

# The Effectiveness of Flipped Classroom Combined with Toulmin's Model on Chinese EFL Undergraduates' Argumentative Writing

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## Abstract

English argumentative writing is a significant and challenging genre, and it is common in standardized English proficiency tests for EFL learners. The present study applies flipped classroom to overcome the drawbacks of conventional face-to-face learning, and in order to teach English argumentative writing effectively, this study combines Toulmin's model in the flipped classroom to improve Chinese EFL undergraduates' argumentative writing. 83 EFL Chinese undergraduates, a sample in a quantitative research design, are voluntary to be recruited from a research university, and all written texts by participants before and after the flipped classroom implementation were collected as research data. The results indicate that participants show considerable improvement in their English argumentative writing through comparing the overall scores based on an assessment rubric. Besides, more appropriate activities related to argumentative writing skills, involving mind maps and the organization of debate drafts combined with Toulmin's model are added during the application of flipped classroom. The findings suggest the effectiveness of flipped classroom combined with Toulmin's model on teaching Chinese EFL undergraduates English argumentative writing.

**Keywords:** Chinese Efl Undergraduates, Flipped Classroom, Toulmin's Model, Argumentative Writing, Quantitative Research Design

## Introduction

Writing is considered as a productive skill in language teaching, which is a significant component of most exams in China (Yan, 2019). In standardized English proficiency tests, such as TOEFL, IELTS, English argumentative writing is playing an important role. Compared with narrative and descriptive writing, argumentative writing is a genre that expresses the process of argumentation (Yang, 2022), and argumentation involves using evidence and forming

reasons to support claims (Jin et al., 2020). According to Toulmin's model (Toulmin, 2003), a well-organized argument consists of three main elements that are data, warrant and claim. To enhance the accuracy and logic, the other three additional elements can be included: qualifier, backing, and rebuttal. The goal of argumentative writing is to persuade others to agree with the writer's opinions (Aziz et al., 2023), and it can be relatively challenging for Chinese EFL learners (Yang, 2022). At the university level, students are expected to evaluate and express viewpoints appropriately with critical and creative thinking (Lee & Lee, 2023).

In the learning process, the conventional face-to-face teaching is generally common and often includes learning activities with lower involvement (Derlina et al., 2020). Under the context of the surging development of network technology and information technology, an increasing number of students are proficient in the operation of digital products, which has led researchers to explore the potential of social networking in education (Eren, 2012). In language learning, social networking application can link online learning resources and promote multimedia interaction, thereby increasing students' input and developing their language skills. Additionally, the COVID-19 pandemic has further accelerated the development of e-learning. Consequently, many teachers have recognized the urgency of adapting traditional face-to-face teaching methods to improve English argumentative writing.

The flipped classroom is regarded as a novel pedagogy, and according to Staker and Horn (2012), a flipped classroom blends face-to-face practice and online delivery of learning contents and instruction. Compared to the traditional class, the flipped classroom provides learners with opportunities and time to prepare and preview, which is helpful to save teachers' lecture time and lays the foundation for in-class practice. However, little empirical research has focused on EFL learners' English argumentative writing in a flipped classroom setting (Roohani & Rad, 2022). This research combines the flipped classroom approach with Toulmin's model to teach English argumentative writing to Chinese EFL undergraduates. Using a quantitative design, the research aims to evaluate the effectiveness of the flipped classroom combined with Toulmin's Model on Chinese EFL undergraduates' English argumentative writing.

### **Related Works**

This section reviews three topics related to the current research: argumentative writing, Toulmin's model, and the flipped classroom.

