The Effect of Presentation-Assimilation-Discussion (PAD) Class Model on Chinese Undergraduates' Business English Writing Performance

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Abstract—As China's economy and society keep expanding, the significance of business English in worldwide communication remains progressively crucial. Ensuring that China's business English talent training meets global standards is a priority. It has, therefore, become crucial and time-consuming to figure out how to help Chinese students enhance their business English writing skills. Zhang Xuexin, a Chinese professor at Fudan University, proposed the PAD (Presentation-Assimilation-Discussion) Class Model. Since it was presented, many academics and educators have supported it. This study involved 50 undergraduates from a Chinese university, including 25 in the experimental and control classes respectively. The 12-week teaching experiment was followed by interviews with a few students from the experimental class to investigate the influence of the PAD Class Model on the overall score and sub scores of Chinese students' business English writing, as well as the acceptability of the PAD Class Model. Through the analysis of the pre- and post-tests by SPSS, the results indicate that the utilization of PAD Class Model can substantially raise the overall score and the sub scores of content, language, appropriateness, grammar, and organization for undergraduate business English writing. Furthermore, by assessing the interview findings of the experimental class, compared to the conventional teaching model, PAD Class Model serves a more conspicuous role in boosting students' interest in Business English writing, and PAD Class Model is universally accepted by students.

Index Terms—business English writing, PAD class model, Chinese undergraduates

I. INTRODUCTION

Economic globalization has become an increasingly essential trend as the international economy has progressed through time. To facilitate commerce and cultural connections between China and other countries, Business English has emerged as a critical linguistic instrument for international business (Niu et al., 2021). English as a Second Language (ESL) instruction in China has benefited from the expansion of economic globalization. Particularly China's Belt and Road Initiative has strengthened international trade and raised the requirement for business English instruction at universities and colleges (Geng, 2019). Professionals working in international trade rely heavily on their ability to communicate effectively via the medium of writing, which is a key requirement of business English proficiency. Front-line educators at colleges and universities have been working on ways to improve students' abilities to write business English in a professional setting for quite some time. Consequently, Business English Writing serves a vital role in the education and training of business English abilities as an essential course in English major (Sun, 2020).

Business English writing instruction has undergone a wide variety of teaching methods, including outcome teaching, process teaching, genre teaching, case teaching, task-based teaching, etc (Zhang, 2017). However, in the current context, the outlook for business English writing teaching in China remains gloomy, and students' writing attitudes are incorrect, they lack excellent writing habits, and their writing competence is weak (Qiu & Zhang, 2014; Zhang & Gao, 2019). Meanwhile, teachers and students have varying levels of experience in different area, which affects the effectiveness of their instruction. Some colleges and universities, in particular, have issues with the teaching of business English writing, such as outdated teaching techniques, copying of the teaching methods of general English writing courses, low student enthusiasm, limited progress in writing ability, and so on and so forth (Wu, 2019).

How to effectively enhance students' business English writing ability is still an essential subject with a long way to go. Professor Zhang Xuexin of Fudan University, China put up a new teaching model named PAD (Presentation-Assimilation-Discussion) class (Zhang, 2014). This paradigm has evident advantages in educational ideas, techniques and evaluation. Since it was put forward, it has been favored by many scholars and teachers. Practice has demonstrated

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that the PAD model may effectively mobilize college students' learning passion and increase classroom efficiency (Chen, 2016; Li, 2016; Zhao & Zhang, 2018). Therefore, this study applies the PAD model to business English writing instruction and analyzes the effect of this model on Chinese undergraduate Business English writing performance.

II. LITERATURE REVIEW

A. The Definition of PAD Class Model

The PAD (Presentation-Assimilation-Discussion) Class Model was suggested by renowned professor Zhang Xuexin as a new teaching mode in 2013. This instructional strategy divides class time into two segments. The first half is devoted to teacher explanations and the second half is dedicated to student collaboration and debate (half of the class time here can be changeable according to the specific classroom situation). Its objective is to space out the teacher's explanations and the students' discussion so that students have adequate time to absorb and assimilate the knowledge they have acquired (Zhang, 2017). The PAD Class Model splits instruction into three distinct time-stamped processes: Presentation, Assimilation, and Discussion. That is why the model is referred to be the PAD Class Model (Zhang, 2014). Similar to traditional classes, the PAD Class Model places an emphasis on teachers teaching first and students learning subsequently. What distinguishes it is the emphasis on the "assimilation" process, which includes "interactive learning" among students and "autonomous learning".

