The Effect of Autonomous Learning Process on Chinese College Students' Argumentative Writing Ability

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Abstract

Argumentative writing is difficult for many Chinese university EFL learners since successful performance requires more than grammatical accuracy, yet many Chinese university students have difficulty constructing clear claims, selecting relevant evidence, and developing reasoned responses to opposing views. This study examined changes in argumentative writing performance after a 12-week Autonomous Learning Process (ALP) intervention that integrated with the Toulmin Model into a regular College English II classroom. Forty-two first-year Chinese Language and Literature majors from one intact class participated. They completed timed argumentative writing tasks in Week 1 and Week 12. Two raters scored the essays independently with a Toulmin-based analytic rubrics that covering six elements from the Toulmin Model. The mean total score rose from 8.33 (SD = 1.99) to 12.36 (SD = 2.72), $t(41) = 12.34$, $p < .001$, with a large paired-samples effect size (Cohen's $d = 1.91$). In result, all six Toulmin elements improved. Especially, Claim and Data showed the largest increases, whereas Warrant, counterargument-related elements, and Proposition improved more moderately. Based on the ALP design, the findings interpreted as substantial improvement following the intervention rather than as evidence that ALP alone caused the change. The pattern nevertheless suggests that combining argument structure with planning, reflection, emotional regulation, and peer-supported revision is a promising way to organize argumentative writing instruction in a Chinese EFL classroom.

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Introduction

Argumentative writing is an important skill in academic literacy since it asks writers to do more than present writing information. They have to take a position, justify it with evidence, and show how the evidence supports the position. These demands are especially challenging in an EFL setting, where students are managing language and the reasoning required to build a clear argument. Research on Chinese university learners has reported some difficulties with critical thinking, coherence, and the development of well-supported positions (Zhang, 2021). Moreover, work on source-based writing has also drawn attention to the need for learners to evaluate information and connect evidence to claims rather than simply reproduce material from sources (Shi et al., 2020; Jiang & Al-Shaibani, 2024).

The context also provides another perspective on this problem. Many non-English majors in China prepare for the College English Test (CET-4/6), so writing instruction often focuses on exam preparation. Exam preparation can support writing development, but too much attention to fixed writing patterns and test-taking skills may reduce the time students spend developing their arguments, using evidence, expressing their views, and revising their writing (Zheng & Cheng, 2008; Sang, 2017). In the university where the present study was conducted, this situation was obvious in students' writing: they were familiar with common essay formats, yet many still had difficulty explaining why a reason supported a claim or responding meaningfully to a competing position.

This distinction shows that linguistic correctness and argumentative quality are not the same construct. Earlier research identified weak organization, insufficient reasoning, thin content, and inappropriate style as recurring problems in argumentative writing (Cooper, 1984; Crowhurst, 1990; Freedman & Pringle, 1984). Therefore, more recent work similarly suggests that EFL writers face cognitive problems involving argument structure, critical thinking, and the use of feedback (Wang & Mat Said, 2024). Chinese learners may also rely heavily on fixed templates; improvements in grammar,

vocabulary, or formulaic organization do not automatically produce a convincing argument (Yang & Sun, 2012; Yu et al., 2021).

This study focused on this problem through learner autonomy and the Toulmin Model. Generally, learner autonomy concerns learners' capacity to take greater control of goals, strategies, monitoring, and evaluation (Holec, 1981; Benson, 2013). And those processes can be described in terms of how a learner decides what the essay needs, plans an approach, checks whether evidence is relevant, and revises accordingly. Based on this, an autonomy-oriented learning process may provide a useful way to help students from knowing a writing template to managing the decisions that a clear argument requires.

To make argument structure clearer during the process, the intervention integrated the Toulmin Model into the learner autonomy process. Its not just treating Toulmin Model as content to memorize, but the process used the model as a working checklist for students to plan and revise. Students considered whether an essay contained a clear claim, adequate data, an explicit warrant, recognition of opposition, a response opposition, and a proposition. That explained why the study combined ALP and the Toulmin framework to help students organized how they learned and revised, and what they needed to look for in an argumentative text.