#### *Argumentative Writing*

Writing is a social communicative method for writers to express their opinions by organizing texts (Clark, 2012; Zhang & Zhang, 2021). Argumentative writing, a genre aiming at illustrating arguments and persuading audiences to make thoughtful decisions, is particularly significant. At the university level, argumentative writing is prevalent because college students need to acquire the ability to present logical justifications (Wolfe et al., 2009; Luo & Sumalee, 2023). However, Yang (2022a; 2022b) argued that it is challenging for Chinese EFL students to complete argumentative writing effectively. In Qin and Karabacak' analysis (2010), only claims and data were found in English argumentative essays written by Chinese undergraduates. This finding is supported by Zhang (2018), whose study presented that there were few counterarguments and rebuttals in Chinese EFL students' argumentative essays. The insufficient mastery of argument structure is categorized into cognitive challenges in teaching

argumentative writing, according to Wang and Said (2024). Moreover, in terms of Wingate's questionnaire in London (2012), the results revealed that students are struggling with English argumentative writing due to a lack of adequate understanding of arguments and effective formal structure. Therefore, it is essential for learners to practice argumentative writing using effective methods.

In conventional teaching, in general, the approach is teacher-centered and exam-based with teachers acting as instructors and guides (Xu et al., 2020). In a teacher-centered writing class, teachers promote students' knowledge construction, while students receive all contents passively, and seldom have chances to express themselves or think critically. For example, in China, the product-based teaching is common in writing instruction (Zhang & Zhang, 2021), which contradicts the essence of argumentative writing that involves developing learners' logical and critical thinking skills (Zainuddin & Rafik-Galea, 2016). In addition, according to Qin's study in 2020, Arabic learners face difficulties in writing argumentative essays, because the educational system of the United Arab Emirates emphasizes rote memorization. Hence, numerous opportunities and practice sessions should be provided to stimulate learners' writing skills and deep thinking (Liao & Liao, 2022).

In terms of the pedagogical implications of English argumentative writing, it is concluded that effective strategies and measures can be helpful for EFL learners to overcome their drawbacks in writing (Khairuddin et al., 2021; Aziz & Said, 2020). Based on the second language acquisition theory (Krashen, 1982), language learning acquires sufficient input, and teachers are supposed to offer abundant practice and training. More chances of practice should be added to promote students' writing skills and thinking in order to alter the present exam-oriented and instructor-centered teaching (Liao & Liao, 2022). As a result, the input activities, including collaboration, such as pair work, group discussion and peer feedback should be applied to motivate learners (Huang & Zhang, 2019; Ka-kan-dee & Kaur, 2015). This opinion has been agreed by Li and Zhang (2021a), collaborative activities can be regarded as meaningful interactions through small groups, improving language output. In terms of the current study, the teaching of argumentative writing has been combined with cooperative activities, such as debate teams and mind-mapping.

#### *Toulmin's Model*

As shown in Figure 1, data, warrant and claim are the basic three elements, while qualifier, backing and rebuttal are the secondary elements. Data serves as the foundation for the claim that is a conclusion or assertion, while the warrant connects the data and the claim. The other three elements support the validity of the claims and the reliability of the warrant (Zhang, 2018; Toulmin, 2003). In the current research, Toulmin's model is applied as a pedagogical model serving for teaching activities to develop a flipped classroom of argumentative writing.

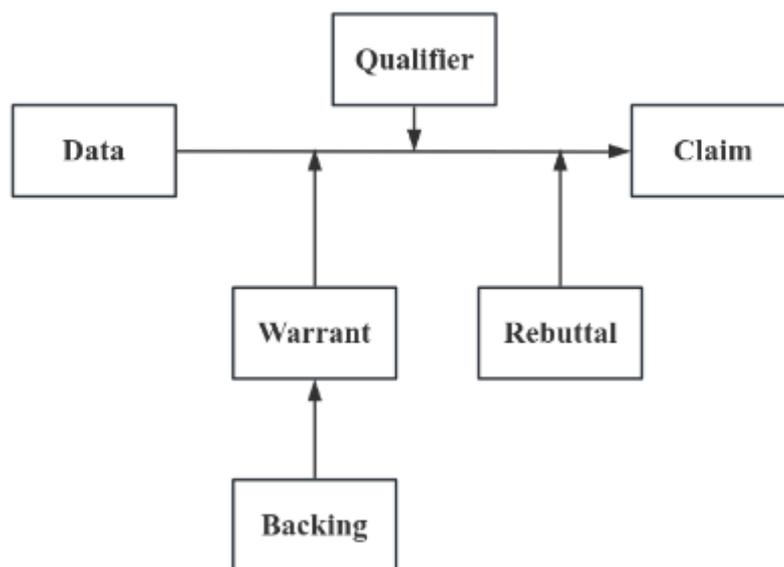


Figure 1 Toulmin Argumentative Model (Toulmin, 2003)

