The Effectiveness of Using an H5P Pathway to Enhance College Students' Academic Style in Writing

Xue Yao, Ying Shao[*], and Rong Luo

School of Languages, Xi'an-Jiaotong Liverpool University, China

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ABSTRACT

This study investigates the effectiveness of using an H5P pathway to enhance college students' academic style in writing. The study was conducted at XJTLU, a Sino-foreign university, where the language barriers of first-year students posed difficulties in their transition from informal language to the formal tone required in academic writing. Through a careful experimental design, participants were assigned to either an experimental or a control group, with the former engaging in a structured H5P pathway including five specific academic writing style rules based on learner needs analysis. The five rules are in aspects of word choice, sentence structure, transition, hedging and redundancy. The latter received lesson PPTs with the same content. This paper discusses the results of the study, which show that the application of the H5P pathway effectively assisted Year 1 students at XJTLU in narrowing the gap between the two writing styles. Preliminary analysis indicates a significant improvement in the experimental group's academic writing style specifically in aspects of using formal words and complex sentence structure. By comparison, other than word choice, there is no significant improvement in the control group. The findings of this study highlight the potential of H5P pathways as an effective tool for enhancing college students' academic writing style. Through interactive and tailored activities, students' challenges at academic writing conventions could be addressed. This research provides implications for innovative pedagogical strategies that can promote students' academic development.

1. Introduction

Academic writing stands as a fundamental skill that significantly influences both academic and professional accomplishments. Nonetheless, mastering academic writing often poses a daunting challenge for students due to various factors such as cognitive load, academic norms, and linguistic proficiency (Berdanier & Lenart, 2020). Authors are required to adeptly structure their thoughts, effectively articulate their viewpoints, and adhere to academic writing conventions which include the use of formal language, sophisticated sentence structures, and

specific academic discourse markers. Additionally, non-native speakers encounter the additional hurdle of adapting to a distinct linguistic and cultural context, leading to obstacles when transitioning from informal to formal writing (Oshima & Hogue, 2006; Zhang, 2018). At Xi'an-Jiaotong Liveropool University (XJTLU), a Sino-British joint-venture university in China, first-year students encounter linguistic challenges in academic writing. Despite the institution's adoption of English as its official language, many students struggle to demonstrate proficient English language skills in their writing, leading to a notable failure rate in essay writing each year. According to Cheng and Zhang (2023), an analysis of students' self-assessments in English for Academic Purpose (EAP) writing at XJTLU revealed consistently low scores in academic style usage, highlighting this as a prevalent weakness among the student body.

The prevalent challenge of mastering academic style necessitates the implementation of innovative instructional designs aimed at enhancing student engagement with learning materials and providing avenues for feedback and reflective practices. Aligned with the cognitivist theoretical approach, which emphasizes the necessity for adaptive, personalized, and student-controlled learning environments (Chatti et al., 2010), the integration of HTML5 Package (H5P) interactive videos emerges as a promising strategy for improving students' academic writing style. These videos incorporate embedded pop quizzes to assess student comprehension, enabling individuals to gauge their understanding before progressing further. Blieck et al. (2019) discovered that these interactive videos could be organized to construct H5P pathways, creating an environment in which students can engage in self-challenge and surpass the basic level of knowledge acquisition. Hence, H5P presents institutions with the potential to develop course content that is interactive, customized, and results in substantial enhancements in learning achievements (Lai & Bower, 2020).

While H5P theoretically appears to be a promising digital tool for enhancing students' learning outcomes, the assessment of its effectiveness remains an area necessitating further exploration, particularly in light of its accessibility and growing popularity. Although Zeller et al. (2021) acknowledged the potential of H5P interactive videos in fostering engaging discussions, the study did not measure its impact on students' learning achievements. Furthermore, conflicting findings exist in other studies. Wikie and Zakaria (2017) investigated the effectiveness of H5P in improving engagement and grades and their findings revealed that the interactive features of H5P significantly enhanced students' success rates in summative assessments. Conversely, Jacob and Centofanti (2023) conducted a similar study and indicated that participants exposed to H5P interactive resources did not exhibit significantly improved summative quiz scores compared to those without access to H5P. To elucidate the actual impact of H5P on improving students' learning outcomes and catering to their specific needs in academic writing, this study aims to evaluate the effectiveness of H5P in enhancing students' academic writing style by addressing the following two research questions.

1. What are the learning needs of XJTLU Year 1 undergraduate students regarding academic style?
2. To what extent is the H5P pathway effective in improving students' academic style in writing?

