Source Use in Integrated Writing among Chinese College ESP Learners with Different Language Proficiency

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Abstract

Recent decades have witnessed the increasing importance and necessity of English for Specific Purposes (ESP) teaching. Integrated writing task evaluating test-takers' discourse synthesis ability is an effective tool for ESP teaching with improved authenticity, but its mechanism is still far from clear. This study investigated the processes related to source material use in a TEM8 reading–writing task with a medical topic among ESP students. Source material use variations among students with different language proficiency were also examined in terms of organization, obtaining opinion and language support, and context comprehension. Results demonstrated that compared with low proficient student, high proficient ones exhibited higher awareness of effectively using source material and stronger tendency for organizational support, idea selection and gaining idea, but the difference in context comprehension and language support did not vary between two groups. These evidence underlie further design and development of integrated task in ESP writing course.

Keywords:Integrated writing task, ESP, Source use, Proficiency level.

I. Introduction

English for Specific Purposes (ESP), with a focus on particular, purposeful uses of language, attends to students' specific purposes for learning English. It has been widely adopted in many countries to better address the communicative needs of learners (Hyland, 2022). In China, the Ministry of Education has advocated comprehensive interdisciplinary learning to optimize the education of disciplines and improve development of specialties, issuing the *New Liberal Arts Construction Declaration* on November 3, 2020 (Education, 2020) when the focus has been shifted from English for general purpose (EGP) to ESP (Luo & Garner, 2017). However, ESP teaching has been a hefty task for Chinese learners and its complexity calling for interaction between language knowledge and background knowledge always imposes great challenge on language teaching.

Integrated writing task, requiring more than one skill for completion, allows for different and more substantive interpretations of test-takers performances, and facilitates literacy learning, providing an invaluable alternative to ESP teachers (Fulcher & Harding, 2021) (Hirvela, 2004). The advent of integrated task overcomes some gaps left by independent skills assessment. Compared with traditional independent tasks, integrated writing task elicits more dynamic behaviours and more interactive process promoting students' discourse synthesis performance with source material input (Lia Plakans, 2008; L. Plakans, 2010;

Lia Plakans, Liao, & Wang, 2018). Recent two decades have witnessed the widespread application of integrated second-language writing tasks in various large-scale tests to assess writing abilities, such as the Test of English as a Foreign Language Internet Based Test (TOEFL iBT) and the International English Language Testing System (IELTS). In China, integrated writing has also been adopted in Test for English Majors-band 8 (TEM8), a nationwide English proficiency test, since 2016 (Fan, Frost, & Liu, 2020). Despite of the extensive use of integrated writing worldwide, researches are still required to better comprehend how integration impacts English as a foreign language (EFL). Of note, the relation between writing proficiency and students' use of source remains controversial. Weigle (Weigle & Parker, 2012) demonstrated that source use in integrated writing did not relate to score level, while Ruiz-Funes (Ruiz-Funes, 2015) and Plakans (Lia Plakans, Gebril, & Bilki, 2019) noted a significant relationship between language proficiency level and the effect of integrated task on writers' complexity, linguistic accuracy, and fluency (CAF). A narrower lens, therefore, shall focus on the role of source use in integrated writing in ESP context.

This study aimed to investigate the feasibility of using the integrated writing task among ESP students and explore the relationship between students' language proficiency and their source use in an integrated writing task.

II. Literature Review

2.1 Input and Output Process

Language input and output have been the main focus of teaching and learning researches, as well as the core of applied linguistics. Two of the most important hypotheses appeared decades ago and have attracted considerable attention: Input Hypothesis (Krashen, 1985) and Out hypothesis (Swain, 2005). In Input Hypothesis, Krashen speculated that comprehensible input is essential to language acquisition and the imparted knowledge should be a bit above students' current level of competence, namely, "*i + 1*", as extra-linguistic context contributes to comprehension and output is a by-product of learning (Krashen, 1985). However, input alone is not sufficient for L2 acquisition. Swain (Swain, 2005) argued that language production, either spoken or written, is also a prerequisite for success of L2 acquisition. Both hypotheses undoubtedly contribute to the development of applied linguistics and pedagogy. Over decades, investigators have been proving these influential hypotheses using particular frameworks. Lichtman and VanPatten (Lichtman & VanPatten, 2021) agree that communicatively comprehensive input is a cornerstone of language construction and exposure to input is necessary for L2 development as comprehension facilitates language production. However, Loewen (Loewen, 2021) doubted Krashen's idea and addressed the importance of interaction, corrective feedback and output from an instructed second language acquisition (ISLA) perspective. The process of human learning is so complicated that people still fail to depict a clear map of functioning mechanism and reach consensus. Overall, the fundamental role of input and output is beyond question.

Effective combination of input and output seems a promising alterative to L2 teaching. In the integrated task, students are instructed to read or listen source materials and need to summarize the reading material. Reading is the main input approach, while writing task is regarded as production providing students with opportunities for self-initiated noticing. Integrated writing task, interestingly, combines input and output process and thereby facilitates the development of SLA. Compared with independent writing task, the presence of source material input better enhances students' performance.