In tertiary education, there are few empirical study applying suitable models to improve learners' argumentative writing (Liao & Liao, 2022). In the previous research, a five-paragraph writing model has been applied, which can not satisfy learners' demand, because it is not effective in constructing strong arguments (Aziz & Ahmad, 2017). In contrast, mind mapping as used by Zhang (2018), strengthens the links between related opinions. Additionally, in Zhang and Zhang's study, the genre-based pedagogy combined with Toulmin's model had positive impacts on participants' overall writing quality and structure in the experimental group. Toulmin's model has been considered a heuristic teaching instruction in argumentative writing, providing a valid assistance in adjusting the structure of arguments (Qin & Karabacak, 2010; Zhang & Zhang, 2021), and is appropriate for analyzing and constructing claims (Luo & Sumalee, 2023).

In the analysis of argumentative writing through Toulmin's model, Zhang and Zhang (2018) claim that counterarguments and rebuttals could not used effectively in argumentation, and also students in Taiwan, China were not skilled in backing, rebuttal and qualifier that are the secondary elements of Toulmin's model. Additionally, according to the previous studies of Toulmin's model in teaching argumentative writing, the claims and evidence written by Arabic students in an experiment have been improved thanks to the Toulmin's model (Qin, 2020). Similarly, it is beneficial for Chinese EFL students to acquire argumentative elements by using Toulmin's model. It is also admitted by Aziz et al. (2023), learners can obtain structures and strategies for argumentative writing through the combination of Toulmin's model. Meanwhile, learner-centered learning and independent learning can be achieved by combining Toulmin's model in the teaching method of argumentative writing (Aziz, 2021; Aziz & Said, 2020). As a result, in this study, Toulmin's model offers pedagogical suggestions for designing class activities in the flipped classroom, aiming to prompt ESL undergraduates' argumentative writing in a Chinese university.

*Flipped Classroom*

According to the classification of blended learning by Staker and Horn (2012), there are four main types of blended learning: rotation model, flex model, self-blend model and enriched-virtual model. The rotation model can be divided into four sub-models, including the flipped classroom model, station-rotation model, lab-rotation model and individual-rotation model. In Roohani and Rad's study (2022), the flipped classroom provides knowledge for learners before attending classes, allowing more time for practice during classes. Both blended learning and the flipped classroom are innovative products of the information technology, and according to Chan and Leung (2016), they are combining synchronous and asynchronous learning. The asynchronous learning before classes enriches learners' preview and encourages flexible and active learning (Su Ping et al., 2020; Asep et al., 2023). In an independent and active learning environment, the flipped classroom is student-centered, guided more by learners than by a teacher.

The past research indicates that the flipped classroom positively influences writing. Su Ping et al. (2019) conducted a qualitative study and summarized that participants had positive attitudes towards flipped classroom, which stimulated their writing due to its flexible learning schedule and the adequate preparation. In Asep et al.'s study (2023), the qualitative research showed that the flipped classroom turned learners into active participants. In addition, researchers using quantitative research designs, dividing all participants into the experimental and control groups. In the experimental group, participants' writing quality has been improved, especially in terms of the overall writing structure and fluency (Soltanpour & Valizadeh, 2018; Fathi & Rahimi, 2022).

In the current research, the flipped classroom model was chosen to teach English argumentative writing utilizing Rain Classroom. Rain Classroom, a learning application, has connected learning resources with Massive Open Online Courses (MOOC) and has been monitored by a backstage management system since 2016. Rain Classroom can integrate massive and complicated technology tools into PowerPoint and be a mini-program in WeChat application. Its purpose is to connect smart terminals for both teachers and students, amplify the efficiency of teaching and learning, and promote educational reform. Then, the reason why Rain-classroom can be applied in the English teaching classes is that almost every college student in China has a smartphone and WeChat account, making it convenient for them to use Rain Classroom anytime and anywhere.