2. Literature Review

2.1. Academic Style

In a university environment, it is crucial for second language (L2) learners to have essential academic writing abilities (Pecorari, 2006). Academic writing is typified by meticulous word selection, the use of complex sentences, adherence to grammatical conventions, and the avoidance of contractions. Consequently, writers are advised to adhere to specific style manuals for academic papers to garner favorable reception from reviewers and readers. According to Bennet (2009), English Academic Discourse is recognized as a distinct entity with identifiable characteristics, widely agreed upon basic principles, specific methods of constructing texts, and prescribed grammatical and lexical elements. In this study, 10 specific rules of academic writing style are derived from Bennet's (2009) research in which 41 academic style manuals were investigated. Through a need analysis survey, five rules were identified, in aspects of word choice, sentence structure, hedges, cohesive devices, and redundancy.

Researchers have investigated these aspects in academic style separately. In academic writing, word choice plays a crucial role in conveying precise and nuanced meanings. It involves selecting language that is formal, specific, and appropriate for the context, with a focus on clarity and accuracy. Ma (2020) examined accuracy in academic writing and highlighted L2 learners' specific problems with choosing the appropriate words. This leads to barriers in the development of a clear and scholarly tone in the written work. In addition, Liardét et al. (2019) investigated formality and discovered that students gained from the instruction provided, steering clear of using specific casual phrases. In line with the studies, explicit instruction is necessary when assisting students to use proper words and avoid informal expressions.

Several studies have examined the utilization of cohesive devices in the writing of non-native students. Connor (1984) observed a deficiency in the diversity of lexical cohesive devices employed by English as second language (ESL) writers in comparison to native speakers. Additionally, Liu and Braine (2005) investigated the academic writing of Chinese graduate students majoring in non-English disciplines, and their findings underscored the necessity for instruction aimed at heightening students' awareness of cohesion in writing. This suggests that educators can provide explicit instruction to students regarding cohesive devices, including conjunctions, transitional phrases, and pronouns, to facilitate the connection of ideas throughout their writing.

The utilization of hedges constitutes another pivotal facet of academic style. Through the use of hedges, writers can acknowledge the limitations or uncertainties in their arguments, thereby upholding scholarly credibility. Furthermore, hedges aid in conveying a nuanced and objective approach to the presentation of ideas, signifying an awareness of alternative interpretations or potential exceptions. Yang (2013) analysed three distinct corpora, revealing that Chinese authors were inclined to assertiveness in scientific writing, using fewer cautious expressions than native English writers. Moreover, Firoozjahantigh et al. (2021) examined the impact of explicit instruction on hedging and boosting devices using a process-based method on the academic writing proficiency of L2 learners. Their research elucidated that L2 learners who received explicit instruction on hedging via a process-based approach to writing instruction

achieved higher scores in Task 2 of the IELTS exam compared to those who did not receive such instruction.

Previous studies have highlighted the importance of instruction in enhancing students' academic style in writing. As with the digital transformation trend in the education field, numerous educational institutions have adopted online learning environments with online videos to provide instruction. By employing appropriate instructional strategies in an online learning environment, students can receive information in different aspects of academic style and have long-lasting learning experiences.

2.2. H5P Interactive Videos

H5P represents an open-source content creation tool utilized for the development of interactive and compelling online learning materials. Educators can use this platform to generate and disseminate diverse interactive content, encompassing presentations, games, quizzes, and interactive videos. Interactive features can be dynamically integrated into the videos, enabling students to assess their comprehension of the content throughout the video, instead of passively listening to it. For instance, in the case of students failing to complete an embedded quiz within an online video, they would be prompted to revisit the section of the video elucidating the specific content. The inclusion of interactive elements within the videos has the potential to enrich student's learning experience by fostering increased opportunities for learner-content interaction (Zhang et al., 2006), which refers to the intellectual engagement with the content, leading to alterations in the student's understanding, viewpoint, or cognitive structures (Moore, 1989).

Prior research has demonstrated that integrating interactive elements into instructional videos can enhance individual learning outcomes and foster heightened student engagement. Dieck-Assad et al. (2020) observed a significant correlation between interactive videos and the academic performance and engagement levels of engineering candidates. Furthermore, Ploetzner's study in 2022 revealed that interactive videos, particularly those integrating components such as questions and tasks to encourage viewer participation, are more effective in promoting information retention and comprehension compared to videos lacking interactive features. The adaptability of interactive videos allows learners to customize their study pace and content based on their prior knowledge, thereby positively influencing self-regulated learning (Taslibeyaz, 2020). Due to the benefits mentioned above, interactive videos are often preferred by learners. As noted by Zhang et al. (2006), the utilization of interactive videos resulted in notably higher levels of learner satisfaction compared to learning in alternative settings.

