Longitudinal Investigation: Impact of Production-Oriented Approach on Chinese University Students' English Writing and Speaking Proficiency

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Abstract

This paper presents preliminary findings of a quantitative investigation of the effects of the Production-oriented Approach (POA) on the English writing and speaking proficiency of Chinese university students. Involving an experiment group instructed by the POA and a control group receiving regular instruction focusing on linguistic forms, the study organized reliable tests before, during and after the study, the data of which was analyzed from the perspectives of complexity, accuracy and fluency indices. Between-group and within-group analysis revealed that the experiment group exhibited a significant and sustained improvement in English writing and speaking fluency. However, notable progress in language production complexity and accuracy was lacking. Conversely, the control group demonstrated significant enhancements in both writing and speaking complexity and accuracy, with no observable improvement in fluency. The results underscore a cautious assessment of the effectiveness of the POA, suggesting its limited impact on students' overall English proficiency in the context of this study. Educators and curriculum planners are encouraged to reconsider the comprehensive development of language proficiency within the POA. Striking a balance between a focus on form, which is prevalent in China's English language education, and a focus on meaning is recommended for optimal language learning outcomes.

Keywords: production-oriented approach, writing, speaking, English proficiency, CAF

1. Introduction

In the vast landscape of English language education (ELE) in China, a nation with a rapidly expanding global presence, the pursuit of linguistic proficiency holds paramount significance. The prominence of English as a global lingua franca, coupled with China's increasing role in international affairs, underscores the pivotal role of English language education in shaping the communicative competence of its citizens (He, 2020). In this context, particularly within the realm of higher education, there exists a critical need for a paradigm shift that addresses the persistent challenges faced by university students in their English communication skills (Hu et al., 2023), notably in writing and speaking (Lin & Liu, 2022; Yang, 2020). Despite the substantial emphasis on English language instruction, students often encounter deficiencies in complexity, accuracy and fluency (CAF) in their expressive abilities (Wang & Han, 2021; Zhang et al., 2022), raising concerns amplified by the recognition that effective English communication skills are integral not only to academic success but also to participating meaningfully in a globalized society and workforce (Hu et al., 2022).

Amidst these challenges, the Production-Oriented Approach (POA) has recently emerged in China's academia as a promising pedagogical strategy designed to address the shortcomings of traditional foreign language (L2) instruction characterized by an over-emphasis on linguistic forms (Zhang, 2020b). The POA refers to an innovative instructional paradigm that shifts the focus from rote memorization and isolated language components toward fostering active language production and authentic communication (Sun, 2022). Given this potential, the POA has gained traction in academic circles and has been integrated into L2 education, particularly ELE, across various educational levels. However, while its theoretical underpinnings suggest transformative possibilities, there exists a notable research gap concerning its concrete impacts, particularly within the specific context of Chinese university students and their English communication abilities (Fan, 2021; Sun & Asmawi, 2021). Therefore, this study endeavors to bridge this gap by embarking on a longitudinal exploration of the effects of the POA on Chinese university students' English writing and speaking proficiency, from the perspective of CAF. By delving into the practical applications and outcomes of the POA, this research seeks to provide empirical insights that can inform educators, policymakers and researchers on the efficacy of this approach within the context of ELE in China.

2. Literature Review

The pedagogical model known as the POA, which has been advanced and refined by Wen (2015), draws inspiration from existing second language acquisition theories, such as the input hypothesis, output hypothesis and interaction hypothesis. It has evolved into a comprehensive model for enhancing English classroom instruction in tertiary education across Mainland China (Wen, 2015). By amalgamating the strengths of traditional Chinese instructional methods with Western pedagogy, this approach is rooted in the output-driven-input-approach hypothesis, actively involving learners in production (Lou & Zhao, 2021). The objective of this teaching

approach is to enhance the effectiveness of language instruction within the Chinese educational context (Zhang, 2020a).