Moreover, students can use Wi-Fi facilities in school, at home, or in dormitory, facilitating access to Rain Classroom during learning period. In the previous study, Zhang (2020) concluded that the writing teaching mode based on Rain Classroom has significant impacts on English writing for college students. Sun (2020) added that through the combination of flipped classroom and the Rain Classroom, the reform of mixed teaching mode has been realized and according to the results, the communication between teachers and students was enhanced and the quality of classroom teaching was improved. Hence, Rain classroom strengthens the online teaching content and preparation before, during and after classes, overcoming the limitation related to teaching content and time, as well as providing a solution for asynchronous feedback on assignments.

## Methodology

This part explains research design, instruments and participants.

### *Research Design*

This research adopted a quantitative research design. According to Creswell and Clark (2018), the quantitative research design is considered a useful method for collecting statistical information, which can explain phenomena deductively. Therefore, the findings and results of quantitative research can be generalized to a whole population or sub-population because of the large sample size. This research focuses on the effectiveness of flipped classroom on Chinese EFL undergraduates, and all participants' written texts were collected for analysis to achieve the research objective.

### *Instruments*

In the current study, the instruments include written texts from all participants and a scoring rubric.

### *Written Texts*

Authentic and pertinent documents are generally significant in the data collection (Yamagata-Lynch, 2010), because they are ready for analysis without transcription. In the current research, student participants were asked to complete argumentative essays during the flipped classroom sessions. In the previous studies, written texts have been used as data, especially for the writing research, such as Qin (2020) and Aziz & Said (2019). To ensure the authenticity of the written texts, all written tasks were completed in classes under the supervision of the researcher. The researcher aimed to address the research question by analyzing the results of written texts based on the rubric assessment.

The research lasted 6 weeks, and all participants were asked to complete three writing tasks with different practice activities, as shown in Table 1. For each topic, participants were given half an hour and needed to write at least 150 words. All learning documents and written assignments were uploaded to the Rain Classroom application. The results of the English argumentative writing tasks further explain the effectiveness of flipped classroom combined with Toulmin's model.

Table 1

Topics of Written Tasks and Collection Weeks

Topic 1	Changes in the Way of Education.	Week 1
Topic 2	The Necessity of Developing Social Skills for College Students.	Week 3
Topic 3	Is technology making people lazy?	Week 6

### *The Rubric Assessment*

As shown in Table 2, the assessment rubric was used to evaluate the overall scores of the argumentative writing essays. It was adapted from Glasswell et al.'s study (2001), known as the *asTTle* Writing Scoring Rubrics. Both the researcher and a lecturer working in the research university agreed to use this rubric assessment in the current study. The full score is 100, and it consists of six parts, with the percentages of content inclusion, coherence, audience awareness and purpose, and language resources for achieving the purpose each at 20%. Besides, vocabulary and grammar covers 15%, while mechanics accounts for only 5%. The

overall scores in level 1 range from 0 to 29, the level 2 is from 30 to 60, and in level 3, the grades are over 60. The assessment rubric was shown to participants with explanations, and the final overall scores of each task were evaluated using this rubric.