2.2 ESP writing

ESP writing shall focus on competences in particular target genres such as medical report and legal documents, as those kinds of writing valued in academic or professional contexts should be taught to the students (Paltridge & Starfield, 2014). Texts produced in legal, medical, or other fields vary considerably, so ESP texts and writing tasks are therefore designed and genres are determined according to learners' needs. The teaching of writing in medical course is further complicated by the complex health system and the sensitivity of moral sensitivity among physicians. Genre-based approach appears to be an important alternative to ESP writing in which students are given genre-based material with increased motivation and greater language performance (Aleksandrzak, 2018; Cheng, 2006; Henry & Roseberry, 1998). In ESP genre-based classroom practice, lexico-grammatical features of ESP detachable from "macro-level issues" are indispensable and linguistic features are crucial (Cheng, 2021). On the other hand, Rogers (Rogers & Johnson, 2010) highlighted the significance of metacognitive strategy training into ESP writing instruction when distinguishing between cognitive and metacognitive strategies. Additionally, technology has been integrated into ESP course as its diverse styles and functions can enhance develop interaction and, communication (Sholikhi, 2020), and a recent study demonstrated majority of ESP students preferred to online writing rather than traditional writing (Su, Tsai, & Tai, 2022). Despite these advancements, development of effective written strategy in ESP context is still in its fancy and need to be explored.

The Ministry of Education in the mainland China has advocated new liberal arts research and reform, stressing the significance ESP teaching, where college English course shall address the future needs of students and society and characterize the content of ESP based on students' major. In the field of ESP, there are few studies focusing on English writing for medical purpose (EMP) (Su et al., 2022), though workplace English of health sector is salient and deserves more attention from language testers. We shall explore effective teaching strategy in ESP context to meet the demands of new era. Importantly, integrated writing seems a promising strategy to ESP learners since it provides source material with which students could learn both information of specific subject and English. Liu (Liu & Stapleton, 2018) confirmed the positive washback of integrated writing task Chinese undergraduates which enhances students' writing performance in some respects including use of metadiscourse and essay organization . But little is known the cognitive process of ESP integrated task and impact of such approach on ESP learners.

2.2 Source Use in Integrated Writing Tasks

Previous studies on integrated writing mainly focus on the effect of integration on learners' performance, writers' strategy use, and the processes of integrated writing (Grabe & Zhang, 2016; Knoch & Sitajalabhorn, 2013; Phillips Galloway, Qin, Uccelli, & Barr, 2020; Phillips Galloway & Uccelli, 2019). While it is well known that most EFL learners hardly achieve native competence (Han, 2013), effective teaching approaches and strategies are crucial to language learning and acquisition. Integrated task, namely, combination of writing and other skills, appears a valuable option for L2 learning. Resembling actual tasks in EAP or ESP context, integrated writing involves the interaction between source materials and writing (Cumming, Grant, Mulcahy-Ernt, & Powers, 2004). Such kind of new test more effectively improves students' writing quality and discourse synthesis, whilst it is considered as an effective approach to measure student writing quality (Darong, 2021; Grabe & Zhang, 2013; Lia Plakans & Gebril, 2013).

Source material input is one of the main concerns in integrated writing and also the focus of this study. As importance of integrating multiple sources of information arises among graduates and undergraduates, the ability to use source material and combine reading and writing becomes more crucial to academic writing (Cumming, Lai, & Cho, 2016). However, writing from various material is a challenging

skill to L2 learner and their limited composing skills pose difficulties and usually induces direct copying and plagiarism (Grabe & Zhang, 2013). The summarizing capacity has not obtained sufficient attention until recent decades but unfortunately, there are still few opportunities to practice synthesis. It is the advent of integrated writing that provides the opportunities to practice reading/writing connections and meet the demands of L2 students (Grabe & Zhang, 2013), which is one of the main reason for worldwide popularity of integrated tasks. Plakans (Lia Plakans, 2008) compared the difference between independent writing and reading-to-writing tasks and demonstrated that integrated task involves a more constructive and interactive process, obtaining improvements in CAF which is highlighted to reflect language development and quality as well as demonstrate the impact of teaching strategy on learner's performance (Biber & Gray, 2013). The mechanism underlying source material input in integrated writing tasks is still far from clear with limited evidence.

It is essential to elucidate how language learners taps into an integrated conceptualization of language use in the integrated task. Source texts might facilitate writer's academic writing when providing significant language support but simultaneously increase complexity. Confronted with integration of reading, listening and writing, L2 learners need to organize, select and organize information, associating source materials with their idea. Yang and Plakans (Yang & Plakans, 2012) pointed out that students' integrated writing performance closely relates to utilization of self-regulatory strategy, discourse synthesis strategy, and "test-wiseness" strategy. Test-wiseness strategy refers to the ability of using test formats to answer test items (Cohen, 2006) including the behaviours of patchwriting in integrated writing. Importantly, discourse synthesis skill is seen as a major factor of integrated writing performance and a predictor of score explaining 55% of the variance (Lia Plakans & Gebril, 2013). And discourse synthesis strategy use exerts significant positive effect on Chinese integrated writing task (CIW) and an English integrated writing task (EIW) when affecting the process of multiple-text comprehension (Cheong, Zhu, Li, & Wen, 2019). Instruction on discourse synthesis writing is a key to integrated writing, as the advent of that instruction improves overall quality of synthesis essays and strengthens the effect of integration on L2 language proficiency (Zhang, 2013). Writing instruction is an essential part of skillful and professional writing. Students should be taught all the necessary components explicitly and systematically and sometimes the instruction combined with practice may effectively improve students' understanding.