The POA comprises three main elements pertaining to instruction: principles, hypotheses, and procedures. These teaching principles emphasize a shift towards student-centered learning, integration of learning and application, and the comprehensive development of individuals (Wen, 2016). In the context of student-centered language teaching, there is a focus on structured instruction, distinguishing it from informal educational approaches (Aqachmar, 2022). Teachers are seen as designers, organizers, and facilitators of English instruction (Hu et al., 2022; Hu, 2023).

The integration of learning and usage principle emphasizes blending language input with output activities to reinforce recently acquired knowledge through practice (Ellis, 2017). Furthermore, the principle of holistic education suggests that language teaching goes beyond mere instruction, aiming to cultivate socially aware and globally conscious citizens (Shen & Li, 2021). Achieving these goals requires careful selection of materials and strategic organization of activities.

The POA also includes three instructional hypotheses: the output-driven, input-enabled, and selective learning hypotheses (Wen, 2016). The output-driven hypothesis suggests restructuring the learning process to prioritize productive tasks as both initial motivations and ultimate outcomes (Sun, 2020). The input-enabled hypothesis posits that well-designed materials and activities can push students beyond their current proficiency levels, aligning with the principles of social constructivism (Sarhady, 2015). Lastly, the selective learning hypothesis proposes that optimal results are achieved when instructional input directly supports productive activities (Zhou, 2021).

The theoretical framework supporting three teaching methodologies—motivating, enabling, and assessing—is founded on several hypotheses (Fan, 2021). Initially, in the motivation phase, teachers assign tasks and encourage students to engage with them, prompting students to recognize their language deficiencies while completing the assigned tasks (Sun & Asmawi, 2021). This identification of gaps may stimulate students' curiosity, leading the teacher to elucidate the learning objectives further. Moving into the enabling phase, teachers meticulously curate relevant materials and devise a series of sequential activities that offer support in language, content, and structure. Typically, tasks progress from simple to more complex, demanding advanced cognitive and linguistic abilities (Wang & Sun, 2021). The POA framework incorporates two assessment types: immediate and deferred (Wen, 2016). Immediate assessment entails ongoing diagnostic and formative evaluations during the enabling phase, while deferred assessment occurs in subsequent sessions based on students' post-class performances. Each phase comprises internal cycles, collectively forming an external cycle that perpetuates the overall process. Motivation identifies skill gaps, enabling phase addresses them, and assessment fine-tunes teaching strategies, setting the stage for new motivating tasks (Fan, 2021). This approach delineates distinct roles for teachers and students, underscoring the collaborative construction of teaching methodologies by both parties.

The POA has undergone extensive empirical testing, confirming its effectiveness in teaching foreign languages. Fan (2019) investigated its application in English reading instruction, suggesting its potential to enhance traditional methods, integrate input and output more effectively, and increase the practical value of teaching, particularly in College English critical reading. Ling and Qin (2022) conducted a two-week trial demonstrating that the POA significantly improved students' writing proficiency, especially in mastering the target language during writing, and boosted their interest in English writing. Yuan (2020) highlighted how the POA enhances students' critical thinking and improves learning efficiency based on student perspectives. Shi and Li (2020) applied the POA in an English majors' comprehensive skills class, leading to improved student initiative and participation.

Due to the challenges Chinese students face in English writing and speaking, as noted by Hu et al. (2022), the POA has received specific attention in China. Previous studies have explored its effectiveness in enhancing these skills among Chinese students. Researchers have conducted experiments and interventions to assess the impact of the POA on communication proficiency (Gu & Gao, 2021; Jing, 2022; Sun & Shi, 2019; Tao, 2021; Zhu, 2021), aiming to tailor the POA to improve English abilities and contribute to language teaching methodologies in the Chinese educational context.