The PAD Class Model is classified into two categories. One is referred to as the "In-class PAD Class Model," while the other is referred to as the "Cross-class PAD Class Model" (Dong et al., 2017). The PAD Class Model is known to have three processes. Presentation, assimilation, and discussion are the three components. It will be a Cross-class PAD Class Model if the assimilation and discussion parts are arranged in the next class, and current class discusses the content of the prior class (Figure 1).
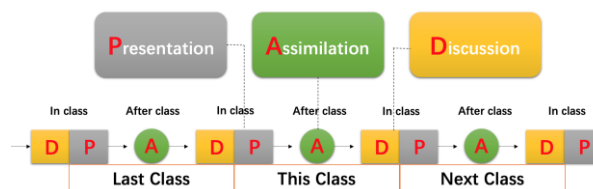

Figure 1. Cross-class PAD Class Model

It is an In-class PAD Class Model if the assimilation and discussion parts are combined in one class. According to the actual class situation and teaching tasks, the instructor can choose one time In-class PAD Class Model or many times In-class PAD Class Model (Figure 2).
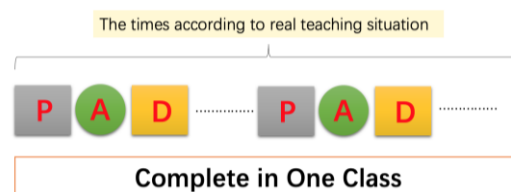

Figure 2. In-class PAD Class Model

B. The Implementation Procedure of PAD Class Model

The procedure of PAD Class includes five steps: Preparation, Presentation, Assimilation, Discussion, Assessment (Chen & Zhang, 2019). The Table 1 is the specific procedure of the PAD Class.

TABLE 1
PAD CLASS MODEL PROCEDURE

		Procedure
Step 1	Preparation	Teaching syllable and Time schedule Teaching objectives Teaching materials Teaching environment Students' analysis
Step 2	Presentation	Only half of the class period is dedicated to instruction by the teacher. Teacher conveys the framework of knowledge and its logical patterns to students. On a macro level, the teacher instructs students on what, why, and how to learn.
Step 3	Assimilation	In Cross-class PAD Model, students need to accomplish the tasks including reading, reviewing, independent thinking, and completing homework after the class. For In-class PAD Model, all the tasks are completed in the class.
Step 4	Discussion	Group discussion Class discussion Teacher's assistance
Step 5	Assessment	PAD Model emphasizes the formative assessment. Teachers usually evaluate students' performance by their behaviors and portfolios in the learning process.

C. The Research Status of PAD Class Model

Professor Zhang Xuexin of Fudan University, China pioneered the concept of "PAD Class" in 2014 with a paper titled PAD Class: A New Exploration of University Teaching Reform, laying the theoretical and practical groundwork for PAD Class (Zhang, 2014). In recent years, researchers have conducted pertinent studies and experiments, establishing a positive trend in PAD Class research. The following aspects summarize the current state of research and development for the PAD Class Model.

(a). Theoretical Research on PAD Class

Regarding theoretical study, scholars concentrate primarily on the substantial educational transformation brought about by PAD, elaborating on PAD's theoretical foundation, characteristics and benefits, teachers' and students' roles, instructional ideas, etc. By evaluating the connotation of PAD and constructivism, Tian et al. (2017) investigated the theoretical basis of PAD's Constructivism from the perspectives of constructivist knowledge, student view, and teaching view. Cheng (2019) examined the benefits, influencing variables, and successful techniques of PAD in English instruction, based on the connotation and features of PAD, and confirmed the viability of PAD in English teaching. Yang et al. (2015) dynamically analyzed the changes of teachers' and students' roles in different links of PAD from the perspective of teachers' and students' roles. In summarizing the theoretical study on PAD, it is evident that researchers are generally enthusiastic about the PAD teaching mode and recognize the decent role this new teaching mode plays in addressing educational issues and encouraging teaching reform.

(b). Experimental Research on PAD Class

In comparison to theoretical study, research on the PAD teaching model in practice is more substantial. Wang (2021), in conjunction with the Cross-class PAD Model and Production-oriented Approach, investigated the teaching mode of the combination of PAD and Blended-teaching and explored new approaches to better comprehend the driving, facilitating, and evaluative links in teaching. Deng (2021) discussed the applicability of the flipped classroom and PAD model in the Transportation Economics classroom. They developed a four-step approach of instruction consisting of Preview, Intensive Lecture, Collaborative Discussion, and Independent Digestion. A more successful flipped classroom model has been gradually developed via practice. Under the teaching concept of PAD, Wang (2020) proposed the "four element teaching" approach, consisting of Teaching, Independent learning, Group Discussion, and Q & A. Utilizing "DingTalk" and "Wing Class" as the teaching platform, she investigates the teaching model to enhance the effectiveness of online high school English instruction. Fu (2021) used the Web-class platform in collaboration with the PAD to teach college English. Students' learning passion has considerably improved after a semester of teaching.

Liu (2019) investigated the PAD-assisted college English vocabulary teaching paradigm and conducted a practical study with a middle school in Sichuan Province, China. The findings demonstrate that the majority of students actively participate in PAD, and that the effect of high school English vocabulary instruction has improved dramatically. Guo (2019) used the PAD teaching style in two sophomore English major classrooms to see if he could find a way to alleviate the problem of time-consuming and inefficient reading class teaching. Following a one-year teaching trial, it was discovered that students' reading levels had improved, as had their learning passion and autonomy. Additionally, their ability to think and innovate has been enhanced. Li (2020) developed PAD to address frequent issues in oral English classrooms, such as a lack of opportunities for oral practice and a poor impact of oral English instruction. The findings of the study indicate that using PAD boosted the effectiveness of oral English instruction.