Using think-aloud transcription and interviews, Plakans (Lia Plakans, 2008) demonstrated that learners with higher L2 proficiency often analyze the material more comprehensively using various strategies, whilst they will pay much attention to idea generation and summary, planning more globally. And the difference across writers can be attributed to their experience and interest in writing. Cho (Cho, Rijmen, & Novák, 2013) analyzed the prompt characteristics in the integrated writing of TOEFL iBT and found that the difficulty of reading material and distinctness of ideas in the material source might affect test takes' performance and score. In an empirical study in China by He (He & Sun, 2021), language proficiency is the main factor of test-takers' performance in integrated writing task where prompt imposes a significant impact on their writing scores, as the difficulty of prompt negatively influences students' performance. As Cumming (Cumming et al., 2016) noted, the ability of material use is influenced by learners' knowledge and experience; older students are more likely to better contextualize and corroborate evidence. The reading and listening material might provide information and context which is crucial to writing. Not all writers' ideas stem from the material they read. While the writers with lower language proficiency might have a lower ability to comprehend and integrate the source material, it doesn't hinder their reading and the difficulty of interpreting source material doesn't significantly relate to writer's score of integrated writing task and their overall performance (Lia Plakans & Gebril, 2012). And different genre, topic and structural organization in integrated tasks affects writers' comprehension of source information, source borrowing strategies, and tendency to use their own original ideas (Homayounzadeh, Saadat, & Ahmadi, 2019). In a

recent study requiring participants to complete two TOEFL iBT integrated speaking tasks with different topics, Allergies and Sunk Costs, all test takers, regardless of proficiency, produced a higher proportion of accurate idea but substantially adjusted the organization of information in Sunk Costs, while for Allergies, they closely followed the generic structure of the stimulus materials (Frost, Clothier, Huisman, & Wigglesworth, 2020). Different source texts may place different demands on test takers. From the above review, we can know that many factors are possibly responsible for integrated writing performance but linguists have not reached a consensus on the specific role of these factors including experience, language proficiency and style of task and further data-based investigation is required.

Accordingly, to contribute to this line of research, the present study analyzed the performance of freshmen and junior ESP students from Southern Medical University on integrated writing task. The research questions are as follows:

1. How ESP students of different proficiency levels use source material in integrated writing task?
2. Does language proficiency level influence test takers' writing?

III. Methodology

3.1 Participants

This study enrolled 58 freshmen (47 females, 11 males) and 46 junior students (10 males, 36 females) majoring in Medical English from Southern Medical University, Guangzhou, China. They were required to complete the questionnaire after finishing the integrated task in an online class and were told that the score of this task will be a part of students' performance of this course. Partly based on the length of time the students had learned English, junior students herein were regarded as high-proficiency participants and freshmen as low-proficiency ones. All included junior students had passed the Test for English Majors Band 4 (TEM-4) and the freshmen had not practiced integrated writing ever before this task.

3.2 Tasks and Instruments

In the present study, a reading-writing task, a real TEM8 writing test, and a questionnaire was adopted. TEM8 is a national test to measure the overall English proficiency of senior undergraduates majoring in English in China, as its reliability and construct validity has been proved (Jin & Fan, 2011). TEM8 integrated writing accounts for 25% of the total score and reflects students' language proficiency and their ability to think critically. Test takers are asked to write an article no less than 300 words including a summary of two source materials and their own idea on the issue mentioned in the prompt.

In the study with amyotrophic lateral sclerosis (ALS) as the topic, both senior students and freshmen were required to write an argumentative essay of no less than 300 words within 45 minutes, including summary of two tasks about ALS. Using the questionnaire of a previous study (Zhou & Bin, 2022) which was adapted from Plakans and Gebril (Lia Plakans & Gebril, 2012) (Table 1), this study assessed the condition of source use of these test takes from the perspective of comprehension, organization, gaining, shaping, and supporting opinion. The questionnaire contained eleven 5-point Likert scale items and semi-open questions which were designed to collect test takes' feelings and the difficulties they encountered. Before administration of writing task, this study had obtained informed consent from each participant and support from two teachers (Cai and Wang).

Marks will be awarded for content relevance, content sufficiency, organization and language quality. Failure to follow the above instructions may result in a loss of marks.

3.3 Statistical Analysis

All data were processed through SPSS 21.0. With the reliability of the questionnaire confirmed (Cronbach's α values = 0.83), its validity was detected by Kaiser-Meyer-Olkin (KMO) (0.736) and Bartlett's test ($p <$ .05) (Table 2). Since the data did not follow a normal distribution, independent group Chi-square test was conducted to assess the difference in material source use between low-proficiency group and high-proficiency group in the integrated writing task. Independent sample t-test was carried out to evaluate the difference in overall score of all items between groups.