Limited empirical research exists on the POA in Chinese academia, with a focus primarily on integrating the POA theory into English curriculum development. Although there are numerous theoretical studies on the POA, empirical research is scarce. The validation of this theory relies on practical application, and its refinement hinges on real-world verification. To enhance the theoretical system, it's crucial to popularize it through teaching practices and obtain evaluations from reputable educational institutions worldwide. Existing empirical studies on the POA typically employ a combination of quantitative and qualitative methods, including tests, questionnaires, interviews, classroom observations, and teaching reflection reports. However, the lack of in-depth analysis impedes the illustration of typical learner behaviors and characteristics. Thus, this study aims to explore the effects of the POA on English writing and speaking, focusing on CAF indices to provide a deeper understanding of this pedagogical approach (Sun & Asmawi, 2021; Fan, 2021; Sun, 2022; Wang & Sun, 2021).

3. Research Methodology

This research adopted a longitudinal, quantitative design, encompassing a pre-intervention assessment, a mid-test during the intervention phase and a post-intervention assessment. This design was pragmatic for assessing the impact of the POA on the targeted variables (Reichardt, 2019), namely English writing and speaking. The study was conducted at a comprehensive university in China within the context of college English instruction for non-English majors. The sample included both a control group (CG) and an experimental group (EG), with students recruited through convenience sampling due to constraints on purposive selection. Consequently, two intact classes participated with informed consent, ensuring ecological validity in the study (Golzar et al., 2022). Efforts were made to enhance

comparability between the CG and EG by aligning their demographic information, thereby ensuring homogeneity (refer to Table 1). This meticulous matching aimed to maximize the validity of the study's findings (Jager et al., 2017).

Table 1. Participants' Demographic Information

	CG	EG
Number	40	40
Year Level	Sophomore	Sophomore
Age	20–21	20–21
Gender	Female: 55% (N = 22)	Female: 50% (N = 20)
	Male: 45% (N = 18)	Male: 50% (N = 20)
Major	Business and Finance	Business and Finance
Years of English Learning	12–13	12–13

The study spanned seven months, covering an entire academic semester and summer school courses, providing ample time for intervention (Reichardt, 2019). The same teaching materials and textbooks, as edited by Chen (2016) and prescribed by curriculum designers at the research site, were utilized. While the CG adhered to the regular teaching mode with a focus on linguistic forms, the EG underwent the POA, involving three phases: the motivating phase (where the teacher outlines tasks, prompting student attempts to identify language gaps for task completion), the enabling phase (where the teacher selects relevant material and designs sequential activities to provide scaffolds in language, content and structure) and the assessing phase (which includes both instant and delayed assessments throughout the learning process) (Sun & Asmawi, 2021).

An argumentative writing test and monologic speaking test, adapted from the College English Test (i.e., a nationally standardized test in China), were administered before, during and after the study for both groups. Prior to the tests, experts reviewed the test papers and instructions to ensure their validity. In contrast to traditional research that may rely on human ratings to assess students' English writing and speaking proficiency, this study, following the advice of Hu et al. (2023), employed linguistic analyses of CAF, with the specific, well-established indices listed in Table 2. Given the intricacies of L2 speaking (Meyer, 2023), a more extensive set of indices was used to enhance assessment reliability compared to writing. Professional interpreters, trained in identifying important codes (i.e., T-unit, AS-unit, clause, errors, pairs, and repairs), transcribed and coded the collected data. The coding agreement, exceeding 90%, was considered acceptable (Skehan, 2009). Statistical analyses were conducted using the Statistical Package for Social Sciences, encompassing both descriptive and inferential analyses. Non-parametric tests (i.e., Mann-Whitney U Test for between-group comparisons, and Kruskal-Wallis One-Way ANOVA and following Wilcoxon Signed Ranks Test for within-group comparisons) were chosen due to the relatively small sample size and the violation of prerequisites for parametric tests (Landau & Everitt, 2017).