The practical research on PAD is fairly comprehensive, exhibiting strong vitality and universal adaptability, as can be seen from the discipline and instruction stage of PAD application. PAD performs a real and effective function in enhancing classroom efficiency, improving learning effect, strengthening teacher-student relationships, and stimulating students' learning passion and interest, according to the results of practical research.

D. Business English Writing Instruction in China

As a required course for Business English majors, Business English Writing is critical in developing business English talent (Sun, 2020). According to the Teaching Guide for Undergraduate Business English Majors in Colleges and Universities (2020), the purpose of the Business English Writing course is to develop students' ability to select appropriate writing strategies for effective communication in an international business environment (Yan, 2020). In terms of instruction method of Business English Writing, Chinese scholars have mainly utilized the following methods: result-based instruction, process-based instruction, genre-based instruction, case-based instruction, and task-based instruction (Zhang, 2017). However, because teachers and students are at varying levels in colleges and universities, the teaching effect is quite different. Certain colleges and universities, in particular, have issues with the teaching of business English writing, including outdated teaching methods, copying the teaching methods used in general English writing courses, low student enthusiasm, and limited improvement in writing ability (Wu, 2019).

To summarize, relevant research on the PAD Class Model has made significant progress and yielded some results thus far. However, after reviewing and analyzing these literatures, it was discovered that the PAD approach has not been used to teach Business English writing. As a result, the influence of PAD on Chinese undergraduates' Business English writing competence is investigated in this study. Its goal is to find answers to the following research questions.

RQ 1: Is there a significant difference between the experimental and control groups' overall scores of Chinese undergraduates' business English writing taught by PAD Class Model?

RQ 2: Is there a significant difference between the experimental and control groups' scores of business English writing in terms of content, language appropriateness, grammar, and organization?

RQ 3: How do Chinese undergraduates feel about the PAD Class Model for business English writing instruction?

Pre-test and post-test are used to illustrate the first and second questions. The interview addresses the third question. After the experiment, the interview takes place. The tests are writing tasks to examine the influence of PAD Class Model on Chinese students' Business English Writing score.

III. METHOD

A. Research Design and Participants

Using the PAD Class Model, this study was able to examine how Chinese undergraduates' Business English writing performance was affected. Mixed-methods research is used in this study. The study employed quantitative data to address questions 1 and 2 of the study. Prior to and following the research process, both pre and post-tests were conducted. All examinations were based on BUSINESS ENGLISH CERTIFICATE (BEC) written tests to ensure the findings' reliability and validity. Business English writing performance on pre- and post-tests was evaluated using the public version of BEC writing and its rubrics, including content, language appropriateness, grammar, and organization. The results of the pre- and post-tests were analyzed utilizing SPSS software. Semi-structured interviews were used to gather qualitative data to address the third research question: how do students feel about the PAD Class Model? Fishbowl sampling was used to randomly choose eight students. In order to see if PAD may stimulate students' interest in Business English writing, their responses to questions concerning testing the acceptability of PAD will be analyzed. Recordings and transcriptions of interview participants' replies were made meticulously for later explore.

Two parallel classes of 25 local college undergraduates with the same language skill level took part in the study. The Oxford Placement Test Version 1.1 was utilized to ensure that all of the participants had the same level of language proficiency. The Business English writing classes were taught by the same teacher in both the experimental and control groups. The PAD Class Model was applied to teach Business English writing in the experimental class, whereas the control class employed the traditional product approach. The experiment lasted a total of 12 weeks.

B. Research Instruments

The Oxford Placement Test Version 1.1 was the first instrument for assessing students' language capabilities. The test consists of 60 questions, the majority of which are communicative vocabulary and grammar related. It was given an objective score. This test was used to ensure that the English levels of the experimental and control classes were comparable. The BEC writing test (part 1 and 2) was used as the second research instrument to evaluate students' capacity to write in Business English. This test was used as a pre- and post-test to observe whether the PAD Class Model is beneficial for students learning Business English writing (RQ 1 and 2). After the treatment, the experimental group participants were interviewed in a semi-structured interview. Three experts validated the interview, which comprised ten open-ended questions. Through this 15-minute interview, the researchers intended to discover more about the students' acceptance of the PAD Class Model (RQ 3).

C. Research Procedure

(a). Before the Experiment

Prior to the experiment, the researchers administered the Oxford Placement Test and a business English writing test to the experimental and control classes, respectively, to gain a better understanding of the participants' current situation and to ensure that the writing levels of the experimental and control classes were consistent. The researcher spent 45 minutes in the first week of the experiment to introduce the form and process of PAD Class Model to students, as well as explain the teaching needs to students, in order to help them better grasp PAD Class Model and cooperate with teaching activities.

