

Enhancing International Communication Effectiveness: The Impact of ESAP on the Output of Academic Paper Abstracts

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Abstract: English for Specific Academic Purposes (ESAP) focuses on English language skills in specific disciplines or research fields, and has played an important role in international communication in recent years. This paper aims to explore the relationship between ESAP, the output of academic paper abstracts, and international communication effectiveness, so as to provide new ideas for enhancing international communication effectiveness. Through a questionnaire survey and combined with the structural equation model analysis method, the results show that the improvement of ESAP has a positive effect on the output of academic paper abstracts and international communication effectiveness; the output of academic paper abstracts can also positively enhance international communication effectiveness; meanwhile, the output of academic paper abstracts has a significant mediating effect.

Keywords: International communication effectiveness; Academic paper abstract; ESAP; Professional discourse competence; Postgraduate students

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1. Introduction

Enhancing the dissemination power and influence of Chinese civilization, and accelerating the development of a Chinese discourse and narrative system, are crucial tasks for strengthening China's international communication capacity building. The academic community in colleges and universities has widely argued that fostering college students' international communication competence holds positive significance, which aligns with the paradigm of education serving the high-quality development of the country^[1]. The development of international communication capacity is inseparable from high-level professional foreign language proficiency. On one hand, it helps improve the effectiveness of international communication, enabling the effective dissemination of Chinese spirit, Chinese values, Chinese path, and Chinese strength, thereby contributing to shaping China's national image. On the other hand, it facilitates the international expression of Chinese wisdom^[2].

The objective of postgraduate English teaching is to meet the needs of cultivating postgraduates' ability

to produce and disseminate academic papers^[3]. Among these abilities, academic writing and communication reflect postgraduates' research capabilities and academic standards. The ability to produce written outputs, as well as the ability to acquire materials, extract information, and conduct research innovation using foreign languages, plays a vital role in demonstrating professional competence, publishing in international journals, and enhancing academic discourse power. Currently, many colleges and universities offer ESAP (English for Specific Academic Purposes) courses for postgraduates, which highlight the interdisciplinary integration advantages of "major + foreign language +" and align with the goal of cultivating first-class interdisciplinary talents proposed in the "New Liberal Arts" initiative^[4]. Specific-purpose languages primarily provide targeted linguistic support for learners and professionals to engage in specialized academic research, management, and other work using English. They explore the genre structure and communication principles across various disciplines to achieve effective professional communication^[5-7]. However, at present, postgraduates' professional academic writing skills and international communication capabilities urgently need improvement, and insufficient attention is paid to teaching objectives such as literature reading and academic writing.

Research on the effectiveness of international communication covers multiple fields, including culture, sports, communication strategies, talent cultivation, and social media. Among these studies, research on the role of English for Specific Academic Purposes (ESAP) courses and academic abstracts in enhancing the effectiveness of international communication is relatively scarce. As a carrier of cultural communication, Chinese academic achievements are also an indispensable part of efficient international communication. Additionally, the research gap regarding the relationship between academic abstract production and ESAP, as well as their role in the effectiveness of international communication, deserves attention.

Previous study mentioned that students' English abstract writing skills are not proficient, with overuse of the simple present tense, excessively high frequency of active voice, and incomplete abstract structure^[8]. A study pointed out that students have a vague understanding of the stylistic characteristics of abstracts; they use simple methods to achieve textual cohesion and coherence, resulting in lengthy texts and non-concise language; and they lack dynamic mastery of the new characteristics of disciplinary language^[9]. Currently, the English abstracts of postgraduates' graduation theses in China mainly have problems such as spelling errors, non-standard use of tenses and voices, incomplete content structure, expression influenced by Chinese thinking patterns, and machine translation issues. It is difficult for students to flexibly apply genre knowledge in combination with communicative contexts^[10,11]. This survey found that: the scattered content of teaching courses, weak connection between knowledge points, insufficient authenticity of the teaching environment, and lack of scenario design affect learners' self-efficacy and academic attitude; even if postgraduates have passed the College English Test Band 4 and Band 6, their academic English writing skills are still not ideal, as they struggle even with short English abstracts. All these reflect the inadequate integration of postgraduates' professional knowledge and academic language, as well as the lack of genre-based teaching practices.