IV. Results

4.1 Using Source Material for Comprehension

The first three items were designed to reflect overall language proficiency (Table 2). The data of item 1 and 2 (I could understand most of the words in the reading passage; I could understand most of the ideas in the reading passage) demonstrated higher percentage of knowing the words and understanding the contents in the high-proficiency group relative to low-proficiency group with significance difference ($p <$ .05). These data suggest a reading ability gap between two groups and indicate a discrepancy between freshmen and junior students. While more freshmen students had difficulty in comprehending the content with lower language proficiency, no interactive effects were detected in Item 3 (I often reread the reading passage while I was writing.) between both groups ($p =$ .46 $>$ .05) and one participant of low-proficiency group did not reread the passage. But the older students presented a greater rate of two highest response categories (often and always) (60.9% *vs* 44.8%).

4.2 Using Source Material to Gather Ideas and Shape Opinions

In Table 2, we can observe large difference between both groups in terms of the results of item 4 (I used the reading passage to help me get ideas on the topic), item 5 (I used the reading passage to form my idea) item 6 (The reading passage helped me choose an opinion on the issue). In the form two questions, the high-proficiency group had greatly more participants who tended to get ideas from the source context and form their own idea effectively utilizing the material ($p =$ .006, .003 $<$ .05, respectively). In the integrated task, the writers were required to show their position or select one side after reading the two passages, during which their ideas might be influenced in a certain way. Herein, item 6 was designed to reflect the tendency of students to use the texts to shape opinion. A dramatic variation between high-proficiency and low-proficiency group was detected ($p =$ .015 $<$ .05). The junior students more tended to select opinion from the reading material with 78.2% of participants choosing "often" and "always".

4.3 Using Source Material for Supporting Opinions and Language Support

In item 7 (I used some of the ideas from the reading passage in my essay), though difference between high and low group approached significance ($p =$ .063), compared with low-proficiency group, high-proficiency group exhibited a greater rate of two highest response categories (often and always) (60.2% *vs*. 40.3%) with more tendency of citing ideas from the passages. Similarly, the difference in item 8 (I used examples and ideas from the reading passage to support my argument in my essay) did not reach significance ($p =$ .349)

and context from the material. And the mean value of low-proficiency group was slightly lower than that of high proficiency group (3.31 vs 3.59) (Table 4).

When it comes to the potential of language support across different learners, the results from item 9 (I used some words from the reading passage when I wrote) suggested that the writers with different language proficiency had a high level agreement of word support, with 50.0% and 56.6% of two highest response categories (often and always) in low and high proficiency group, respectively. And in item 10 (The reading passage helped me write better), the students also admitted the significance of source test in terms of language support. However, these differences in opinion and language support between both groups were not significant ($p > .05$).

4.4 Using Source Material for Modeling Organization and Context Comprehension

Interactive effect was detected on the impact of source material on model organization according to the results of Item 11 (I used the reading passage to help me organize my essay) ($p = .018 < .05$) including a large difference on the two highest response categories (High group vs low group = 67.4% vs 37.9). The data demonstrated that writers with higher language proficiency more likely to utilize the material to construct their articles. Of note, source input in integrated task could enrich English major students' medical knowledge as supported by the data from Item 12 (This writing assignment will improve my understanding of ALS). High proficient group reported a higher percentage of two highest response categories (often and always) (36.9% *vs* 17.2%) but the differences between two proficiency groups on context comprehension were not significant enough ($p = .082 > .05$). Besides, independent sample t-test was carried out to assess the difference on overall source test use in terms of overall score and indicated the interactive effect between two groups ($p = .000$) (Table 5) (45.65 *vs* 40.55).

V. Discussions

In the present study, the results suggested that the material source provided language support to most participants, when deepening their understanding of the ALS. With greater reading and synthesis ability and increased awareness of material source use, the older students are indicated to have significantly more meaningful and effective source test use in terms of the mean of overall score, which is not with the early findings of Plakans and Gebril (Lia Plakans & Gebril, 2013). Apart from the interactive difference in reported comprehension across two proficiency levels, this study also noted other significant gap in various purposes for source use, including acquisition and selection of ideas, and organization.

In integrated writing, the organization of content has long been accepted as foundations of test-takes' performance, whilst organization is essential to discourse synthesis and comprehension in reading and writing. Writers' ability to select appropriate organizational patterns is associated with their language proficiency level as well as their final score in integrated task (Lia Plakans & Gebril, 2017). Consistently, this study demonstrated greater proportion of high-proficiency writers tending to make good use of source material, while the proportion of low-proficiency participants frequently using content for organization was also high enough, just still significantly lower than the high proficiency ones. Of note, Chinese students usually memorize fixed structural patterns to organize their essays and tend to use the same structure in the integrated writing task, which probably minimizes the difference across levels.