(b). In the Experiment

This research involved a 12-week teaching experiment and 12 sessions of Business English writing training. During the procedure, the experimental class received PAD Class Model instruction while the control class experienced conventional writing instruction. Dr. Xiao, an experienced professor, led two classes. The researcher assisted with lesson planning and was primarily responsible for the PAD Class Model teaching design in the business English writing course. The uniformity of teaching material and progress between the experimental and control classes was assured by engaging in the centralized lesson preparation and following up in the classroom. The following is the teaching plan for business English writing in the two classes:
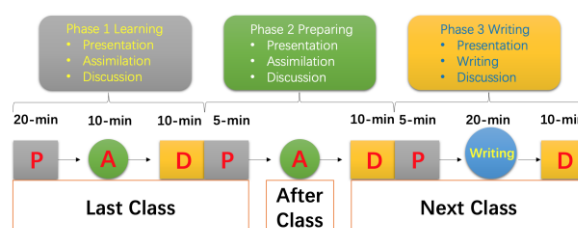
1. Experimental Class

Figure 3. Teaching Process of PAD Class Model in Experimental Class

As indicated in Figure 3, there are three phases to implementing the PAD Class Model in Business English Writing training in the experimental class:

(1). Phase 1: Learning (In-Class PAD Class Model)

Business English Writing Course was chosen as the textbook for this research. The textbook covers a wide range of knowledge topics, including business English writing genres and writing norms, and presents the essential procedures and characteristics of business English writing. As a result, the researcher devised a 45-minute in-class PAD Class Model to complete the presentation and assimilation of knowledge.

The first 20 minutes of class time are devoted to introducing students to the fundamentals of business English writing, followed by an in-depth discussion of a specific writing skill, including an explanation of its definition and characteristics, as well as concrete examples to help students better grasp the material. Keep the focus of the class on the course's most important concepts and challenges, while allowing students some time to process what they have learned on their own. The teacher then allows students 10 minutes to study and review alone by offering questions or assignments. In addition to the teacher's instruction, students must independently read books and materials, think and summarize, and perform teacher-assigned tasks. Teachers conduct classroom patrols to supervise and observe students' self-study behavior. Within the following 10 minutes, the instructor conducted a group discussion on the newly assigned problems. In the course of a conversation, students should completely exchange their perspectives, achieve a consensus on the topic, and document their differences. After the majority of group talks have concluded, the teacher picks a few students to report on the findings of the group discussion. After the group report, the entire class will communicate, that is, all students will be able to ask questions and talk freely to address problems collectively, with the teacher answering any difficulties that the class cannot resolve. After class discussion, the instructor should provide an appropriate summary.

(2). Phase 2: Preparing (Cross-Class PAD Class Model)

The researcher assimilated the concept of allowing students to independently collect writing materials in the PAD Class Model designed by Liu and Guo (2017), which is intended to guide students to conduct independent learning, collect composition materials, and design their own writing outline through the implementation of the Cross-class PAD Class Model. In the final five minutes of the first-class period, the instructor provided the writing assignment and helped students through the analysis of the topic. After completing this task, the teacher would assign homework, encouraged students to examine pertinent materials, collect and organize composition materials, and create an outline for the composition. Within ten minutes of the start of the second class, students would join the group discussion and share their own writing outlines. Then, select the group with the most reasonable writing structure and distribute it to

the entire class. Following the class discussion, the instructor would summarize and provide instruction on how to write utilizing acquired knowledge.

(3). Phase 3: Writing (In-Class PAD Class Model)

The primary objective of the third phase is to draft and edit the article. Teachers spend around five minutes explaining the fundamentals of writing to students, guiding them to enhance the article's structure, refining the article's concept, and elevating the language expression. The students then compose the first draft of the piece under the direction of the instructor.
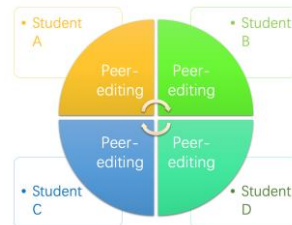

Figure 4. Peer-editing Model in Group of Experimental Class

After completing the first draft of their writing, students would evaluate their peers' work in groups. Before that, instructors offer a mutual assessment checklist to aid students in evaluating each other's work more successfully. The technique of group mutual evaluation of compositions corresponds to Tan (2021)'s peer-editing model (see Figure 4). After the review, the students in the group discussed and summarized the group's shared challenges, and then choose the best group-written piece to share with the entire class. Finally, the instructor called a few students to debate the group discussion, to listen to the compositions of exceptional students, and to summarize the common issues in the students' writing.

2. Control Class

The control class utilized the conventional method of Business English writing instruction to teach Business English writing. Figure 5 depicts the core instructional procedure.
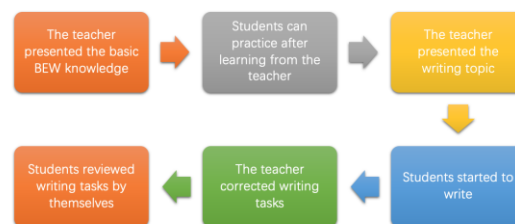

Figure 5. The Conventional Business English Writing Teaching Model

In the traditional method of teaching Business English writing, teachers would spend a great deal of time conveying writing expertise and strive to be exhaustive, thorough, vivid, energetic, and engaging. Simultaneously, when presenting the writing topic, the instructor should not only aid the students in analyzing the composition issue, but also in conceptualizing the composition's substance. The original form of instruction provides more advantages in terms of the comprehensiveness and interest of instruction, as well as the clarity of the instructors' leadership position. However, because the teacher's explanation is excessively explicit, the majority of students write articles based on the teacher's views, and the original model is not favorable to fostering students' capacity to think critically.