2.3. ICAP Framework

The Cognitive Engagement Framework known as Interactive-Constructive-Active-Passive (ICAP), developed by Chi and Wylie (2014), posits that deeper levels of learning are associated with increasingly complex engagement with learning materials. The ICAP framework outlines four modes of engagement and their influence on the assimilation of domain-specific knowledge: passive, active, constructive, and interactive. Passive engagement is characterized by the absence of overt learning behavior as the student interacts with the learning material, resulting in the solitary storage of new information at a cognitive level. Active engagement is

more complex as learners can manipulate new information, which means they can integrate certain parts of their learning experience with the new materials, resulting in the formation of robust memory connections and easier retrieval. Following active engagement, constructive engagement entails generating fresh knowledge that goes beyond the original learning content provided. Subsequently, interactive engagement occurs when multiple learners work together to develop new learning material through conversation, resulting in the inference of fresh knowledge supported by activated and combined information from the learning resources, along with input from the fellow learner.

According to the ICAP Framework, the H5P interactive videos facilitate the transition of learners from passive modes of engagement to more intricate ones, such as active and constructive modes of engagement, by enabling students to manipulate and reproduce their comprehension of the learning material (Jacob & Centofanti, 2023). For instance, during the viewing of an H5P interactive video, the video will pause for students to engage in a blank-filling activity, thereby integrating their understanding of the presented concepts with the learning material, which reflects active engagement. Furthermore, additional interactive features such as multiple-choice questions and sequencing activities can be carefully designed for learners to apply acquired information in new contexts, reflecting constructive engagement. Extensive interaction with multimedia materials has been shown to enhance learning performance (Bernard et al., 2009). Consequently, in accordance with the framework, H5P interactive videos hold the potential to enhance students' learning outcomes.

3. Methodology

3.1. Participants

The study was conducted with Year 1 students at XJTLU in 2023, involving a total of 3176 participants. Students were divided into control and experimental groups based on their preferences. The control group (CG) received PPTs focusing on academic style learning, while the experimental group (EG) engaged with the H5P pathway, accessing interactive modules tailored to address key academic writing challenges. Notably, both the PPTs and H5P pathway shared identical content. The intervention spanned a 4-week period, allowing students the flexibility to access the materials at their discretion. The specific research steps are shown in Figure 1:
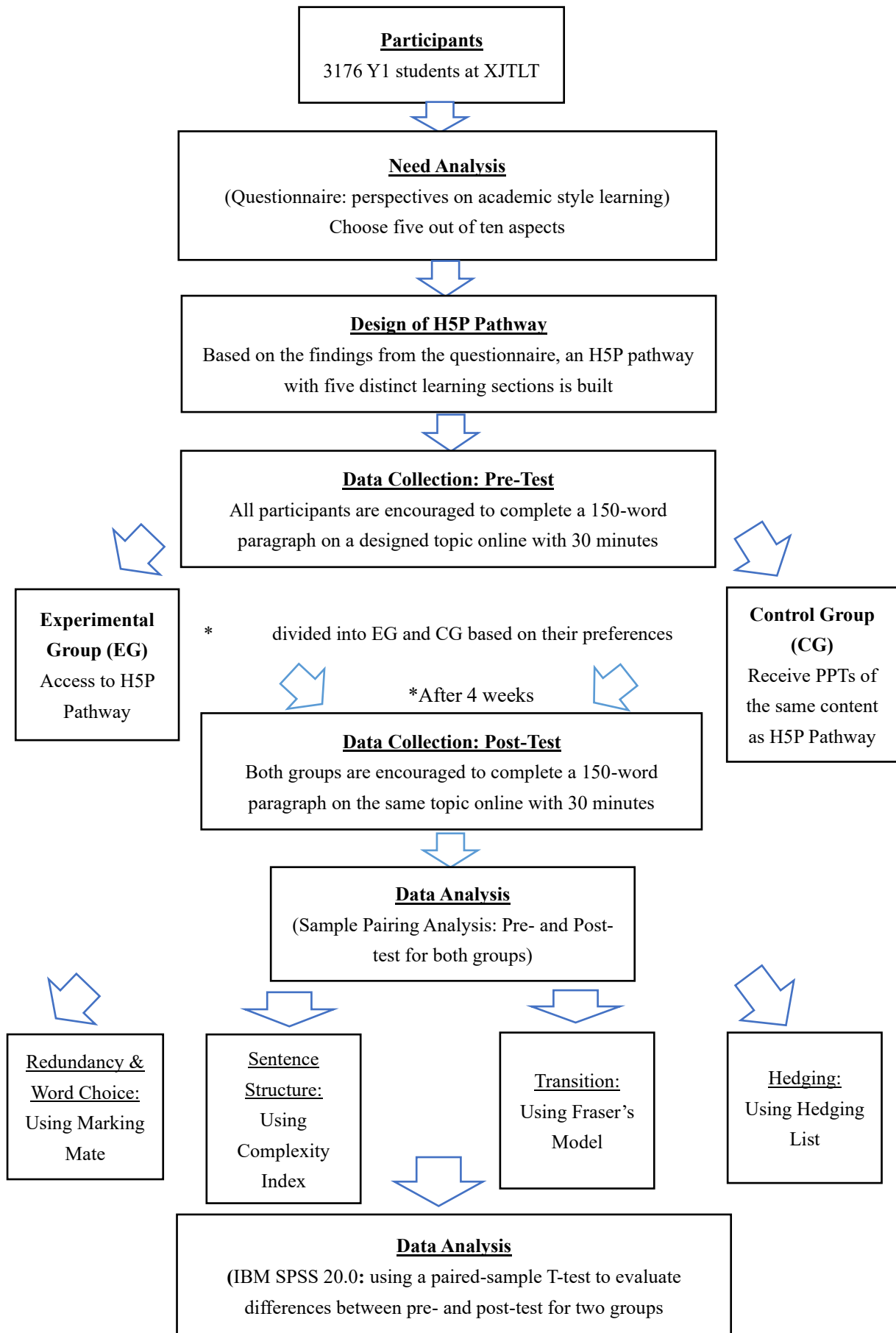
Figure 1. Research steps

