a hotel nearby.
4) The children were enjoying their outdoor activities. A sudden downpour forced them indoors.
5) Television appeared in people's home in the fifties. The radio had been the chief sources of home entertainment.
6) Some people spend their leisure time readings. Others prefer to watch television.
7) If May had not cheated. She would not have been sentenced to jail.

8) The house must be very quiet. He cannot concentrate.
9) My friend will not keep me company. I will travel to Canada.

Appendix E Handout E – Exercise on Prepositions Developed for the Blocking Group

Task 1: Combine sentences for each question below with a preposition:

1) He dislikes chemistry. He has decided to take this subject as his major at university.
2) We must pay our taxes. We will be fined.
3) Their new house is being built. They are staying at a hotel nearby.
4) The children were enjoying their outdoor activities. A sudden downpour forced them indoors.
5) Television appeared in people's home in the fifties. The radio had been the chief sources of home entertainment.
6) Some people spend their leisure time readings. Others prefer to watch television.
7) If May had not cheated. She would not have been sentenced to jail.
8) The house must be very quiet. He cannot concentrate.
9) My friend will not keep me company. I will travel to Canada.