(c). After the Experiment

After the teaching experiment, the researchers administered a post-test of business English writing for all participants to see whether students' business English writing scores improved as a result of the experiment. Concurrently, five students in the experimental class were chosen equitably based on their student numbers for interviews to verify the application impact of PAD Class Model in Business English writing instruction. After the experiment, the researcher sorted and examined all of the experimental data and interview findings and evaluated and summarized the application effect of PAD Class Model in terms of quantity and quality. Using SPSS, this study did a t-test analysis on the overall writing scores and sub ability scores of the two classes before and after the experiment and examined the impact of PAD Class Model on the improvement of students' writing scores and ability. Simultaneously, combining the interview data, assessing the students' attitude and identification of PAD Class Model, this experiment gathered students' ideas on the PAD Class Model, and confirmed further the impact of PAD Class Model on the teaching of business English writing.

IV. RESULTS

The researcher conducted pre and post writing tests on the experimental and control classes to verify the effect of PAD Class Model on undergraduates' business English writing performance, as well as to check the impact of PAD Class Model on undergraduates' business English writing ability through the pre-test and post-test sub ability scores, namely content, language appropriateness (LA), grammar, and organization. In this study, the writing test score relates to the BEC writing part's sub scoring standard, and the content, LA, grammar, and organization are all rated separately before the total score is totaled. SPSS is used to evaluate and process the writing test findings, and an independent sample t-test of the experimental and control classes' pre- and post-test scores is performed. The following are the test and analysis results:

A. T-Test Results and Analysis of Overall Score

TABLE 2
GROUP DESCRIPTIVE STATISTICS OF THE OVERALL SCORES OF EXPERIMENTAL AND CONTROL CLASSES

	Class	N	Mean	Std. Deviation	Std. Error Mean
Pre-test	EC	25	12.92	3.581	.716
	CC	25	12.88	3.456	.691
Post-test	EC	25	17.28	3.285	.657
	CC	25	13.88	3.444	.689

EC=Experiment Class; CC=Control Class

Table 2 shows the group description statistics of the overall scores of business English writing in the experimental and control classes. As can be seen from table 2, the mean score of pre-test in the experimental class is 12.92, while the mean score of pre-test in the control class is 12.88. The mean score of the experimental class (17.28) and the control class (13.88) in the post-test is higher than that in the pre-test. Regardless of the pre-test or post-test, the total score of the experimental class is always higher than that of the control class. However, from the mean score difference between the two classes, the difference (3.400) of the overall score of the two classes in the post-test is greater than that in the pre-test (0.040) (see Table 3).

TABLE 3
INDEPENDENT SAMPLE T-TEST OF THE OVERALL SCORES OF EXPERIMENTAL AND CONTROL CLASSES

		Levene's variance equivalence test		Mean equivalence t-test						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pre-test	Assuming equal variance	.150	.701	.040	48	.968	.040	.995	-1.961	2.041
	Assuming unequal variances			.040	47.939	.968	.040	.995	-1.961	2.041
Post-test	Assuming equal variance	.090	.765	3.572	48	.001	3.400	.952	1.486	5.314
	Assuming unequal variances			3.572	47.894	.001	3.400	.952	1.486	5.314

Independent sample tests of overall scores are shown in Table 3 for the experimental and control classes. Table 3 displays the significant probability of the two variables, as shown by Levene's variance equivalence test (Sig.). It is 0.701 and 0.765 respectively, indicating that the variance of the experimental class and the control class in the pre and post-test is equal. According to the data (Sig 2-tailed), the probability of significance for the pre-test is 0.968, which is larger than the significance level of 0.05, suggesting that there is no significant difference between the experimental and control classes in terms of pre-test scores. In addition, the 95 % confidence interval of the pre-test difference comprises 0, indicating that there is no significant difference between the two classes' overall scores. For the post-test, it can be seen from the data (Sig 2-tailed) that the significance is 0.001, which is less than 0.05, suggesting that there is a significant difference between the experimental class and the control class in terms of the overall score on the post-test writing section. This is further supported by the fact that the confidence interval for the post-test difference does not contain 0.

In conclusion, both the experimental class and the control class improved their overall scores after the experiment, but the advancement of the experimental class was more prominent, indicating that the PAD Class Model has more benefits than the traditional teaching method for enhancing undergraduates' business English writing scores. Furthermore, the results of the independent sample test show that while there is no significant difference in the overall scores of the experimental and control classes in the pre-test, there is a significant difference in the overall scores in the post-test, and the experimental class using the PAD Class Model for Business English Writing Teaching has higher scores than the control class using the traditional teaching mode, indicating that the application is effective.

B. T-Test Results and Analysis of Content Score

TABLE 4
GROUP DESCRIPTIVE STATISTICS OF THE CONTENT SCORES OF EXPERIMENTAL AND CONTROL CLASSES

	Class	N	Mean	Std. Deviation	Std. Error Mean
Pre-test	EC	25	3.24	.831	.166
	CC	25	3.20	.866	.173
Post-test	EC	25	4.32	.690	.138
	CC	25	3.36	.952	.190

Table 4 shows that the experimental class's mean pre-test score in terms of Content is 3.24, whereas the control class's mean pre-test score in regards of Content is 3.20, and the experimental class is 0.04 points higher than the control class (see Table 5). The Content scores of the two classes have progressed to some extent in the post-test. The experimental class's mean Writing Content post-test score is 4.32, whereas the control class's is 3.36. The experimental class's Writing Content score is 0.960 points higher than the control class's (see Table 5).