This article reports the quantitative findings for the research question of a classroom-based project: What is the effect of the Autonomous Learning Process on Chinese college students' argumentative writing ability? Because the study used one intact class without a control group, the analysis focuses on the magnitude and pattern of pre-post change and avoids attributing all observed improvement exclusively to the intervention.

Research Objectives

To study the effect of the Autonomous Learning Process on Chinese college students' argumentative writing ability

Research Methodology

Research Design and Research Question

This study used quantitative strand by pre-test and post-test to examine changes in students' English argumentative writing ability, and the design contained a 12-week Autonomous Learning Process (ALP) intervention. One intact class completed an argumentative writing test before the intervention, and a second test after the intervention. Although the two tests used different topics, the administration and scoring criteria remained consistent. Students' essays were evaluated by Toulmin Model rubric that adapted from McCann (1989) and grounded in Toulmin's model of argumentation (Toulmin, 1958, 2003). The pre-test and post-test scores were compared to identify changes in overall writing performance and in each Toulmin element.

Throughout the intervention, students were required to practice constructing arguments by using planning, drafting, peer review, reflection, and revision. This learning process was intended to help students master argumentative structures and gradually transfer them to independent writing tasks. The overall instructional framework of the ALP is presented in Figure 1.

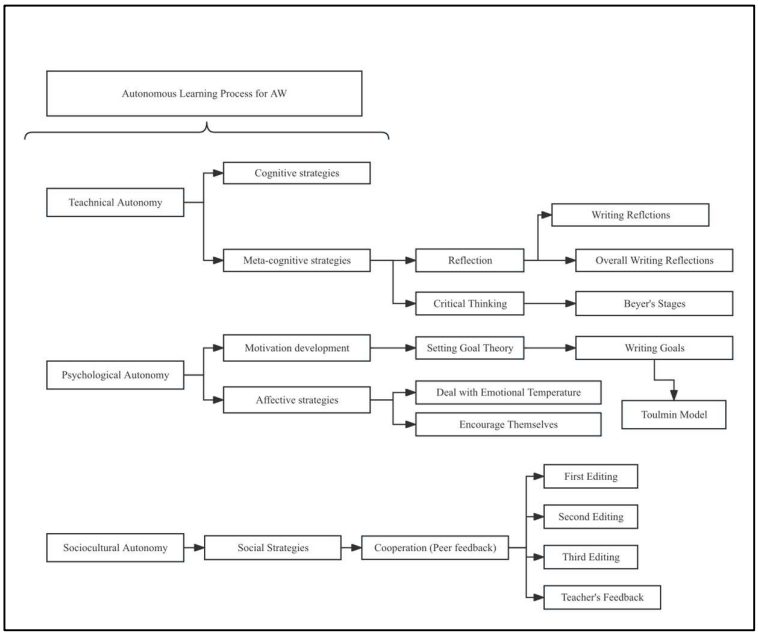


Figure 1 The Autonomous Learning Process for Argumentative Writing

As shown in Figure 1, the ALP was designed as an instructional process to help students to learn the Toulmin Model. In the three dimensions of learner autonomy, technical autonomy was fostered by cognitive and metacognitive strategies, psychological autonomy by goal setting and affective regulation, and sociocultural autonomy by collaborative learning and peer feedback. The integration provided learners with structural guidance for constructing arguments and strategic support for regulating their writing and emotions.

Participants and Instructional Context

The study was conducted in one class of College English II at Yunnan Technology and Business University. The participants, selected purposively, were 42 first-year undergraduate students majoring in Chinese Language and Literature. The class was selected through convenience sampling because the participants formed an intact instructional group involved in the ALP intervention. Their English proficiency level was relatively homogeneous, as indicated by their performance in the National College Entrance Examination.

The ALP Intervention and Teaching Schedule

The ALP intervention integrated three dimensions of learner autonomy with Toulmin-based argumentative writing instruction. It was implemented as an added layer within the regular College English II course. Students received weekly in-class ALP training and completed structured out-of-class tasks through Mosoteach. The intervention was designed to help students practice the same writing routines across the semester rather than complete isolated writing activities.