Table 2. CAF Indices of English Writing and Speaking

Skill	Dimension	Index	Justification
Writing	Complexity	Proportion of Clauses (PC) = Number of clauses divided by Number of T-units	Larsen-Freeman (2006)
	Accuracy (lexical, morphological and syntactic errors considered	Proportion of Errorless T-units (PET) = Number of Errorless T-units divided by Number of T-units	
	Fluency	Average Number of Words per T-unit (ANWT) = Number of Words divided by Number of T-units	
Speaking	Grammatical Complexity	Mean Length of AS-unit (MLAS) = Number of Tokens divided by Number of AS-units	Foster et al. (2000); Norris and Ortega (2009)
		Mean Length of Clause (MLC) = Number of Tokens divided by Number of Clauses	
		Ratio of Sub-clauses (RS) = Number of Clauses divided Number of AS-units	
	Lexical Complexity	D-score calculated in the Computerized Language Analysis program	Siskova (2012)
	Accuracy (lexical, morphological and syntactic errors considered)	Percentage of Errorless Clauses (PEC) = Number of Errorless Clauses divided by Number of Clauses	Ellis and Barkhuizen (2005)
		Percentage of Errorless AS-unit (PEA) = Number of Errorless AS-units divided by Number of AS-units	
	Fluency	Number of Pauses (NP) = Number of Pauses divided by Speaking Time in Seconds	Skehan (2009)
		Number of Repairs (NR) = Number of Repairs divided by Speaking Time in Seconds	

4. Results

Firstly, between-group comparisons were conducted to assess the learning achievements of the EG and the CG at different stages of the study. Descriptive statistics in Table 3 and inferential statistics in Table 4 revealed that, due to efforts to create comparable groups, there were no significant differences in the writing and speaking CAF indices between the two groups before the study ($p > .05$). In the middle of the study, similar results were observed, with no statistically significant differences among most indices. However, the EG demonstrated

significantly higher ANWT in writing ($p = .023$), indicating increased writing fluency. Additionally, the EG exhibited significantly lower NP ($p = .001$) and NR ($p = .043$) in speaking, suggesting enhanced speaking fluency. This trend persisted in the post-test, where the EG displayed higher ANWT ($p = .002$) and lower NP ($p < .001$) and NR ($p < .001$) compared to the CG, indicating sustained improvements in English fluency. Nevertheless, the CG achieved a higher D-score than the EG at the end of the study ($p = .019$), indicating the former group's superior proficiency in lexical complexity.

Table 3. Descriptive Statistics of CAF Analyses

Group	Index	Mean			Standard Deviation		
		Pre-test	Mid-Test	Post-test	Pre-test	Mid-Test	Post-test
EG	PC	5.925	5.913	5.853	.884	.763	.659
	PET	.591	.589	.534	.110	.102	.104
	ANWT	14.985	16.656	20.371	2.589	2.888	3.773
	MLAS	10.542	10.503	10.493	1.739	1.631	1.843
	MLC	6.554	6.513	6.524	.849	.892	.865
	RS	1.584	1.566	1.576	.196	.230	.241
	D-score	64.301	64.008	64.001	10.486	11.410	11.085
	PEC	.628	.631	.639	.114	.106	.121
	PEA	.477	.476	.468	.157	.158	.148
	NP	.557	.424	.258	.120	.087	.104
	NR	.350	.219	.063	.166	.168	.055
CG	PC	6.088	6.123	6.684	.989	1.127	1.228
	PET	.513	.652	.644	.199	.165	.201
	ANWT	14.805	14.885	14.769	2.193	2.043	1.942
	MLAS	10.285	10.860	10.917	1.538	1.790	1.748
	MLC	6.344	6.404	6.354	.766	.853	.797
	RS	1.542	1.559	1.575	.208	.217	.227
	D-score	64.878	68.931	76.138	10.752	12.970	12.271
	PEC	.619	.667	.706	.105	.158	.171
	PEA	.410	.518	.639	.227	.155	.282
	NP	.550	.587	.538	.120	.094	.292
	NR	.390	.358	.338	.166	.179	.395

Table 4. Inferential Statistics of Between-EG-and-CG Comparisons

Index	Significance		
	Pre-test	Mid-Test	Post-test
PC	.631	.853	.165
PET	.393	.353	.315
ANWT	.796	.023	.002
MLAS	.912	.684	.579
MLC	.579	.684	.579
RS	.631	.796	.796
D-score	.912	.353	.019
PEC	.853	.684	.353
PEA	.631	.579	.165
NP	.089	.001	.000
NR	.165	.043	.000