3.1. Need Analysis

To gain a deeper understanding of students' perspectives on academic style learning, participants were prompted to select five out of ten aspects, such as redundancy, word choice, sentence structure, hedging, listing expressions, split infinitives, transition, exclamations, contractions, and pronouns (Bennett, 2009), in which they lacked confidence. Subsequently, a meticulous analysis of their responses informed educators about the specific areas of academic style where students required further support and guidance (Figure 1).

3.2. Design of H5P Pathway

Based on the findings from the questionnaire, an interactive H5P pathway consisting of five distinct learning sections addressing various aspects of academic style was developed. This pathway allowed students the flexibility to select and progress through one or multiple sections based on their individual learning needs and pace. Each section featured two core components: an interactive video and accompanying follow-up quizzes. These learning resources integrated a range of H5P functionalities, including Multiple Choice Questions, Fill in the Blanks, and Drag and Drop (Appendix A), all supplemented with detailed feedback. Notably, interactive elements such as fill-in-the-blank questions with explanations were strategically interspersed within the videos, providing students with opportunities to apply newly acquired knowledge before advancing to subsequent topics. Following each video, students were encouraged to complete a comprehensive quiz encompassing diverse exercise types aligned with the module's thematic content, such as Multiple Choice Questions, Fill in the Blanks, and Drag and Drop (Appendix B). Upon quiz completion, students received immediate feedback, including a score; those scoring below 60 were advised to revisit the video lesson for further reinforcement (Figure 1).

3.3. Data Collection

A total of 3176 Year 1 students were encouraged to participate in a pre-test online, tasked with composing a 150-word paragraph on a designated topic with 30 minutes. Following this initial assessment, the EG was granted access to the H5P pathway comprising five distinct learning sections focusing on academic style learning, while the CG received PPTs containing identical content. Subsequently, after a span of 4 weeks, both groups were prompted to undergo a post-test, wherein they were required to craft another 150-word paragraph on the same topic online with 30 minutes as the pre-test (Figure 1).

3.4. Data Analysis

In accordance with the need analysis results, the primary academic style challenges identified by students were hedging, transition, sentence structures, redundancy, and word choice, as determined by questionnaire responses. To ensure the reliability of the data, samples were systematically paired. Subsequently, four criteria were applied to assess the paired samples' performance across the aforementioned academic elements. The results of this analysis were quantified and processed using IBM SPSS 20.0 (Coakes, 2013), specifically employing a paired-sample T-test to evaluate differences between pre-test and post-test outcomes for both the control and experimental groups. Specifically, those four criteria were adopted in this study as follows (Figure 1).

Redundancy and Word Choice 1. Marking Mate (Jordan & Snyder, 2012), an AI-powered online learning tool (Appendix C), was used to count students' errors in both redundancy and word choice. Specifically, this tool highlighted and tallied students' informal expressions, redundant words, and phrases in both pre- and post-tests. If the number of errors increases, it indicates that the H5P pathway for the EG or PPTs for the CG were not effective in enhancing their academic style concerning redundancy and word choice, and vice versa.

Sentence Structures 2. In this study, Complexity Index (CI) (Casal et al., 2021), a measure-based on length commonly employed to assess syntactic complexity (Lu, 2011), was utilized to analyze the complexity of sentences. Specifically, the index added up all the independent and dependent clauses in the transcript and then divided by the number of independent clauses from both tests. For example, if there are countable 25 units in a transcript, there are 25 independent clauses. If there are 5 dependent clauses in this transcript, the CI would be: (25+5)/25=1.2. Subsequently, the CI from both tests were compared to assess whether they exhibited an increase, thereby indicating the progress made by the EG and CG as a result of utilizing distinct learning methods in sentence structures.