**Table 2**  
*An Assessment Rubric*

	Level 1	Level 2	Level 3
Content inclusion (20%)	Make some arguments that related to the topic. The content can be tangential for the topic. (0-6)	Includes most argument elements (e.g., position statement, main points, evidence, restatement). Includes some useless information that does not contribute to argument. (7-12)	Includes all argument elements (e.g., position statement, main points, evidence, restatement). The content relates and contributes to the argument. (13-20)
Coherence (20%)	Only organized at sentence level (0-6)	Attempt to structure content with grouping ideas across sentences. May use simile linking words (e.g., and, or, because). (7-12)	Effective ideas grouping and paragraphing. Use varied linking words and phrases (e.g., although, by the same token, nevertheless). (13-20)
Audience awareness and purpose (20%)	Writer recognizes that his/her opinion is needed in evidence. The writer uses language to state opinions with personal perspective. (0-6)	Language use and writing style generally appropriate to audience. Writer states his/her position. Some attempt to influence the reader is evident. (7-12)	Language use and writing style appropriate and directed to audience (e.g., attempts to persuade reader). Clearly stated consistent position is evident. (13-20)
Language resources for achieving the purpose (20%)	Topic-related vocabulary present. Often speech-like in structure and uses a personal voice. (e.g., I reckon). (0-6)	Uses topic appropriate vocabulary. Attempts to use language to make arguments seem more objective (e.g., passive structures) and powerful (e.g., emotive language). (7-12)	May attempt to use persuasive language (e.g., emotive vocabulary) to influence readers or includes or refers to the reader (e.g., you would). Uses language to make arguments seem more objective (e.g., passive structures) and/or powerful (e.g., certainly, must, absolutely). (13-20)
Vocabulary and grammar (15%)	Limited vocabulary range: frequent errors of agreement, tense, number, articles, pronouns, prepositions and meaning confused or obscured. (0-4)	Appropriate vocabulary range: several errors of agreement, tense, number, articles, pronouns, prepositions but meaning seldom obscured. (5-9)	Sophisticated vocabulary range: few errors of agreement, tense, number, articles, pronouns, prepositions. (10-15)
Mechanics (5%)	Frequent errors of spelling, punctuation, capitalization, paragraphing. (0-1)	Occasional errors of spelling, punctuation, capitalization, paragraphing. (2-3)	Few errors of spelling, punctuation, capitalization, paragraphing. (4-5)

**Participants**

The current research employed a convenient sampling in the quantitative research design, and the convenient sampling is a type of non-probability and non-random sampling, in which all participants are available and accessible to the researcher (Etikan et al., 2016). In the

current study, the researcher used advertisements to recruit 83 EFL Chinese undergraduates from a research university. All participants were from different classes and they voluntarily participated in the study. They were informed that they would attend a flipped classroom and complete all tasks related to English argumentative writing. In the process of this study, all written texts were collected as research data with the participants' permission.

#### *Data Collection and Analysis*

The aim of this study is to determine the effectiveness of the flipped classroom combined with Toulmin's model by collecting and analyzing written texts. In this study, all written texts from participants were collected for statistical analysis. Among the three tasks, the number of valid written texts was 83. In terms of the various written tasks, a test of normality, shown in Table 3, was conducted for the overall grades across the three writing tasks, which were named as T1, T2, and T3. As the p-value was less than 0.05, a Friedman test was selected to compare difference of the overall grades across the three time points.

Table 3

#### *Test of Normality*

	Statistic	df	Sig.	Statistic	df	Sig.
T1	.142	83	.000	.821	83	.000
T2	.183	83	.000	.763	83	.000
T3	.152	83	.000	.951	83	.003

#### **Results**

The results show students' performance in English argumentative writing tasks. The research question is addressed by comparing the differences among three written tasks before, during and after flipped classroom sessions using Toulmin's model. The results consists of four tables: descriptive statistics, ranks, test statistics in the Friedman test, as well as pairwise comparison in the Wilcoxon Signed-Rank Test. As shown in Table 4, the descriptive statistics presented means, std. Deviations, minimums, and maximums. The means increased from 77.07 at T1 to 89.72 at T3, suggesting a potential improvement during the three time points. The highest std. Deviation was at 8.514 in T1, and it suggested greater variability in the data. In contrast, the lowest standard deviation was in T3, at 3.472, suggesting the overall grades became more stable. In terms of minimums and maximums, T1 ranged from 28 to 92, while T3 ranged from 79 to 97, which suggested more consistent values. Therefore, the descriptive statistics in Table 4 shown an increasing trend across the three time points, with the final one being the most stable.

Table 4

#### *Descriptive Statistics*

	N	Mean	Std. Deviation	Minimum	Maximum
T1	83	77.07	8.514	28	92
T2	83	81.06	6.577	40	92
T3	83	89.72	3.472	79	97

Moreover, Table 5 shown the mean rank across the three time points, and the mean rank in T3 was the highest, indicating the highest value. The obvious increasing trend in Table 5 aligns with the upward progression in the descriptive statistics, Table 4.