TABLE 5
INDEPENDENT SAMPLE T-TEST OF THE CONTENT SCORES OF EXPERIMENTAL AND CONTROL CLASSES

		Levene's variance equivalence test		Mean equivalence t-test						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pre-test	Assuming equal variance	.136	.714	.167	48	.868	.040	.240	-.443	.523
	Assuming unequal variances			.167	47.917	.868	.040	.240	-.443	.523
Post-test	Assuming equal variance	4.297	.044	4.081	48	.000	.960	.235	.487	1.433
	Assuming unequal variances			4.081	43.771	.000	.960	.235	.486	1.434

It can be seen from Table 5 that Levene's variance equivalence test (Sig.). shows the significance probability of the two variables. It is 0.714 and 0.044 respectively, indicating that the variance of the two variables on the "Content (pre-test)" is equal, while the variance on the "Content (post-test)" variables is not equal. In the pre-test, the significance probability is 0.868, which is much higher than 0.05, indicating that there is no significant difference in the Writing Content between the experimental and control class. In addition, the 95% confidence interval of the difference of the "Content (pretest)" variable contains 0, which also shows that there is no significant difference in the Writing Content scores between the two classes in the pre-test. In the post test, the significance was 0.000, less than 0.05. It shows that there is a significant difference in the performance of Writing Content between the experimental and control class. This can also be proved from the 95% confidence interval of the difference of the "Content (post-test)" variable without 0.

Pre-test writing content score for experimental class is somewhat higher than control class, while post-test writing content score for experimental class is much higher than control class. There is no significant difference in writing content between experimental and control courses during the pre-test, but there is during the post-test. As a result of this, the experimental class scored higher than the control class, indicating that the PAD Class Model is more successful than the traditional method in increasing students' competence to express content in Business English writing.

C. T-Test Results and Analysis of Language Appropriateness (LA) Score

TABLE 6
GROUP DESCRIPTIVE STATISTICS OF THE LANGUAGE APPROPRIATENESS SCORES OF EXPERIMENTAL AND CONTROL CLASSES

	Class	N	Mean	Std. Deviation	Std. Error Mean
Pre-test	EC	25	3.28	1.173	.235
	CC	25	3.20	1.118	.224
Post-test	EC	25	4.48	1.122	.224
	CC	25	3.48	1.122	.224

As can be observed in Table 6, the experimental class's mean pre-test Language Appropriateness score is 3.28, whereas the control class's mean pre-test LA score is 3.20. During the pre-test, the experimental class's LA score was 0.080 higher than the control class's (see Table 7). The performance of the two classes improved to some amount in the post-test. The experimental class's mean post-test LA ability score is 4.48, whereas the control class's is 3.48. The experimental class's post-test LA score is 1.000 point higher than the control class's (see Table 7).

TABLE 7
INDEPENDENT SAMPLE T-TEST OF THE LANGUAGE APPROPRIATENESS SCORES OF EXPERIMENTAL AND CONTROL CLASSES

		Levene's variance equivalence test		Mean equivalence t-test						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pre-test	Assuming equal variance	.200	.656	.247	48	.806	.080	.324	-.572	.732
	Assuming unequal variances			.247	47.889	.806	.080	.324	-.572	.732
Post-test	Assuming equal variance	.000	.985	3.150	48	.003	1.000	.317	.362	1.638
	Assuming unequal variances			3.150	48.000	.003	1.000	.317	.362	1.638

Table 7 compares the experimental and control classes' Language Appropriateness scores. The significance of the two variables is illustrated in Table 7 (Sig.). They are 0.656 and 0.985, showing that the variance of the experimental and control classes is equal. The data (Sig 2-tailed=0.806<0.05) reveal that there is no significant difference between the experimental and control classes in terms of pre-test scores. It can be further confirmed that the 95 percent confidence interval of the pre-test difference is 0. According to the data (Sig 2-tailed), the significance of the experimental and control classes in the post-test writing part is 0.003, which is less than 0.05. The fact that the post-test difference confidence interval does not contain zero supports this.

The experimental class progressed more than the control class, demonstrating that the PAD Class Model is more effective than conventional teaching methods in enhancing students' LA scores. On the other hand, the independent sample test results show that while there is no significant difference in the pre- and post-test LA scores of the experimental and control classes, the experimental class using the PAD Class Model for Business English Writing Teaching outperforms the control class using the traditional teaching mode.

D. T-Test Results and Analysis of Grammar Score

TABLE 8
GROUP DESCRIPTIVE STATISTICS OF THE GRAMMAR SCORES OF EXPERIMENTAL AND CONTROL CLASSES

	Class	N	Mean	Std. Deviation	Std. Error Mean
Pre-test	EC	25	3.04	.935	.187
	CC	25	3.16	.987	.197
Post-test	EC	25	4.08	.862	.172
	CC	25	3.40	.866	.173

As shown in Table 8, the experimental class has a mean pre-test Grammar score of 3.04 whereas the control class has a mean pre-test Grammar score of 3.16. The experimental class's Grammar score on the pre-test was 0.120 points lower than that of the control group (see Table 9). On the post-test, the performance of both classes increased somewhat. The experimental class's mean post-test score for Grammar ability is 4.08, while the control class's score is 3.40. The experimental group's post-test Grammar score is 0.68 points higher than the control group's (see Table 9).