Transition 3. Fraser's model (Hama, 2021) (see Appendix D), a comprehensive list of transitional vocabulary for structuring written discourse, was adopted in the analysis of transition. The model includes conclusive markers, reason, elaborative discourse markers (DMs), contractive DMs, inferential markers, and exemplifiers. Specifically, the number of correctly used transitional words that students used in their written work from both tests was counted in terms of such categories. After comparison, if the numbers increases, it suggests that H5P for EG or PPTs for EG might work and vice versa.

Hedging 4. Participating students' hedging usage from both tests was detected based on a hedging list (Hyland, 2005) (see Appendix E), a list of typical hedging expressions utilized in academic writing encompassing both individual words and phrases. Hedges from their paragraphs were counted in terms of modal verbs, adjectives, nouns, verbs, adverbs, and phrases. In the event that the frequency of occurrences in both tests for a paired sample decreases, it suggests that the tools (H5P or PPTs) may not be sufficiently effective for the group of subjects in utilizing hedging language.

4. Results

4.1. Need Analysis

The study collected 52 questionnaire responses from students and their choices are shown in Table 1. Among the 10 provided academic style features, word choice, redundancy, sentence structures, hedges and transitions were selected by students as the top five difficult features.

Table 1.
Ranking of Academic Features

Academic features	Number	Percentage
Word choice	33	63.46%
Redundancy	28	53.85%
Sentence structures	28	53.85%
Hedges	22	42.31%
Transitions	22	42.31%
Exclamations	17	32.69%
Contractions	13	25%
Pronouns	12	23.08%
Split infinitives	11	21.15%
Listing expressions	5	9.62%

4.2. The Experimental Group

Of the 3176 students, 1406 agreed to participate in the experimental group and watched the interactive videos. There were 4379 views of the five H5P interactive videos. In total, the study collected 231 pre-test results and 196 post-test results. After comparing and selecting, 112 sample pairs are valid data. The results show that among the five academic features, four have been improved. Mean scores of the five academic style features are shown in Table 2:

Table 2.
Pre- and Post mean scores of the Experimental group

	Word choice-pre	Word choice-post	Sentence structure-pre	Sentence structures-post	Redundancy-pre	Redundancy-post	Transition-pre	Transition-post	Hedging-pre	Hedging-post
Mean	2.750	1.375	1.564	1.724	0.679	0.464	3.536	4.018	2.161	1.929
N	112	112	112	112	112	112	112	112	112	112

The mean score of word choice decreases from 2.750 to 1.375, which shows that participants use fewer informal words in their post-test writing. The increased mean of CI index in sentence structures means that they are able to use more complex sentences in writing. Their use of redundant expressions has also decreased from 0.679 to 0.464. In terms of transitions, the mean score ascends by roughly 0.5, which indicates participants use more transitional signs in post-test. However, participants' proficiency in hedging exhibited a slight decline.

The paired-sample T-test results in Table 3 indicate whether there are statistically significant differences between the pre- and post-test results of the five features. The p-value of word choice and sentence structures is less than 0.05, which means there are significant differences between their pre- and post-test results (IBM Corp, 2019). The p-value of redundancy, transition and hedging is bigger than 0.05, which means there are no significant differences between their pre- and post- test results (IBM Corp, 2019).

Table 3.
Paired Samples Test results of the Experimental group

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Word choice-pre - Word choice-post	1.3750	2.4646	.2329	.9135	1.8365	5.904	111	.000
Pair 2	Redundancy-pre - Redundancy-post	.2143	1.0348	.0978	.0205	.4080	2.192	111	.031
Pair 3	Transition-pre - Transition-post	-.4821	1.8404	.1739	-.8267	-.1375	-2.773	111	.007
Pair 4	Hedging-pre - Hedging-post	.2321	1.8599	.1757	-.1161	.5804	1.321	111	.189
Pair 5	Sentence structures-pre - Sentence structures-post	-.160444999492631	.238081310794865	.022496569291982	-.205023453349845	-.115866545635417	-7.132	111	.000

4.3. The Control Group

In total, the study collected 59 valid sample pairs from students who studied the five academic style features using PPTs. Results indicate improvement in four out of the five academic aspects analyzed. The mean scores for each academic style feature are detailed in Table 4. Specifically, the average score for word choice decreased from 2.729 to 1.508, suggesting a reduced use of informal language in participants' post-test compositions. The increased mean of CI index in sentence structures means that they are able to use more complex sentences in writing. Their use of redundant expressions decreased from 0.712 to 0.576. The mean score of transitions ascends from 3.593 to 4.068, which indicates participants use more transitional signs in post-test. Similar to the Experimental group, the control group exhibited a slight decline in the use of hedging.