As Table 1 shows, the pre-test and post-test was administered in Week 1 and Week 12. In Weeks 2-4, the teaching schedule emphasized on recognizing argumentative patterns and three dimensions of learner autonomy. During Weeks 5-8, students moved into model analysis, outline revision, drafting, and peer feedback. Weeks 9-11 concentrated on teacher's feedback, self-checking, and group discussions.

Table 1 Summary of the 12-Week ALP Intervention for Argumentative Writing

Stage	Weeks	Main focus
Baseline	Week 1	Pre-test and introduction to the intervention platform and materials.
Strategy and structure training	Weeks 2-4	Cognitive strategies, Toulmin element identification, critical-thinking practice, goal setting, affective strategies, and reflection.
Drafting and feedback	Weeks 5-8	Model analysis, outline revision, drafting, peer feedback, reflection, and revision.
Revision and consolidation	Weeks 9-11	Teacher feedback, rubric self-checking, peer review, independent drafting, and consolidation of recurring problems.
Post-intervention assessment	Week 12	Post-test and overall written reflection in the larger dissertation project.

Writing Tasks and Scoring

Argumentative writing ability was measured through two timed argumentative writing tasks, and two tests were administered under same conditions but different topics. In Week 1, students wrote on the topic 'Television does more good than harm. Do you agree or disagree?' In Week 12, the topic was 'Studying at local universities is better than studying abroad. Do you agree or disagree?' The topic was changed to reduce the likelihood that students would reproduce content remembered from the first task. Students had 30 minutes and were expected to produce a complete argumentative essay within the CET-4 requirements.

The two essays were scored by two different raters using a rubric adapted from McCann (1989). Claim, data, and warrant were treated as the central elements and scored from 0 to 6. Opposition, response to opposition, and proposition were scored from 0 to 3. This differential component scoring was useful, because changes in the total score might present differences across six elements of argumentation. Specifically, students could make substantial gains in claims and supporting evidence while showing more limited improvement in warrants or responses to opposing views.

Data Analysis

In data analysis, descriptive statistics were calculated for the pre-test and post-test scores. A paired-samples t-test was used to examine the mean difference for the total score, and Cohen's d for paired observations was used to describe the magnitude of change. The same pre and post test comparison was conducted for all six Toulmin elements.

Ethical Considerations

Participation was voluntary. Before research-related data collection, students received a participant information sheet and an informed consent form and were given sufficient time to read the materials and ask questions. They were informed that participation or withdrawal would not affect course learning or grades.

All data were de-identified for analysis and reporting. Writing scripts were scored independently, electronic files were stored in password-protected folders, and the results were reported in aggregate form. Access to identifiable materials was restricted to the researcher and authorized raters.

Research Results

Overall Argumentative Writing Performance

After the data analysis, the pre-test mean was 8.33 (SD = 1.99), compared with 12.36 (SD = 2.72) on the post-test. The average paired increase was 4.03 points. This difference was statistically significant, $t(41) = 12.34$, $p < .001$. The paired-samples effect size was large (Cohen's d = 1.91). Thus, within this class, the post-intervention writing performance was substantially stronger than the pre-intervention performance.

Table 2 Pre-test and Post-test Results for Argumentative Writing

n	Test scores	Paired t-test	Effect size
42	Pre-test M = 8.33 (SD = 1.99); Post-test M = 12.36 (SD = 2.72); Mean gain = 4.03	$t(41) = 12.34$, $p < .001$	Cohen's d = 1.91 (large)

Change Across the Six Toulmin Elements

The data also analyzed six elements from Toulmin Model, Claim showed the largest mean gain (1.07 points) and the largest component effect size (d = 1.07). Data followed with a mean increase of 0.93 and d = 0.87. These are the two components most improved after intervention. Moreover, warrant also improved, but the change was smaller (0.67; d = 0.54). After that, the three lower-weighted components showed moderate changes: opposition increased by 0.50 (d = 0.65), response to opposition by 0.48 (d = 0.57), and proposition by 0.38 (d = 0.46). Every element reached statistical significance at $p < .001$.