ESAP courses provide targeted training in discipline-specific vocabulary and language conventions, helping learners understand the structural elements and stylistic nuances required to produce clear and concise abstracts, thereby contributing to overall academic success. ESAP serves as a bridge between learners' general English proficiency and the professional language skills needed to write academic papers. Secondly, as a concise summary of an academic paper, an abstract is a window for readers to understand the content of the paper. In terms of the effectiveness of international communication, abstracts should fully consider the structuring of content, the accuracy of language, the reasonable use of professional vocabulary, and sensitivity to cultural differences. However, few studies have focused on the impact of ESAP on the production of academic paper

abstracts, despite the close connection between the production of academic paper abstracts and the effectiveness of international communication. Therefore, this study aims to bridge the gap between learners' language skills and the specific terminology required to convey professional academic content, emphasize "language reconstruction" and "conceptual transformation", and strive to provide new ideas for the effective dissemination of academic achievements and the enhancement of China's international communication effectiveness, as well as to provide feedback for teaching.

2. Research design

The research hypothesizes that the quality indicators of academic abstracts (accuracy, conciseness, completeness, structure, and reader acceptance) and the six dimensions of international communication effectiveness (language clarity, cultural sensitivity, communication channels, international citation rate, interdisciplinary influence, and open access) have a significant impact on the overall effectiveness of academic abstracts and their international communication effectiveness.

A total of 251 postgraduate students majoring in non-English disciplines from universities were recruited for the survey, covering majors such as International Economics and Trade, International Business, Finance, Economics, Law, Business Administration, International Chinese Language Education, Journalism and Communication, and Accounting. The questionnaire was designed to include four parts, including personal information, measurement of academic English proficiency, evaluation of academic abstract quality, and evaluation of international communication effectiveness.

The sample data showed high diversity. Among the samples, males accounted for 54.6% (137 participants) and females accounted for 45.4% (114 participants); in terms of grade distribution, first-year postgraduates accounted for 28.3% (71 participants), second-year postgraduates accounted for 32.7% (82 participants), and third-year postgraduates accounted for 39.0% (98 participants). Regarding English proficiency, 31.5% of the students held a College English Test Band 4 (CET-4) certificate, 35.5% held a College English Test Band 6 (CET-6) certificate, and held higher-level English proficiency certificates for about 33.1%.

The construction of the research model is based on the evaluation of academic abstract quality and international communication effectiveness. The evaluation of academic abstract quality includes accuracy, conciseness, completeness, structure, and reader acceptance^[12]. The evaluation of international communication effectiveness covers language clarity, cultural sensitivity, communication channels, international citation rate, interdisciplinary influence, and open access^[13]. Using these data, a research hypothesis model was constructed to explain the impact of these dimensions on academic abstracts and their effectiveness in international communication.

3. Research analysis

3.1. Reliability and validity analysis

Table 1 shows that the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy reached 0.954, which is higher than the commonly accepted standard of 0.954 (> 0.7). This indicates that the partial correlations among variables are low, so the data is suitable for factor analysis. In addition, the results of the Bartlett's Test of Sphericity show that the approximate chi-square value is 3475.804, with 171 degrees of freedom, and the significance level reaches the conventional significance level of 0.000 (< 0.05). This means that there is a common factor structure among the data, and the null hypothesis that all variables are mutually independent

is rejected. The combination of these two indicators shows that the scale used in this study has high statistical applicability and is suitable for subsequent construct validity verification and other multivariate statistical analyses.

Table 1. Structural validity analysis: KMO and Bartlett's test

KMO Measure of Sampling Adequacy		.954
Bartlett's Test of Sphericity	Approx. Chi-Square	3475.804
	Degrees of Freedom (df)	171
	Significance	.000

Table 2 presents the results of the reliability analysis, showing that all Cronbach's Alpha coefficients are higher than 0.9, the Cronbach's Alpha coefficient for ESAP (English for Specific Academic Purposes) is 0.941, for academic paper abstract output is 0.908, and for international communication effectiveness is 0.919. These results are far higher than the conventional acceptable standard of 0.8, indicating that the scales for each variable have high internal consistency, which ensures the reliability of the measurement tool. A high Cronbach's Alpha value indicates that the scores of each item have high statistical consistency, thus verifying the reliability of the questionnaire in measuring attitudes and opinions. Therefore, it can be considered that the scale used in this study is statistically robust, providing a reliable measurement basis for further factor analysis and structural equation modeling.