Table 4.
Pre-and Post mean scores of the Control group

	Word choice-pre	Word choice-post	Sentence structure-pre	Sentence structures-post	Redundancy-pre	Redundancy-post	Transition-pre	Transition-post	Hedging-pre	Hedging-post
Mean	2.729	1.508	1.561	1.631	0.712	0.576	3.593	4.068	2.305	1.983
N	59	59	59	59	59	59	59	59	59	59

The paired-sample T-test results in Table 5 indicate whether there are statistically significant differences between the pre- and post-test results of the five features. The p-value of word choice is less than 0.05, which means there is significant difference between the pre- and post-test results (IBM Corp, 2019). The p-value of sentence structures, redundancy, transition and hedging is bigger than 0.05, which means there are no significant differences between their pre- and post-test results (IBM Corp, 2019).

Table 5.
Paired Samples Test results of Control group

| | | **Paired Differences** | | | | | | | |
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | t | df | Sig. (2-tailed) |
					Lower	Upper			
Pair 1	Word choice-pre - Word choice-post	1.2203	2.0850	.2714	.6770	1.7637	4.496	58	.000
Pair 2	Redundancy-pre - Redundancy-post	.1356	1.0079	.1312	-.1271	.3982	1.033	58	.306
Pair 3	Transition-pre - Transition-post	-.4746	1.8228	.2373	-.9496	.0004	-2.000	58	.050
Pair 4	Hedging-pre - Hedging-post	.3220	1.8703	.2435	-.1654	.8094	1.323	58	.191
Pair 5	Sentence structures-pre - Sentence structures-post	-.070594554266882	.227564336088799	.029626353093475	-.129898143245540	-.011290965288224	-2.383	58	.020

5. Discussion

In both the experimental and control groups, participants demonstrated significant improvement in word choice, with a slightly larger improvement observed in the experimental group compared to the control group. The results of the current study align with previous studies that showed materials such as PPTs with word lists and video lessons containing explicit instruction can enhance students' use of more formal expressions and avoid informal words such as "a lot of" and "get" (Liardét et al., 2019). This underscores the importance of integrating explicit instructional strategies into lessons to educate students on the effective utilization of formal expressions. These strategies may encompass direct elucidation, demonstration through modeling, and guided practice to elucidate the appropriate contexts for employing formal language. Particularly, educators are advised to demonstrate the application of formal language across diverse contexts to furnish students with illustrative instances of correct language usage. Encouraging students to emulate apt word selection can facilitate the internalization of formal expressions. The marginally superior performance of the experimental group can be attributed to the Interactive, Constructive, Active, and Passive (ICAP) framework, which suggests that interactive elements in the video format, such as multiple-choice questions and fill-in-the-blank exercises, enable students to integrate prior knowledge and interact with new material (Jacob & Centofanti, 2023), fostering active mode of engagement. Moreover, the inclusion of questions and tasks following each section in the video is posited to enhance retention and comprehension compared to passive viewing experiences (Ploetzner, 2022). The findings yield implications for the design of interactive videos. It is recommended that designers of H5P interactive videos embrace a formative assessment approach, leveraging embedded questions and tasks within the video to gauge students' comprehension and memory retention in real-time. This formative assessment strategy enables prompt feedback for both students and instructors, facilitating timely support and reinforcement. Furthermore, the implementation of differentiated instruction is advised, entailing the customization of questions and tasks in the video to suit diverse learning styles and levels of comprehension. This personalized approach empowers students to showcase their understanding through a range of question formats and varying difficulty levels.

The most notable disparity was observed in sentence structures, with participants in the experimental group exhibiting significant improvement, while those in the control group showed minimal progress. It shows that interactive videos seem to engage students more effectively than static PPT slides. The act of noticing plays a crucial role in second language acquisition, emphasizing the importance of attending to linguistic forms to master intricate sentence structures (Schmidt, 1990). The interactive video strategically directs attention towards complex sentence constructions through embedded quizzes that prompt participants to identify, combine, rephrase, and formulate new sentences consistently. These interactive exercises facilitate the generation of fresh knowledge beyond the initial learning materials, fostering constructive engagement (Jacob & Centofanti, 2023). This approach resonates with the insights of Izumi and Bigelow (2000), highlighting the necessity of directing learners' attention to linguistic forms using diverse techniques, such as interactive quizzes. In comparison to learning via PPTs, students exposed to the video lessons assimilated the form and function of varied sentence structures in a more integrated manner, leveraging auditory effects, animations, and interactive flashcards. Moreover, the provision of timely and corrective feedback has long been acknowledged as a fundamental component in language instruction (Van der Kleij et al., 2012). Both the interactive video sessions and follow-up quizzes offer participants immediate feedback accompanied by detailed explanations following each practice session. The findings suggest that curriculum materials should integrate online resources featuring visual and auditory components to enhance students' attention, particularly in language-focused learning contexts. Moreover, the promotion of blended learning, coupled with the flipped classroom model, is recommended, wherein students access foundational content through interactive online videos. Platforms like H5P can be seamlessly incorporated into online learning systems to facilitate the delivery of educational materials alongside interactive quizzes. This approach enables the gathering of student progress and performance data through online formative assessments. Educators can leverage this data to monitor student achievements, pinpoint areas necessitating enhancement, and tailor instructional strategies for in-person sessions accordingly.