Table 5

*Ranks*

	Mean Rank
T1	1.40
T2	1.88
T3	3.83

Additionally, Table 6, the results of the Friedman Test, suggested that there was at least one of the three time points was significant different from others, as the Chi-square was 178.358. The p-value also indicated a statistically significant difference among the three time points.

Table 6

*Test Statistics in Friedman Test*

N	83
Chi-Square	178.358
df	3
Asymp. Sig.	.000

Finally, a Wilcoxon signed-rank test was conducted as post-hoc comparisons to identify the difference among the three time points, since the statistics in the Friedman test presented significant differences. The pairwise comparisons were presented in Table 4.8, whose results confirmed the significant differences for T1-T2, T2-T3, and T2-T3. According to the results after Bonferroni correction, the difference between T1 and T2 was not significant, even though the p-value was less than 0.05, while there was a general increasing trend from T1 to T3, with stronger transition in later stage.

Table 7

*Pairwise Comparisons in Wilcoxon Signed-Rank Test*

Time point A-B	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. <sup>a</sup>
T1-T2	-.476	.200	-2.375	.018	.105
T1-T3	-2.428	.200	-12.114	.000	.000
T2-T4	-1.952	.200	-9.739	.000	.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.

Asymptotic significances (2-sided tests) are displayed. The significance level is .050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

**Discussion**

The current research aims to study the effectiveness of flipped classroom combined with Toulmin's model on Chinese EFL undergraduates' English argumentative writing by gathering participants' written texts during the research. It invited 83 Chinese EFL undergraduates from a research university who were voluntary to be involved into the flipped classroom of argumentative writing, and used quantitative research design, by analyzing statistical results. The outcomes of this research reflect several points for discussion and consideration, detailed as follows. In terms of the results, student participants showed considerable improvement in their English argumentative writing. All written texts were graded by the researcher and

another instructor with over 15 years of experience in English teaching to ensure the trustworthiness of the study.

The assessment rubric included content inclusion, coherence, audience awareness and purpose, and language resources. Improvements in these five aspects were attributed to the innovative teaching method, known as the flipped classroom, which is in line with the research of Shooli et al. (2022), Roohani and Rad (2022). They adopted the quantitative research design including questionnaires and experiments to find out the effectiveness of flipped classroom on English argumentative writing, and compared the different impacts of the flipped classroom and traditional classroom. Therefore, the flipped classroom combined with Toulmin’s model can influence Chinese EFL undergraduates effectively and positively.

During the flipped classroom sessions, mind maps and debate drafts were used as teaching activities during the flipped classroom, and both of them were designed with the assistance of Toulmin’s model. The mind map include three main elements (claim, ground and warrant) and three secondary elements (qualifier, backing and rebuttal). The mind map is based on the figure 1: Toulmin’s Argumentative Model. There is a sample from a participant who drawn a mind map based on one of tasks, shown as Figure 6. In this sample, the participant illustrated three main elements and two secondary elements without a qualifier. The claim is the topic that it is necessary for college students to develop their social skills. College students with good social skills usually have more opportunities, and they can express themselves more confidently. Then, the writer presented the ground and the warrant: social skills can help them make more friends, and friends can help each other to solve difficulties. After the graduation, students’ excellent social skills help them adapt to the changeable working environment. Additionally, there is a backing with an example that college students with social skills can complete group work and team competitions. Lastly, the rebuttal presents that with social skills, the team communication maybe become meaningless. Compared with the first task before the application of the flipped classroom with Toulmin’s model, the mind map is helpful for the writer’s argumentation and the overall grades.