Interestingly, both freshmen and junior students showed high reliance on repeatedly reading for comprehensive understanding of the source material (89.7%, 95.7%) in terms of three highest categories

(sometimes, often, always) in item 3. On the one hand, though taking time, frequent reading is definitely a vital skill to academic writing and awareness of using source material is significant. In this case, sufficient reading promotes the birth of a new and correct idea and organization of following writing. On the other hand, the difficulty, type and length of material are important factors for their selection of reading strategy (Yang & Plakans, 2012). A more recent meta-analysis by Chan and Yamashita (Chan & Yamashita, 2022) noted that text length had a strongest correlation with integrated writing performance, followed by source integration, organization, syntactic complexity, and lexical complexity.

Medicine, a unique and sensitive topic, includes complicated etiology of countless diseases and complex human body, involving ethic issues and ranging from pharmacogenetics to psychoneurobiology. During the intensive talks and highly-charged interactions in healthcare, translators, interpreters, or medical staff must understand the medical context and then response or translate appropriately and meaningfully. Mistakes can be made with serious consequences. However, it is one of main characteristics of Medical English that professionals must overcome and master. Only when students have sufficient and systematic knowledge of medicine and excellent language competency will they outperform on occupations related to Medical English, meeting the social demand of ESP. Apart from context knowledge, ESP teaching exists other hurdles preventing students from attaining the conceived targets, such as vocabulary size and variation (Khan, 2016). Medical English, is part-technical, part-academic with own language, structure and conventions. Teaching such language in very context-specific situations requires a more systematic and interactive strategy. As ESP concentrates more on language in context rather than grammar, it is essential to enhance the interaction of input and output and create a learning environment or a context. Integrated writing task provides a specific context and an opportunity to practice learners' writing and synthesis, so it is expected as a promising alternative strategy to ESP teaching.

In line with the conclusion by Zhou and Bin (Zhou & Bin, 2022), this study demonstrated higher overall use of the source material for comprehension among the high-proficiency participants, but no interactive effect was detected between groups. The subsequent semi-question provided some evidence to account for such outcome.

LL (id: 3221201048): I am not familiar with medical vocabulary and the background knowledge of ALS. Therefore, it took me a long time to read two passages, leaving insufficient time for writing.

ZL (id: 3221201076): Integrated writing task requires repeated reading.

Confronted with medical context in integrated writing task, those with lower language proficiency and poorer reading ability might have greater difficulties in interpreting and correctly understanding the provided materials. Indeed, the main challenge facing the test-takers in ESP integrated writing is to understand the information in the sources, especially in the presence of subject-specific content and new terminology. Freshmen are not familiar with integrated writing task and lack the ESP background knowledge, so it took some of them relatively longer time to read two passages, leaving insufficient time for writing. As a result, some students (n = 15) wrote an essay less than 300 words, not reaching the threshold of essay length. The study of Homayounzadeh (Homayounzadeh et al., 2019) also addressed the performance of some TOEFL candidates on integrated writing task and noted that with poorer comprehension of the content, the test-takers relies more on the language of the reading passage to help them complete their summaries. Therefore, a possible explanation is that the difference in comprehension ability coexists with different students' perceptions of test difficulty across participants with different language proficiencies, in which high-proficiency and low-proficiency writers appear similar behaviours of rereading, though their strategy of using the context varies (Lia Plakans & Gebril, 2013).

While high proficient group had stronger intention to use the reading passage to support their opinions and use the words, items 7, 8, 9 10, 12 in terms of language and opinion support and context comprehension were not differentiated in language proficiency comparison. Writers might utilize the source test as a dictionary for checking and reminding spelling of technical terminology. However, this study did not evaluate the types of their citation from the reading material and analyze their strategies to utilize the context and words, not distinguishing plagiarism from paraphrasing. The data only indicated their tendency of source use for language support and idea support.

Interestingly, though encountering hardship and having a poor performance in reading and writing, some freshmen students desired for more opportunities to practice integrated writing and instruction on such kind of task. It is evident that integrated writing tasks trigger students' interest in writing and increase their motivation. Integrated writing task should be administered to students with different proficiencies in ESP program. Meanwhile, the poor performance of freshmen, on the other hand, indicated that the TEM8 integrated writing task was too difficult for them. Fundamentally, these difficulties stem from limited reading and writing proficiency and insufficient medical knowledge. The ability of critically responding to text input, summarizing and writing in the integrated task does require plenty of practice. Therefore, we shall pay attention to and consider the context and difficulty of source material carefully in ESP program especially when it comes to the freshmen or students with low language proficiency.

Nevertheless, there are still some limitations in the present study. The usage of source material mainly was collected mainly from the subject answers of questionnaire, but the consistency between the answer and their behaviour in the task was not validated, which might influence the accuracy of the data. Additionally, the small sample size limits the power of this study when increasing the margin of error. Though all freshmen and junior students majoring in English in the university were enrolled in this study, the amount is not large enough. Therefore, it is worthy of carrying out a large-scale experiment about integrated writing task combined with assessment of test-taker's writing performance in the future.

Conclusion

This study investigated source use of two different proficiency group of Chinese ESP students in integrated writing task. Most participants admitted the important role of source context in terms of gathering ideas and opinions, and gaining language and organizational support, and comprehension of health-related context. With better reading and synthesis ability, high proficient ESP students exhibited higher awareness of effectively using source material and stronger tendency for organizational support, idea selection and gaining ideas. These results advocate further investigation as well as application of ESP integrated writing among students with different proficiency levels in ESP program.