Table 2. Reliability analysis

Research Variables	Number of Items	Cronbach's Alpha
ESAP	8	0.941
Academic Paper Abstract Output	5	0.908
International Communication Effectiveness	6	0.919

3.2. Confirmatory factor analysis

Table 3 presents in detail the results of the convergent validity test. The convergent validity test is a method used to assess whether two or more theoretically related measurement tools actually measure the same construct. The latent variables included in the study are ESAP (English for Specific Academic Purposes), academic paper abstract output, and international communication effectiveness. Under the ESAP variable, the factor loadings of observed indicators such as compositional knowledge application ability and listening comprehension ability range from 0.775–0.840, indicating a high level of measurement consistency. In addition, the composite reliability (CR) of ESAP is 0.941, and the average variance extracted (AVE) is 0.665, both exceeding the criteria for determining good convergent validity ($CR > 0.7$, $AVE > 0.5$). For the latent variable of academic paper abstract output, its observed indicators (e.g., accuracy and conciseness) also show robust factor loadings. With a CR value of 0.908 and an AVE value of 0.664, it similarly demonstrates strong convergent validity. The relevant observed indicators of international communication effectiveness include language clarity and cultural sensitivity. Their factor loadings range from 0.786–0.820, with a CR of 0.918 and an AVE of 0.651, this further confirms the convergent validity of the model. Overall, these results verify that the measurement indicators of the scale have good statistical consistency and reliability, laying a solid foundation for further analysis.

Table 3. Convergent validity test

Latent Variables	Observed Indicators	Factor Loading	CR	AVE
ESAP	Organizational competence	0.818	0.941	0.665
	Listening comprehension	0.840		
	Reading comprehension	0.812		
	Oral expression	0.814		
	Written expression	0.821		
	Pragmatic ability	0.827		
	Interpreting ability	0.815		
	Translation ability	0.775		
Academic Paper Abstract Output	Accuracy	0.765	0.908	0.664
	Conciseness	0.826		
	Completeness	0.846		
	Structure	0.807		
	Reader acceptance	0.827		
International Communication Effectiveness	Language clarity	0.809	0.918	0.651
	Cultural sensitivity	0.818		
	Communication channels	0.800		
	International citation rate	0.806		
	Interdisciplinary influence	0.786		
	Open access	0.820		

Table 4 presents the results of the discriminant validity test. The test assesses whether each latent variable in the model can be effectively distinguished by comparing the relationship between the correlation coefficients among different latent variables and the square root of the Average Variance Extracted (AVE) of each corresponding dimension.

Table 4. Discriminant validity test table

Latent Variables	ESAP	Academic Paper Abstract Output	International Communication Effectiveness
ESAP	0.815		
Academic Paper Abstract Output	0.579	0.815	
International Communication Effectiveness	0.623	0.592	0.807

Note: The values on the diagonal represent the square root of the Average Variance Extracted (AVE) for the corresponding dimension

The square roots of AVE for the latent variables ESAP, Academic Paper Abstract Output, and International Communication Effectiveness are 0.815, 0.815, and 0.807 respectively. These values on the diagonal represent the communality of the internal constituent elements of each latent variable. By comparing these values with the inter-latent-variable correlation coefficients on the off-diagonal in the table (for example, 0.579 between

ESAP and Academic Paper Abstract Output, and 0.623 between ESAP and International Communication Effectiveness), it can be observed that all correlation coefficient values are significantly smaller than the square roots of AVE of the corresponding latent variables. This result indicates that there is good discriminability among the latent variables, thereby verifying that the discriminant validity of the scale is reliable.

Table 5 presents the results of the measurement model fit indices, which provide a comprehensive assessment of the degree of fit between the model and the observed data.

Table 5. Measurement model: table of measurement model fit indices

Fit Indices	χ^2/df	RMSEA	GFI	AGFI	NFI	TLI	CFI
Reference Criteria	< 3	< 0.08	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9
Results	1.021	0.009	0.941	0.925	0.957	0.999	0.999

Specifically, the value of χ^2/df is 1.021, which is lower than the reference standard of 3, indicating that the model has a good fit. The RMSEA (Root Mean Square Error of Approximation) is 0.009, below the threshold of 0.08, demonstrating that the model error is extremely small and the goodness of fit is very high. Regarding other fit indices, the GFI (Goodness of Fit Index) is 0.941 and the AGFI (Adjusted Goodness of Fit Index) is 0.925, both exceeding the 0.9 benchmark, which reflects that the overall goodness of fit of the model is favorable. The values of NFI (Normed Fit Index), TLI (Tucker-Lewis Index), and CFI (Comparative Fit Index) are 0.957, 0.999, and 0.999 respectively. All these indices are significantly higher than the reference value of 0.9, indicating that the model performs excellently in the sample data.