The study findings reveal that there were no significant enhancements observed in the remaining three academic style features, namely transitions, redundancy, and hedging, for both groups. Concerning transitions, while the quality of a written piece is not solely determined by the quantity of transitional words utilized, the appropriate usage of transitional signals indicates the writers' capacity to compose lucid and eloquent texts (McCarthy & Carter, 1994). On average, participants in both groups incorporated approximately three to four correct transitional markers in a 150-word paragraph. One plausible rationale for their insufficient use of transitional language could be attributed to limited exposure to diverse textual genres and writing styles, impeding students' proficiency in comprehending and applying cohesive devices in their writing endeavors (Hama, 2021). In both experimental settings, participants were provided with similar learning materials primarily comprising sentences and brief paragraphs. The dearth of extensive reading material may result in inadequate language exposure, as learners require ample linguistic input to refine their writing skills. A rich reading experience plays a pivotal role in enhancing writing abilities since exposure to varied writing styles enables students to recognize cohesive devices and other essential components (Crosby, 2009; Olness, 2005). Concerning redundancy and hedging, these two facets may potentially conflict with one another. The endeavor to minimize redundancy in instructional materials could inadvertently impede participants' utilization of hedging expressions. This discrepancy arises from the

instruction to eliminate redundant terms and opt for concise phrases over verbose ones. For instance, in a specific exercise, participants are advised to eliminate "the possibility of" from a sentence like "They have shown that researchers should consider the possibility of doing the testing in advance." However, this directive may clash with the use of hedging, as hedging phrases such as "It is possible that" and "we believe that" tend to elongate sentences. Apart from the potential counterproductive impact of redundancy instruction, participants' inadequate incorporation of hedging may also be influenced by the limited viewership of the video content. Among the five H5P videos, the video on hedging garnered only 509 views, considerably fewer than the others. This trend is not uncommon among Chinese students, as hedges have historically received less emphasis compared to vocabulary and sentence structures (Zhao, 2022). The findings suggest that educators should incorporate a diverse range of textual genres and writing styles within interactive videos to expose students to various forms of writing, such as narratives, expository texts, persuasive essays, and other genres. This exposure aims to enhance students' comprehension of transitional signals across different contexts. The interactive video platform should offer ample opportunities for students to practice utilizing transitional signals in their writing through interactive activities, prompts, and exercises that prompt the application of transitional signals in diverse writing tasks. Moreover, it is crucial to maintain a balance between reducing redundancy in instructional materials and encouraging the use of hedging expressions. Teachers can integrate models and examples in the instructional content to illustrate the effective use of hedging expressions alongside clear and concise language. These examples demonstrate how hedging can enrich communication without compromising clarity.

6. Limitations

Several limitations were encountered during the course of this research study. Firstly, the sample size of valid pairs was relatively small due to the tendency of students to opt for either the pre-test or post-test, rather than completing both assessments. This issue was exacerbated by the fact that the post-test period coincided with exam periods, leading students to prioritize other academic responsibilities over participating in the study. Secondly, the study was constrained to a relatively short duration of 4 weeks. Given the nature of academic skill development, longer periods of engagement may be necessary for students to achieve significant improvements in their academic writing. Longer periods of engagement allow for the consolidation of learning. Students need time to revisit and practice sentence structures, word choice and hedging in various contexts to solidify their understanding and application of these skills. Extended engagement also enables teachers to monitor students' progress more effectively as longer study durations provide opportunities for ongoing assessment and feedback, allowing educators to identify areas of improvement and provide targeted support. Furthermore, while the research identified enhancements in specific aspects of academic style, the lack of qualitative data limited the depth of analysis regarding students' perceptions of the H5P pathway. Future studies should consider incorporating qualitative measures to explore students' experiences and individual needs to maximize the benefits derived from interactive learning resources such as H5P videos. Finally, in this study, two distinct experimental groups were involved. EG engaged with the H5P pathway, whereas CG utilized PowerPoint (PPT) presentations to access identical information. Given that all experimental subjects are enrolled in EAP courses and are thus immersed in academic writing, the outcomes of the experiment

may be influenced by their classroom instruction. To address this potential influence, the inclusion of a third control group in the experimental design, wherein participants are neither involved in EAP courses nor utilize any learning materials in academic writing, could serve to mitigate the impact of classroom instruction as a potential confounding variable on the experiment's results.