Declaration of interest

None

Author contributions

Linwei Ma collected the data from students, performed the analysis and wrote the paper.

Acknowledgments

References

Aleksandrzak, M. (2018). Genre-based approaches in teaching and learning English for academic purpose (EAP). *Neofilolog*, 137-151. doi:10.14746/n.2018.51.2.2

Biber, D., & Gray, B. (2013). Discourse Characteristics of Writing and Speaking Task Types on the "TOEFL iBT"® Test: A Lexico-Grammatical Analysis. "TOEFL iBT"® Research Report. TOEFL iBT-19. Research Report. RR-13-04. *ETS research report series*.

Chan, S., & Yamashita, J. (2022). Integrated writing and its correlates: A meta-analysis. *Assessing writing, 54*, 100662. doi:https://doi.org/10.1016/j.asw.2022.100662

Cheng, A. (2006). Understanding learners and learning in ESP genre-based writing instruction. *English for Specific Purposes, 25*(1), 76-89. doi:https://doi.org/10.1016/j.esp.2005.07.002

Cheng, A. (2021). The place of language in the theoretical tenets, textbooks, and classroom practices in the ESP genre-based approach to teaching writing. *English for Specific Purposes, 64*, 26-36. doi:10.1016/j.esp.2021.07.001

Cheong, C. M., Zhu, X., Li, G. Y., & Wen, H. (2019). Effects of intertextual processing on L2 integrated writing. *Journal of second language writing, 44*, 63-75. doi:10.1016/j.jslw.2019.03.004

Cho, Y., Rijmen, F., & Novák, J. (2013). Investigating the effects of prompt characteristics on the comparability of TOEFL iBT™ integrated writing tasks. *Language testing, 30*(4), 513-534. doi:10.1177/0265532213478796

Cohen, A. D. (2006). The Coming of Age of Research on Test-Taking Strategies. *Language assessment quarterly, 3*(4), 307-331. doi:10.1080/15434300701333129

Cumming, A., Grant, L., Mulcahy-Ernt, P., & Powers, D. E. (2004). A teacher-verification study of speaking and writing prototype tasks for a new TOEFL. *Language testing, 21*(2), 107-145. doi:10.1191/0265532204lt278oa

Cumming, A., Lai, C., & Cho, H. (2016). Students' writing from sources for academic purposes: A synthesis of recent research. *Journal of English for academic purposes, 23*, 47-58. doi:10.1016/j.jeap.2016.06.002

Darong, H. C. (2021). Integrated Task on Students' Writing Quality: Is It More Effective? *English Language Teaching Educational Journal, 4*(1), 25. doi:10.12928/eltej.v4i1.3336

Education, M. o. (2020). "New Liberal Arts Construction Work Conference Held in Shandong University". Retrieved from http://www.moe.gov.cn/jyb_xwfb/gzdt_gzdt/s5987/202011/t20201103_498067.html

Fan, J., Frost, K., & Liu, B. (2020). Teachers' involvement in high-stakes language assessment reforms: The case of Test for English Majors (TEM) in China. *Studies in educational evaluation, 66*, 100898. doi:10.1016/j.stueduc.2020.100898

Frost, K., Clothier, J., Huisman, A., & Wigglesworth, G. (2020). Responding to a TOEFL iBT integrated speaking task: Mapping task demands and test takers' use of stimulus content. *37*(1), 133-155. doi:10.1177/0265532219860750

Fulcher, G., & Harding, L. (2021). *The Routledge handbook of language testing* (Second edition. ed.). London ;: Routledge.

Grabe, W., & Zhang, C. (2013). Reading and Writing Together: A Critical Component of English for Academic Purposes Teaching and Learning. *TESOL journal, 4*(1), 9-24. doi:10.1002/tesj.65

Grabe, W., & Zhang, C. (2016). Reading-writing relationships in first and second language academic literacy development. *Language teaching, 49*(3), 339-355. doi:10.1017/S0261444816000082

Han, Z. (2013). Forty years later: Updating the Fossilization Hypothesis. *Language teaching, 46*(2), 133-171. doi:10.1017/S0261444812000511

He, L., & Sun, Y. (2021). The Influence of Candidates' Cognition of Writing Prompts on Their Writing Performance in Comprehensive Writing. *Modern Foreign Languages, 44*(4), 12.

Henry, A., & Roseberry, R. L. (1998). An Evaluation of a Genre-Based Approach to the Teaching of EAP/ESP Writing. *TESOL quarterly, 32*(1), 147-156. doi:10.2307/3587913

Hirvela, A. (2004). *Connecting reading and writing in second language writing instruction*. Ann Arbor: University of Michigan Press.

Homayounzadeh, M., Saadat, M., & Ahmadi, A. (2019). Investigating the effect of source characteristics on task comparability in integrated writing tasks. *Assessing writing, 41*, 25-46. doi:https://doi.org/10.1016/j.asw.2019.05.003

Hyland, K. (2022). English for Specific Purposes: What Is It and Where Is It Taking Us? *ESP Today, 10*, 202-220. doi:10.18485/esptoday.2022.10.2.1

Jin, Y., & Fan, J. (2011). Test for English Majors (TEM) in China. *Language testing, 28*(4), 589-596.