TABLE 9
INDEPENDENT SAMPLE T-TEST OF THE GRAMMAR SCORES OF EXPERIMENTAL AND CONTROL CLASSES

		Levene's variance equivalence test		Mean equivalence t-test						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pre-test	Assuming equal variance	.123	.727	-.442	48	.661	-.120	.272	-.666	.426
	Assuming unequal variances			-.442	47.860	.661	-.120	.272	-.667	.427
Post-test	Assuming equal variance	.244	.624	2.782	48	.008	.680	.244	.189	1.171
	Assuming unequal variances			2.782	47.999	.008	.680	.244	.189	1.171

Table 9 shows the Grammar scores for the experimental and control groups. The significance of the two variables as evaluated by Levene's variance equivalence test is shown in Table 9. (Sig.). The results are 0.727 and 0.624, indicating that the experimental and control classes' variances are equal. The findings (Sig 2-tailed) reveal that there is no significant difference in pre-test scores between the experimental and control classes (0.661). Also, the 95 percent confidence interval for the pre-test difference is 0, demonstrating that the Grammar test results of the two classes are not statistically different. The post-test writing portion has a significance level of 0.008, which is less than 0.05, suggesting that there is a significant difference between the experimental and control classes. The fact that the post-test difference confidence interval does not contain 0 confirms this.

It implies that compared to the control group, the experimental group has improved greatly in grammar. A significant difference in grammar between the experimental and control courses was found in the post-test, according to the independent sample test. As a result of this, the PAD Class Model exceeds the usual teaching technique in enhancing undergraduates' capacity to write in Business English.

E. T-Test Results and Analysis of Organization Score

TABLE 10
GROUP DESCRIPTIVE STATISTICS OF THE ORGANIZATION SCORES OF EXPERIMENTAL AND CONTROL CLASSES

	Class	N	Mean	Std. Deviation	Std. Error Mean
Pre-test	EC	25	3.36	1.114	.223
	CC	25	3.32	1.030	.206
Post-test	EC	25	4.40	1.258	.252
	CC	25	3.60	1.041	.208

Table 10 demonstrates that the experimental class's mean pre-test score for organization is 3.36, while the control class's mean pre-test score for Organization is 3.32; the experimental class is 0.04 points higher than the control class (see Table 11). On the post-test, the organization scores of the two classes had risen somewhat. The experimental class's mean post-test score on writing organization is 4.40, whereas the control class's score is 3.60. The organization score of the experimental class is 0.800 points greater than that of the control class (see Table 11).

TABLE 11
INDEPENDENT SAMPLE T-TEST OF THE ORGANIZATION SCORES OF EXPERIMENTAL AND CONTROL CLASSES

		Levene's variance equivalence test		Mean equivalence t-test						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pre-test	Assuming equal variance	.349	.557	-.132	48	.896	-.040	.303	-.570	.650
	Assuming unequal variances			-.132	47.708	.896	-.040	.303	-.570	.650
Post-test	Assuming equal variance	1.267	.266	2.449	48	.018	.800	.327	.143	1.457
	Assuming unequal variances			2.449	46.370	.018	.800	.327	.143	1.457

The results of independent sample testing of organization scores for the experimental and control groups are displayed in Table 11. Table 11 shows the significance of the variables using Levene's variance equivalence test (Sig.). The pre- and post-test variances of the experimental and control classes are equal at 0.557 and 0.266. The statistics (Sig 2-tailed) indicate that there is no statistically significant difference between the experimental and control groups in terms of pre-test scores (0.896). Also, the 95% confidence interval for the pre-test difference is 0, suggesting that the two classes' organization scores are not significantly different. The post-test results (Sig 2-tailed=0.018<0.05) show a significant difference between the experimental and control classes in terms of the post-test writing section organization score. The fact that the confidence interval for the difference between pre- and post-test scores is not 0 verifies this.

Subsequently, both the experimental and control classes improved their organization scores after the experiment, but the experimental class's improvement was more noticeable, indicating that the PAD Class Model has more benefits than the traditional teaching method for enhancing undergraduates' business English writing organization scores. Furthermore, the results of the independent sample test reveal that, while there is no significant difference in the experimental and control classes' organization scores in the pre-test, there is a significant difference in the experimental and control classes' organization scores in the post-test, and the experimental class utilizing the PAD Class Model for Business English Writing Teaching has higher scores than the control class using the conventional teaching mode, demonstrating that the application is successful.