More specifically, this pattern is more informative than the total score. Students appeared to gain first in aspects of argument that can be made explicit and checked directly: stating a position and providing relevant support. The smaller gains in warrants and other counterargument components point to a continuing difficulty with deeper reasoning. In a word, after the post-test completed, the result from data do not suggest that every aspect of argumentation developed to the same degree.

Table 3 Pre-test and Post-test Results Across Six Toulmin Elements

Element	Pre-test M (SD)	Post-test M (SD)	Mean diff.	T	p	d
Claim	2.36 (0.91)	3.43 (1.33)	1.07	6.96	< .001	1.07
Data	1.79 (0.98)	2.71 (1.35)	0.93	5.63	< .001	0.87
Warrant	1.36 (1.06)	2.02 (1.49)	0.67	3.48	< .001	0.54
Opposition	0.88 (0.80)	1.38 (0.94)	0.50	4.19	< .001	0.65
Response to opposition	0.95 (0.88)	1.43 (1.02)	0.48	3.70	< .001	0.57
Proposition	1.00 (0.83)	1.38 (1.21)	0.38	2.99	< .001	0.46

Research Discussion

Discussion of the Main Findings

In the discussion, the 42 students wrote stronger argumentative essays at the end of the 12-week intervention. The size of the total-score difference was large, and improvement appeared in every Toulmin category. Because no control group was

included, the observed improvement cannot be attributed solely to ALP. The results are therefore interpreted as changes occurring following the intervention rather than as definitive evidence of causation.

There is an explanation for the overall improvement is that the ALP gave students a clearer way to approach argumentative writing as a process rather than as a single timed task. Before the intervention, students had to manage several demands at once: choosing a position, finding support, organizing ideas, and expressing these ideas in English. During the intervention, these demands were divided into more manageable activities, they could manage and practice them one by one. Especially, Students practiced argument structure, analyzed some model examples, reflected on weaknesses, and revised their work with group members. In this setting, the Toulmin Model provided a clear structure for deciding what an argument should contain, previous research also showing that Toulmin-based instruction can improve the quality of argumentative writing (Zainuddin & Rafik-Galea, 2016; Yang, 2022; Yang & Pan, 2023), while the ALP provided routines for working through that structure during planning and revision. The intervention did more than introduce the template of claim, data, and warrant, it gave students clear goal and opportunities to use those elements during writing.

Based on the results, the large gain in claim is consistent with this explanation. Claim is one of the most visible elements in an argumentative essay, and it can be taught through direct explanation and guided practice. Students can usually identify whether a position has been stated clearly, and they can revise a vague position once the problem is pointed out. The ALP intervention marked recognizing argumentative structure and establishing a clear position, which may have helped students become more aware of what their argument was expected to express. Previous research has also shown that explicit Toulmin Model instruction can improve the use of claims in student writing. Varghese and Abraham (1998) reported an improvement in explicit claims, developed data, and warrants after structured instruction, while Qin and Karabacak (2010) found that claims and supporting data were among the more frequently used Toulmin elements in university students' argumentative writing.

However, the proposition showed the smallest effect size among the six elements, and this result should not simply be read as a weakness of the intervention. Proposition as a low-weight scoring element of this study, requires students to bring the argument to a meaningful conclusion rather than simply repeat the opening position. If claims, evidence, and counterarguments remain only partly developed, then the final proposition may also remain limited, because it depends on the development of the argument as a whole. The smaller improvement may be because conclusion writing requires students to bring earlier ideas together, and they may need more time to move beyond simple restatement and write conclusions that clearly follow from the argument.