Khan, I. (2016). Difficulties in Mastering and Using English for Specific Purpose (Medical Vocabulary): A Linguistic Analysis of Working Saudi Hospital Professionals. *Macrothink journal of Education, 8*, 78-92. doi:10.5296/ije.v8i1.9163

Knoch, U., & Sitajalabhorn, W. (2013). A closer look at integrated writing tasks: Towards a more focussed definition for assessment purposes. *Assessing writing, 18*(4), 300-308. doi:10.1016/j.asw.2013.09.003

Krashen, S. D. (1985). *The input hypothesis : issues and implications*. London: Longman.

Lichtman, K., & VanPatten, B. (2021). Krashen forty years later: Final comments. *Foreign language annals, 54*(2), 336-340. doi:10.1111/flan.12543

Liu, F., & Stapleton, P. (2018). Connecting writing assessment with critical thinking: An exploratory study of alternative rhetorical functions and objects of enquiry in writing prompts. *Assessing writing, 38*, 10-20. doi:10.1016/j.asw.2018.09.001

Loewen, S. (2021). Was Krashen right? An instructed second language acquisition perspective. *Foreign language annals, 54*(2), 311-317. doi:10.1111/flan.12550

Luo, J., & Garner, M. (2017). The Challenges and Opportunities for English Teachers in Teaching ESP in China. *Journal of Language Teaching Research, 8*, 81-86.

Paltridge, B., & Starfield, S. (2014). *The handbook of English for specific purposes* (Paperback edition. ed.). Chichester, West Sussex: Wiley Blackwell.

Phillips Galloway, E., Qin, W., Uccelli, P., & Barr, C. D. (2020). The role of cross-disciplinary academic language skills in disciplinary, source-based writing: investigating the role of core academic language skills in science summarization for middle grade writers. *Reading & writing, 33*(1), 13-44. doi:10.1007/s11145-019-09942-x

Phillips Galloway, E., & Uccelli, P. (2019). Beyond reading comprehension: exploring the additional contribution of Core Academic Language Skills to early adolescents' written summaries. *Reading & writing, 32*(3), 729-759. doi:10.1007/s11145-018-9880-3

Plakans, L. (2008). Comparing composing processes in writing-only and reading-to-write test tasks. *Assessing writing, 13*(2), 111-129. doi:10.1016/j.asw.2008.07.001

Plakans, L. (2010). Independent vs. Integrated Writing Tasks: A Comparison of Task Representation. *TESOL quarterly, 44*(1), 185-194. doi:10.5054/tq.2010.215251

Plakans, L., & Gebril, A. (2012). A close investigation into source use in integrated second language writing tasks. *Assessing writing, 17*(1), 18-34. doi:10.1016/j.asw.2011.09.002

Plakans, L., & Gebril, A. (2013). Using multiple texts in an integrated writing assessment: Source text use as a predictor of score. *Journal of second language writing, 22*(3), 217-230. doi:10.1016/j.jslw.2013.02.003

Plakans, L., & Gebril, A. (2017). Exploring the relationship of organization and connection with scores in integrated writing assessment. *Assessing writing, 31*, 98-112. doi:10.1016/j.asw.2016.08.005

Plakans, L., Gebril, A., & Bilki, Z. (2019). Shaping a score: Complexity, accuracy, and fluency in integrated writing performances. *Language testing, 36*(2), 161-179. doi:10.1177/0265532216669537

Plakans, L., Liao, J.-T., & Wang, F. (2018). Integrated assessment research: Writing-into-reading. *Language teaching, 51*(3), 430-434. doi:10.1017/S0261444818000149

Rogers, & Johnson, R. (2010). Incorporating Metacognitive Strategy Training in ESP Writing Instruction: English for Lawyers. *English language teaching (Toronto), 3*(4), 3.

Ruiz-Funes, M. (2015). Exploring the potential of second/foreign language writing for language learning: The effects of task factors and learner variables. *Journal of second language writing, 28*(Jun), 1-19. doi:10.1016/j.jslw.2015.02.001

Sholikhi, F. a. (2020). Edmodo Use in ESP Writing: The Perceptions and Barriers of Sociology Students. *English Language Teaching Educational Journal, 3*(3), 241.

Su, S., Tsai, Y., & Tai, H. (2022). An ESP Approach to Teaching Nursing Note Writing to University Nursing Students. *Education sciences, 12*(3), 223.

Swain, M. (2005). *The Output Hypothesis: Theory and Research*.

Weigle, S. C., & Parker, K. (2012). Source text borrowing in an integrated reading/writing assessment. *Journal of second language writing, 21*(2), 118-133. doi:10.1016/j.jslw.2012.03.004

Yang, H., & Plakans, L. (2012). Second Language Writers' Strategy Use and Performance on an Integrated Reading-Listening-Writing Task. *TESOL quarterly, 46*(1), 80-103. doi:10.1002/tesq.6

Zhang, C. (2013). Effect of instruction on ESL students' synthesis writing. *Journal of second language writing, 22*(1), 51-67. doi:10.1016/j.jslw.2012.12.001

Zhou, Y., & Bin, K. (2022). How Chinese College EFL Learners Use Source Material Across Different Integrated Writing TasksIntegrated writing tasks: A Comparative Study. In L. Hamp-Lyons & Y. Jin (Eds.), *Assessing the English Language Writing of Chinese Learners of English* (pp. 95-112). Cham: Springer International Publishing.