The model fitting indices presented in **Table 6** provide us with a method to measure the degree of match between the statistical model and the observed data, and these indices indicate that the proposed model exhibits an excellent fitting effect. Specifically, $\chi^2/df = 1.021$ (< 3), which suggests that the error between the model and the data is small, and the model has a good fitting degree. $RMSEA = 0.009$ (< 0.08), implying that the model residuals are extremely small and the fitting quality is very high. GFI and AGFI are 0.941 and 0.925 respectively, both exceeding the good fitting standard of 0.9, which indicates that the model as a whole has a good consistency with the data. The values of NFI, TLI, and CFI are 0.957, 0.999, and 0.999 respectively, all significantly higher than the 0.9 standard. These indices show that the predictive accuracy and explanatory power of the model remain at an extremely high level even after adjusting for model complexity.

Table 6. Structural equation model: model fit indices table

Fit Indices	χ^2/df	RMSEA	GFI	AGFI	NFI	TLI	CFI
Reference Criteria	< 3	< 0.08	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9
Results	1.021	0.009	0.941	0.925	0.957	0.999	0.999

Table 7 presents the test results of the direct effect paths in the structural equation model. Hypothesis H1 examines the impact of ESAP (English for Academic Purposes) on the output of academic paper abstracts. The path coefficient (β) is 0.579, with an estimated value of 0.543, a standard error (S.E.) of 0.066, and a critical ratio (C.R.) of 8.281. The p -value is marked with three stars (***), indicating $p < 0.001$, which proves this path is statistically extremely significant. Hypothesis H2 investigates the effect of ESAP on international

communication effectiveness. Here, $\beta = 0.422$, the estimated value is 0.406, the standard error is 0.069, and the C.R. value is 5.903; the p -value is also extremely significant. Finally, Hypothesis H3 explores the influence of academic paper abstract output on international communication effectiveness. For this path, $\beta = 0.348$, the estimated value is 0.356, the standard error is 0.073, the C.R. value is 4.850, and the p -value is likewise extremely significant. These results all support the research hypotheses, demonstrating that ESAP not only directly promotes the improvement of academic paper abstract output but also indirectly enhances international communication effectiveness by improving the quality of paper abstracts.

Table 7. Path test results of the structural equation model

Hypothesis	Path	Estimate	β	S.E.	C.R.	p	Result
H1	ESAP → Academic Paper Abstract Output	0.543	0.579	0.066	8.281	***	Support
H2	ESAP → International Communication Effectiveness	0.406	0.422	0.069	5.903	***	Support
H3	Academic Paper Abstract Output → International Communication Effectiveness	0.356	0.348	0.073	4.850	***	Support

The results of the bootstrap test for mediating effects shown in **Table 8** pertain to Hypothesis 4 (H4), which examines whether the output of academic paper abstracts plays a mediating role between ESAP and international communication effectiveness. The results indicate that the effect value of the mediating path “ESAP → Output of Academic Paper Abstracts → International Communication Effectiveness” is 0.194, with a standard error of 0.051. The Bias-Corrected 95% confidence interval ranges from 0.103–0.314. Since this confidence interval does not include 0, it demonstrates that the output of academic paper abstracts exerts a significant mediating effect between ESAP and international communication effectiveness. This finding emphasizes the bridging role of academic paper abstract output in enhancing the impact of ESAP on international communication effectiveness, and reveals the mechanism through which ESAP indirectly improves international communication effectiveness by enhancing the quality of academic paper output.

Table 8. Bootstrap test table for mediating effects

Hypothesis	Mediating Path	Effect Value	Standard Error	Bias-Corrected 95% CI	
H4	ESAP → Academic Paper Abstract Output → International Communication Effectiveness	0.194	0.051	0.103	0.314

Combining the analysis results from **Table 7** and **Table 8**, **Figure 1** constructs a structural equation model diagram, which shows that ESAP (English for Academic Purposes) exerts a positive effect on the output of academic paper abstracts, and the output of academic paper abstracts also has a positive impact on the effectiveness of international communication. At the same time, the output of academic paper abstracts plays a mediating role in the relationship between ESAP and the effectiveness of international communication.