Subsequently, within-group comparisons were conducted to assess potential progress made by the participants. As depicted in Table 5, most indices did not show statistically significant differences, except for the EG's ANWT ($p < .001$), NP ($p < .001$) and NR ($p < .001$), and the CG's PET ($p = .045$), MLAS ($p = .006$), RS ($p = .037$) and D-score ($p = .004$). Subsequent comparisons were then focused on these specific indices. As illustrated in Table 6, the EG exhibited significant differences in ANWT, NP and NR across all three tests ($p < .05$). Together with the provided descriptive statistics, this suggested that the EG demonstrated immediate and continuous improvement in ANWT and a reduction in NP and NR, indicative of enhanced English writing and speaking fluency. In the CG, similar patterns were observed in PET and MLAS, with higher scores in the mid-test and post-test than in the pre-test ($p < .05$), though the difference between the mid-test and the post-test was less apparent ($p > .05$). This implied that improvements in the earlier stages tended to be more pronounced. Regarding RS, a statistically significant difference was found only between the pre-test and the post-test ($p = .048$), indicating that the development of RS was a gradual process. As for D-score, statistical differences were identified between the pre-test and the post-test, and the mid-test and the post-test ($p = .018$). This suggested that the development of lexical complexity in speaking might occur at the later stage of the study.

Table 5. Inferential Statistics of Within-group Comparisons

Group	Index	Significance
EG	PC	.607
	PET	.076
	ANWT	.000
	MLAS	.838
	MLC	.981
	RS	.424
	D-score	.838
	PEC	.949
	PEA	.401
	NP	.000
	NR	.000
CG	PC	.080
	PET	.045
	ANWT	.513
	MLAS	.006
	MLC	.368
	RS	.037
	D-score	.004
	PEC	.163
	PEA	.353
	NP	.202
	NR	.150

Table 6. Inferential Statistics of Follow-up Comparisons

Group	Index		Z	Significance
EG	ANWT	pre-test – mid-test	-2.803	.005
		pre-test – post-test	-3.666	.008
		mid-test – post-test	-4.557	.008
	NP	pre-test – mid-test	2.803	.005
		pre-test – post-test	3.802	.005
		mid-test – post-test	2.790	.005
	NR	pre-test – mid-test	3.730	.004
		pre-test – post-test	2.625	.000
		mid-test – post-test	2.156	.001
CG	PET	pre-test – mid-test	-2.028	.043
		pre-test – post-test	-1.960	.048
		mid-test – post-test	.338	.735
	MLAS	pre-test – mid-test	-2.023	.043
		pre-test – post-test	-2.201	.028
		mid-test – post-test	-1.000	.317
	RS	pre-test – mid-test	-1.414	.157
		pre-test – post-test	-1.826	.048
		mid-test – post-test	-1.604	.109
	D-score	pre-test – mid-test	-1.521	.128
		pre-test – post-test	-2.366	.018
		mid-test – post-test	-2.366	.018

5. Discussion

The findings of the study provided intriguing insights into Chinese university students' English writing and speaking proficiency under varied instructional approaches. Generally, students instructed through the POA demonstrated enhanced English writing and speaking proficiency, aligning with previous research findings (Ding, 2023; Zhang, 2020b). Specifically, the observed increase in writing and speaking fluency, as reflected in ANWT, NP and NR, in the EG is consistent with the positive impact of the POA reported in prior studies (Li, 2018; Liu et al., 2020), though they used different indicators (e.g., human ratings of tests) to quantify the variables. Additionally, according to within-group comparisons, the immediate and continuous improvement in writing and speaking fluency in the EG, across all test stages, supports the notion that sustained the POA implementation positively influences language production over time (Lou & Zhao, 2021). This finding is particularly evident when compared with the CG's lower fluency levels throughout the study, highlighting that, in contrast to traditional approaches that emphasize linguistic forms, the POA proves effective in engaging learners in language production (Sun, 2020). Theoretically, this finding could be attributed to the idea that the POA, underpinned by SLA theories (e.g., The Output Hypothesis), emphasizes practical language use and communication, thereby promoting fluency through continuous and meaningful engagement (Sun & Asmawi, 2021).