The improvement in argumentative writing can also be considered in relation to the learner autonomy design of the ALP. In this study, learner autonomy was not treated as learning without teacher support, but as students gradually taking greater responsibility for decisions during their argumentative writing. The ALP provided students with specific ways and goal to apply and to evaluate, Toulmin Model practices and critical thinking activities helped them to examine the structure in their arguments, and reflection encouraged them to record problems and reconsider their writing choices. In psychological autonomy dimension, goal setting theory provides them a clearer purpose for each stage of the writing task, affective strategies to help them regulated their emotion during the writing task. The peer feedback in sociocultural autonomy provided another source of information for revision, it also develops their writing willingness in the future. These activities allowed students to take a more active role in planning, checking, and improving their own writing rather than depending entirely on teachers.

Specifically, sociocultural autonomy and revision cycle became important when students used interaction and feedback to improve their use of Toulmin elements. This interpretation is also consistent with the broader view of autonomy as context-sensitive and socially supported (Benson, 2013; Murase, 2015). In the study, peer assessment and group revision allowed students to compare arguments, identify missing support, and respond to comments from others. This is relevant to data, warrant, and counterargument because weaknesses in these elements may be difficult

for writers to notice on their own. A peer may question whether the evidence is relevant, point out that the connection between evidence and claim is unclear, or introduce an alternative view that the writer has not considered. In this way, feedback became a resource for self-regulation rather than a replacement for autonomy.

In the ALP, three dimensions of learner autonomy worked together during the writing process. Students could use technical strategies to notice a weak warrant, draw on psychological regulation to stay engaged with revision, and use peer feedback to judge whether the revised reasoning was clear enough. In this process, the Toulmin model helped students see where an argument needed improvement, and learner autonomy helped them decide how to respond. This shows that autonomy in the ALP developed through actual writing decisions rather than as a separate ability outside the writing task.

A second feature of the ALP was that writing was treated as a managed process. Goal setting and reflection asked students to make decisions before and after drafting rather than wait for teacher correction. Affective strategies were used because timed English writing caused visible anxiety for some learners in this context. These psychological supports cannot be linked directly to individual score gains in the present quantitative analysis, but they are relevant to how the intervention was implemented. A student who can identify a weak claim still needs enough persistence and confidence to revise it repeatedly. The ALP attempted to support that persistence alongside the structural instruction.

New Knowledge

Overall, the findings suggest that ALP helped students use argument structure to manage their writing more effectively. The Toulmin Model gave students a clearer basis for judging what their essays needed, and the learner autonomy activities encouraged them to act on those judgments through planning, reflection, revision, and feedback. This may help explain why improvement was found across all six Toulmin elements, although the extent of change differed from one element to another. The stronger gains in claim and data also suggest that more clear parts of an argument

may respond more quickly to structured practice, however, some elements may require deeper reasoning and longer development. Based on the one group design, these findings should be interpreted with caution, but they still show that a structured process combining Toulmin Model instruction with learner autonomy support can provide a useful direction for argumentative writing.

Research Suggestions

This study examined argumentative writing performance before and after a 12-week Autonomous Learning Process that embedded the Toulmin Model in College English II classroom. The students' mean score increased from 8.33 to 12.36, and all six components of the analytic rubric improved. The strongest changes occurred in claim and data, and other elements such as warrant, opposition, response to opposition, and proposition showed smaller but still significant gains. The intervention provided an explicit structural guidance, and substantial improvement was observed following the intervention.

In classroom, the findings present Toulmin Model as a tool used in writing process rather than a teaching content taught in one lesson. Students applied the learner autonomy and strategies when they outlining, drafting, reviewing peers. Peer review is quite useful when students work from a group, and they shared analytic rubric and revision follows the feedback. However, this instruction should pay particular attention to warrants and other counterarguments, because these elements remained less responsive than claims and data in the study.

Future studies should test the intervention with larger samples, more than one institution, and a control or comparison condition. A delayed post-test would help determine whether the gains persist after structured support is removed. It would also be useful to examine whether warrants and rebuttals continue to develop after the clearer elements of argument have stabilized. Such work would clarify which parts of the ALP are most strongly associated with writing development and whether the process transfers to other EFL writing contexts.

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