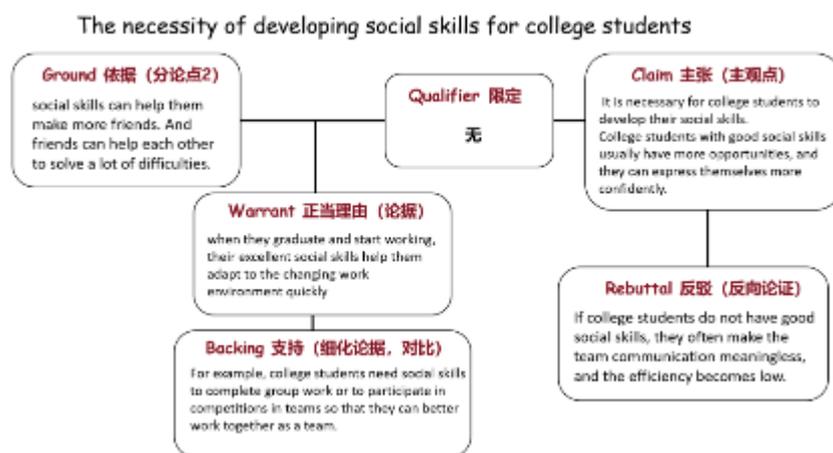


Figure 2 A Sample of the Mind Map

Moreover, the debate drafts based on a specific topic and all participants were divided into groups with Debaters of affirmative side and Debaters of negative side. They had mock debate and recorded them thoughts as debate drafts. There is a part of the debate draft presented

by the researcher before classes, shown in Table 8. In the sample, it includes the three main elements of Toulmin's model, which further promote the organization and logic of arguments.

Table 8

*A Sample Part of A Debate Draft*

Although the management of organizations tends to be the role of older people, I argue that it is preferable if younger people lead them (Claim). Young people can come up with some creative opinions to improve the working efficiency, which is helpful to improve elders' traditional thoughts (Ground). By providing a better age mix to companies and governments, they can contribute more to progressive policies, which in turn results in/ leads to not only better planning, but also more balanced decisions (Warrant).
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The arguments written by most participants included not only data, claim and warrant, but also qualifier, rebuttal and backing. With logical statements and critical thinking, the written texts achieved the purpose of persuading readers and completing task responses. Besides, the language in written texts was more objective, with fewer mistakes in vocabulary and grammar. As a result, although the flipped classroom is thought as a valuable method in teaching writing (Soltanpour & Valizadeh, 2018; Fathi & Rahimi, 2022), it still requires more appropriate activities related to argumentative writing skills, such as mind maps and the organization of debate drafts combined with Toulmin's model.

### **Conclusion**

This study aims to investigate the effectiveness of the flipped classroom in teaching argumentative writing to Chinese EFL undergraduates. A flipped classroom with Toulmin's model was implemented to teach argumentative writing through a quantitative research design. The study of the flipped classroom in improving Chinese EFL undergraduates' argumentative writing with Toulmin's model filled the research gap in the previous research, since applicable pedagogical models and methods are rarely adopted in tertiary education (e.g. Roohani & Rad, 2022; Liao & Liao, 2022).

The results of the present study suggested that the implementation of the flipped classroom with Toulmin's model can effectively improve the overall grades of argumentative essays, which shown pedagogical implications. At first, the implementation of the flipped classroom was achieved by using Rain classroom, aligning with the development of technology. With the application of the Rain classroom, Chinese EFL undergraduates could benefit from both asynchronous and synchronous learning effectively in acquiring learning skills. Then, the learning activities, such as mind maps and debates, based on Toulmin's model, which promoted high-order interactive activities related to argumentative writing. Therefore, this study provides significant insights into the effectiveness of the flipped classroom, and pedagogical strategies to incorporate the flipped classroom with Toulmin's model.

However, there are some limitation of this study. The difference between the first and the third time point was more statistically significant than that between the first and the second time point. This suggest that participants need time to become accustomed to the flipped classroom, as they have been experienced conventional face-to-face classes for many years.

Through practice and understanding, students gradually improved their argumentative writing, making it more logical and organized. However, the current study lacks the qualitative research design such as participants' interviews which can collect students' opinions of flipped classroom with Toulmin's model. Besides, all participants were from a research university. Therefore, the positive effects of flipped classroom on argumentative writing should be further explored by improving the research design and involving more participants.

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