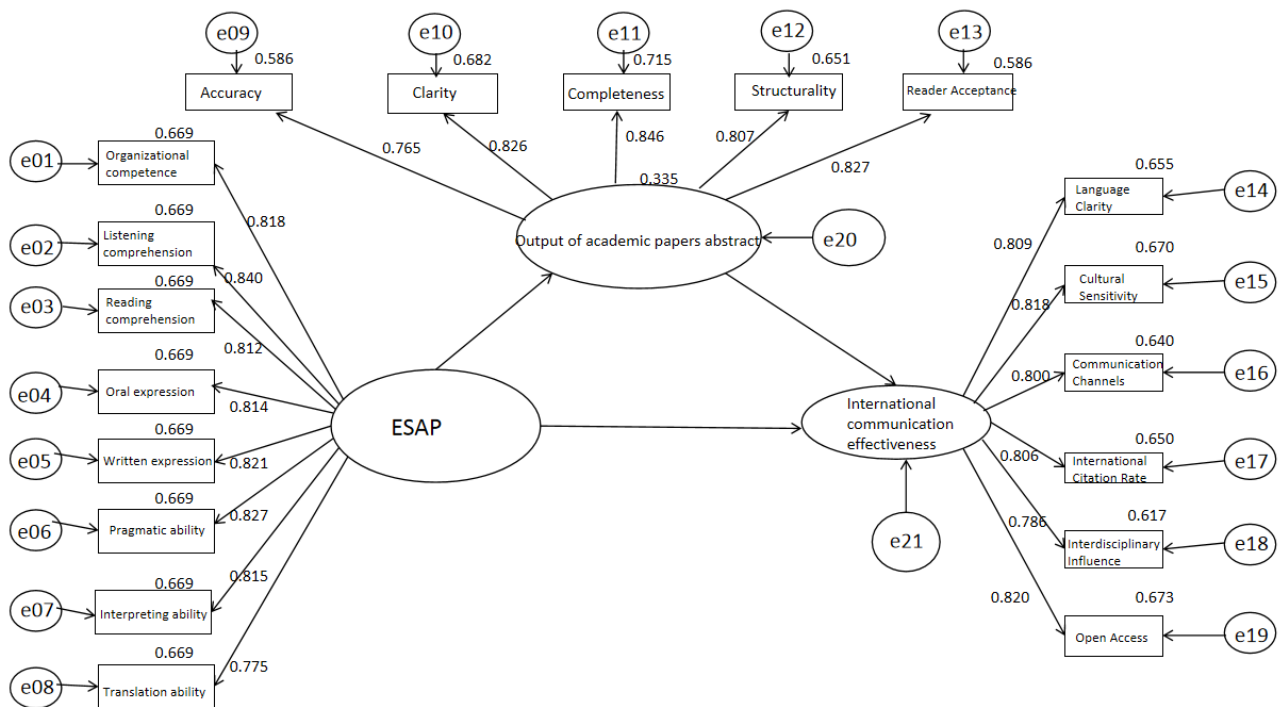


Figure 1. Structural equation model diagram.

4. Conclusions and implications

This study reveals that English for Academic Purposes (ESAP) training plays a positive role in enhancing the quality of academic paper abstracts and the effectiveness of international dissemination. Furthermore, the effective output of academic paper abstracts exerts a significant mediating effect on improving international dissemination effectiveness. The implications of the study are as follows.

Previous studies have mostly focused on the teaching effects of ESAP or discussed the optimization of academic paper abstracts in isolation. They lacked a quantitative analysis of how these two factors interact to enhance international dissemination effectiveness and overlooked the specific connections and interactions between academic English proficiency and the quality of academic paper abstracts^[14]. This study addresses this gap and emphasizes the critical role of improving ESAP teaching quality in boosting the international dissemination of academic papers. Traditional communication theories rarely focus on the specific impact of language skills in specific academic fields on international communication. This study not only verifies the key role of language proficiency in ensuring effective communication within professional fields but also advances the application of communication theories in academic contexts.

In addition, the research results highlight the mediating role of academic paper abstracts and reveal the importance of improving abstract quality in optimizing academic communication. Based on the research findings, it is suggested that higher education institutions should attach importance to and strengthen the curriculum design of ESAP, particularly in teaching students how to write academic paper abstracts with international influence. This study not only expands the understanding of ESAP's role in the academic field but also promotes in-depth discussions on how to effectively disseminate academic knowledge through academic abstracts.

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