However, the non-significant improvement in complexity and accuracy, both in English writing and speaking, in the POA tends to contrast previous findings in literature that suggests that this approach could facilitate comprehensive development of English

communication (Li & Li, 2020; Liu et al., 2020), but somehow reflects the concern in Ding's (2023) qualitative research that stakeholders (e.g., students) might not consider the POA as effective as anticipated. This concern is particularly evident when compared with the CG's higher D-score at the end of the study, and its immediate improvement of writing accuracy indicated by PET and speaking complexity on the dimensions of grammar and vocabulary indicated by MLAS, RS and D-score throughout the study, which is a well-established finding in relevant literature (Du, 2021). Otherwise stated, the POA employed in the study did not demonstrate the same level of effectiveness as the traditional approach, the application of which might have a more obvious effect on linguistic forms in ELE.

This reflects the criticism that the POA, rooted in SLA theories (e.g., Communicative Language Teaching and Task-based Language Teaching), might over-emphasize the meaning of language production while ignoring the teaching and learning of linguistic forms (e.g., grammar and vocabulary) (Jian, 2019). The critique suggests that while the POA promotes meaningful language use, it may not adequately address the formal aspects of language structure or lack explicit instruction in essential language components in the POA, hindering learners' overall linguistic competence. Hence, although proponents of the POA argue for a balanced approach between a focus on linguistic forms and a focus on linguistic meaning to maintain integration between input and output while addressing the formal aspects of language (Li & Li, 2020; Sun, 2022), whether the negotiation of forms and meaning is really achieved in class, a concern also raised by Ellis (2017), should be re-considered.

This paper simply serves as a concise overview of the findings from the present study, and it is imperative to address several aspects in future investigations. The current quantitative research design has its inherent limitations, preventing an in-depth exploration of the underlying reasons behind the observed research findings. To remedy this, future research should incorporate qualitative methodologies to supplement and elucidate the reported findings, offering deeper insights into why the POA employed in the study did not lead to improvements in language production complexity and accuracy. Furthermore, given the innovative use of linguistic CAF indices to quantify learners' language production in this study, there is a notable absence of similar research designs for comparison or contrast. It is recommended that subsequent research endeavors in the realm of language production employ a multifaceted approach, moving beyond sole reliance on, for example, human ratings of language tests. This approach would present a more comprehensive picture of learners' language development and contribute to a richer understanding of the effectiveness of instructional strategies.

6. Conclusion

In summary, this paper has presented preliminary findings on the efficacy of the POA in enhancing the English proficiency of Chinese university learners. The linguistic analyses underscored the substantial impact of the POA on the fluency of learners' writing and speaking. However, when juxtaposed with conventional instruction that centered on linguistic forms, the POA demonstrated limitations in fostering a comprehensive language development, particularly in terms of improving the complexity and accuracy of language production.

A noteworthy implication derived from these findings is that, for both classroom teachers and curriculum designers, there is a need to strike a balance between emphasizing linguistic forms and focusing on meaning. This balanced approach is crucial for promoting comprehensive language development. Relying solely on either aspect, as seen in traditional language teaching methods such as the Grammar-Translation Method or in exclusive SLA practices that may neglect linguistic knowledge development, is not optimal. Instead, educators should adopt an integrated approach that considers both linguistic forms and meaning to create a more effective language learning environment.

Authors contributions

Yanli Zhao, Nur Ainil Sulaiman and Wahiza Wahi were responsible for study design and revising. Yanli Zhao was responsible for data collection. Yanli Zhao drafted the manuscript and Nur Ainil Sulaiman and Wahiza Wahi revised it. All authors read and approved the final manuscript.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Sciedu Press.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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