F. Analysis of Interview Results

After conducting the experiment, the researcher randomly chose and interviewed five students from the experimental class based on their student numbers in order to answer RQ 3. This interview consists of three questions about students' perceptions of the PAD Class Model, their business English writing skills, and their opinions on the PAD Class Model. The scheduled interview results are as follows:

The first question of the interview was to ask students' attitude towards PAD Class Model. This teaching model was praised by all responders. They all remarked they had never seen this model before, and that it was unique and intriguing. Three students indicated that they like the Discussion. They claimed that group discussions not only promoted peer learning but also fostered student friendships. To grow in this process, they needed to create united viewpoints on Teachers' challenges, and learned from one other. PAD Class Model also allowed students to participate in class discussions, which relieved boredom, made the classroom livelier. Similarly, two students stated that the

Assimilation in the PAD Class Model helped build self-study ability and reflection habit. This model allowed students to study and review in class, fostering independent thinking and evaluation. 12 weeks of instruction promoted autonomous thinking and summarizing contemplation.

The second interview question asked students whether they think PAD Class Model has improved their business English writing skill and what the key improvements are. All five respondents agreed that the PAD Class Model helped them enhance their business English writing skills. Four respondents claimed that the PAD Class Model broadens their writing thinking. Previously, teachers merely asked students to peer evaluate after writing. Inheriting this tradition, the PAD Class arranged students to discuss the composition outline before writing, which strengthened everyone's knowledge of the writing and mutual communication. Three respondents stated that using the PAD Class Model helped them improve their language skills, particularly their language appropriateness. Their capacity to substitute ordinary words with advanced terms has been boosted through teachers' purposeful nurturing. According to two respondents, using the PAD Class Model helped them organize their content better. Students assisted each other and improved the structure of their articles through two discussions before and after writing.

The third interview question seeks suggestions on the PAD Class Model. After sorting, five respondents offered key ideas. First, group reasonably. Some participants said teachers should categorize students based on gender and personality. Each group should include at least one student who can set the tone. Second, prolong the time for discussion. Some students stated that everyone enjoyed group discussions and the opportunity to learn from one another. They thought teachers would properly prolong discussion time so students could communicate more deeply. Finally, schedule self-study projects and time. Some respondents said that following each information point, the teacher assigns tasks that everyone can perform, but the thinking questions are occasionally challenging. The teacher did not allow enough time for self-study, thus they cannot complete it. They hoped the teacher could make appropriate adjustments in the future teaching.

V. Discussion

This study examines the effect of PAD Class Model on Undergraduates' business English writing abilities using a 12-week teaching experiment in two parallel classes at a Chinese university, as well as a pre- and post-test and student interview. There is minimal difference between the mean scores of students in the two courses on the overall writing test on pre-tests, but there is a significant difference on post-tests. The mean score of the experimental group grew by 4.36 points, but the mean score of the control group increased by only 1.00 points. A substantial difference in writing scores between the two classes was seen in the post-test, and the mean score for business English writing in the experimental class utilizing the PAD Class Model was greater than in the control class. PAD Class Model may successfully increase the business English writing abilities of students (RQ 1). The interview conducted with experimental class students after the experiment also supported this finding to a certain degree.

According to the sub-ability scores of business English writing, there are no significant differences in the scores of content, language appropriateness, grammar, and organization between the two classes in pre-tests, indicating that the writing ability of the two classes prior to the experiment is similar in these four aspects. Before and after the experiment, the mean scores of students in the experimental class grew by 33.3%, 36.6%, 34.2%, and 31.0% in content, language approbation, grammar, and organization, whereas the scores of students in the control class increased by just 5.0%, 8.8%, 7.6%, and 8.2%. The t-test results also confirmed that there were significant differences in the sub-ability scores of business English writing between the two classes on the post-tests, indicating that the PAD Class Model has a greater effect on improving the content, language appropriateness, grammar, and organization of undergraduate business English Writing (RQ 2). Based on the findings of further interviews with students in the experimental class, the interviewed students also confirmed the model's favorable influence. According to the interview results, all the respondents enjoyed this new teaching model, indicating that students have a favorable attitude regarding PAD Class Model and a high level of acceptability (RQ 3).

VI. Conclusion

This study combines the PAD Class Model with business English writing instruction to investigate and assess the effect of this teaching method on the business English writing competence of undergraduates. The application effectiveness is evaluated from three perspectives: the overall business English writing score, the sub scores, and the accepting attitude of students towards the PAD Class Model in business English writing class. Before the trial, the overall scores and level of business English writing of students in the experimental class (mean score = 12.92) and the control class (mean score = 12.88) were similar based on the analysis of pre-tests score data. However, after 12 weeks of PAD Class Model instruction, the writing scores of students in the two groups were dramatically different, with the experimental class (increased by 4.36 points) significantly outperforming the control group. In addition, based on the BEC scoring rubric and a comparison of pre- and post-test performance data, it has been determined that the experimental class students' sub-abilities in business English writing, including content, language, appropriateness, grammar, and organization, have improved considerably. However, the range of improvement for the control group is limited and lacks statistical significance. The aforementioned findings indicate that the PAD Class Model may

successfully increase the overall and sub scores of undergraduate business English writing. By examining the interview findings of the experimental class following the trial, it was determined that students liked the PAD Class Model very significantly, were eager to continue using it, and even hoped to use it to learn other subjects in the future. Students have a high level of acceptance of the PAD Class Model in Business English writing instruction. This study validates the effect of the PAD Class Model on boosting the business English writing skills of Chinese undergraduates. In further teaching studies, it is envisioned that PAD Class Model will be applied to English Teaching in other disciplines and nations.

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