7. Conclusion

In summary, the research findings demonstrate the positive impact of utilizing H5P interactive videos in improving students' academic writing skills, specifically in using formal language and crafting complex sentences. The interactive nature of these videos, combined with explicit instruction and engaging features, effectively stimulate active participation and constructive learning among students. However, while the H5P pathway proved beneficial in enhancing certain aspects of academic style, such as formal vocabulary and sentence complexity, it did not yield significant improvements in areas like redundancy, hedging, and transitions. This outcome may be attributed to factors such as limited exposure to diverse language inputs, the potential conflict between hedging strategies and reducing redundancy, and low viewership of the H5P videos. As educators continue to explore the integration of interactive technologies in language instruction, it is essential to consider these nuanced findings and further investigate strategies to address areas of improvement in students' language proficiency. By leveraging the strengths of interactive videos while addressing their limitations, educators can better support students in developing a comprehensive and proficient academic writing style.

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Appendix A

H5P quiz- Multiple Choice Question

H5P quiz- Fill in the blanks

H5P quiz- Drag and Drop

Appendix B

Rewrite the paragraph and make it more academic.

Technology has highly evolved over time. In fact, nowadays almost everybody has some sort of machine at hand, like computers, cars, or even washing machines. But although machinery was devised to be good for mankind, it has also brought along many flaws to match.

The ☐ of technology has ☐ over time. In fact, nowadays almost everybody has ☐ machine at hand, ☐ computers, cars, or even washing machines. ☐ , although machinery was devised to ☐ mankind, it has also ☐ ☐ flaws to match.

✔ Check

Follow-up quiz

Appendix C

Your Results

What the colors below mean:
Academic Style = Red | Grammar / Spelling = Green | General Style = Blue

Grandparents may have more experience in taking care of children, but these experiences may not be suitable for today's children, and the age difference between the elderly and children is too big. Many things have not kept up with the development of The Times, and parents do not choose to take care of their children by themselves, which will lead to estrangement between the children and the children can not communicate well with the children when they grow up Parents and children need to establish a good bond over a long period of time to gradually guide the child's development

Report Card ?

Your text is shorter than 200 words, so it is not possible to create a full report. Why not try writing a little more?

Report Details ?

undefined

Academic Style Rating: Needs further checking

3 informal expressions
No personal pronouns
No conjunctions at the start of sentences
No common contractions
No questions or exclamations
No overconfident words was found

Grammar/Punct. Rating: Looks good!

No plural uncountable nouns
No modal with '-ing' verb errors
No fragments
No comma splice problems
No spelling problems

Punctuation/Capitalization:
No missing capitals at the start of sentences
No punctuation/bracket spacing problems
No nonstandard characters or punctuation marks
No transition words missing commas

Writing Style Rating: Needs further checking

No commonly used redundant words or phrases
1 repeated word instances

References:

No correctly formatted citations were found.

Marking Mate (Jordan & Snyder, 2012)

Appendix D

There are six categories and subcategories based on Fraser's Model (1999)
1. Conclusive: in Conclusion, in sum, to sum up, finally, lastly, in summary, etc.
2. Reason: Because, because of, since, owing to, due to, etc.
3. Elaborative DMs: And, also, moreover, in addition, additionally, as well as, etc.
4. Contrastive DMs: but, on the other hand, however, nevertheless, nonetheless, although, etc.
5. Inferential: Therefore, thus, as consequence, consequently, hence, so, as a result, etc.
6. Exemplifier: for example, for instance, such as, etc.

Fraser's model (Hama, 2021)

Appendix E

HEDGES FOR ANALYSIS

category	modal verb	adjective	noun	verb	adverb	phrase
Certainty	will, won't	certain, sure, clear		think , believe	actually, certainly, definitely , clearly , obviously , essentially, indeed, surely, undoubtedly, quite	there is no doubt, in fact, of course, as we (all) know, as far as I am concerned, in my opinion
Possibility	would, may, might, wouldn't	probable, possible likely	possibility probability	seem, argue, appear, indicate, predict, assume, claim, doubt	probably, rarely, possibly, generally, perhaps, relatively	generally speaking
Usuality					always, never, often, frequently, usually, sometimes	
Approximation					about, almost, around	to a certain extent

hedging list (Hyland, 2005)