Table 1 Source use framework (Zhou & Bin, 2022)

Source use type	Questionnaire items
Reading for comprehension	1. I could understand most of the words in the reading passage. 2. I could understand most of the ideas in the reading passage. 3. I often reread the reading passage while I was writing.
Gaining ideas	4. I used the reading passage to help me get ideas on the topic. .
Shaping opinion	5. I used the reading passage to form my idea. 6. The reading passage helped me choose an opinion on the issue.
Supporting opinion	7. I used some of the ideas from the reading passage in my essay. 8. I used examples and ideas from the reading passage to support my argument in my essay.
Language support	9. I used some words from the reading passage when I wrote. 10. The reading passage helped me write better.
Reading for organization	11. I used the reading passage to help me organize my essay
Integration for context comprehension	12. This writing assignment will improve my understanding of ALS

Table 2 KMO and Bartlett's test of the Questionnaire

KMO and Bartlett's test		
KMO value		0.736
Bartlett's test	Sig.	0.000

Table 3 Independent Group Chi-square test of High and Low Proficient Participants in Items 1-12 in Integrated Writing Task

Source	Proficiency level	Frequency					df	Sig.
		Never	Seldom	Sometimes	Often	Always		
Item 1	Low	0(0%)	7(12.1%)	26(44.8%)	24(41.4%)	1(1.7%)	3	0.000
	High	0(0%)	1(2.2%)	4(8.7%)	33(71.7%)	8(17.4%)		
Item 2	Low	0(0%)	4(6.9%)	23(39.7%)	30(51.7%)	1(1.7%)	3	0.000
	High	0(0%)	0(0%)	2(4.3%)	39(84.8%)	5(10.9%)		
Item 3	Low	1(1.7%)	5(8.6%)	26(44.8%)	20(34.5%)	6(10.3%)	4	0.460
	High	0(0%)	2(4.3%)	16(34.8%)	20(43.5%)	8(17.4%)		
Item 4	Low	0(0%)	6(10.3%)	18(31%)	27(46.6%)	7(12.1%)	3	0.006
	High	0(0%)	0(0%)	6(13%)	27(58.7%)	13(28.3%)		
Item 5	Low	0(0%)	13(22.4%)	19(32.8%)	24(41.4%)	2(3.4%)	3	0.003
	High	0(0%)	1(2.2%)	15(32.6%)	21(45.7%)	9(19.6%)		
Item 6	Low	0(0%)	7(12.1%)	14(24.1%)	32(55.2%)	5(8.6%)	3	0.015
	High	0(0%)	1(2.2%)	9(19.6%)	22(47.8%)	14(30.4%)		
Item 7	Low	0(0%)	5(8.6%)	29(50%)	22(37.9%)	2(3.4%)	3	0.063
	High	0(0%)	1(2.2%)	17(37%)	21(45.7%)	7(15.2%)		
Item 8	Low	1(1.7%)	6(10.3%)	26(44.8%)	24(41.4%)	1(1.7%)	4	0.349
	High	0(0%)	3(6.5%)	17(37%)	22(47.8%)	4(8.7%)		
Item 9	Low	0(0%)	3(5.2%)	26(44.8%)	26(44.8%)	3(5.2%)	3	0.725

							df	Sig.
	High	0(0%)	2(4.3%)	18(39.1%)	21(45.7%)	5(10.9%)		
Item 10	Low	1(1.7%)	6(10.3%)	26(44.8%)	20(34.5%)	5(8.6%)	4	0.281
	High	0(0%)	2(4.3%)	15(32.6%)	22(47.8%)	7(15.2%)		
Item 11	Low	1(1.7%)	6(10.3%)	29(50%)	17(29.3%)	5(8.6%)	4	0.018
	High	0(0%)	6(13%)	9(19.6%)	23(50%)	8(17.4%)		
Item 12	Low	1(1.7%)	10(17.2%)	37(63.8%)	10(17.2%)	0(0%)	4	0.082
	High	0(0%)	4(8.7%)	25(54.3%)	14(30.4%)	3(6.5%)		

Table 4 Mean value analysis (MVA)

Group		Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12	Overall score
Low	N	58	58	58	58	58	58	58	58	58	58	58	58	58
	SD	0.711	0.655	0.861	0.836	0.849	0.815	0.693	0.754	0.682	0.855	0.846	0.648	6.076
	M	3.33	3.48	3.43	3.6	3.26	3.6	3.36	3.31	3.5	3.38	3.33	2.97	40.55
High	N	46	46	46	46	46	46	46	46	46	46	46	46	46
	SD	0.595	0.389	0.801	0.631	0.769	0.772	0.743	0.748	0.741	0.773	0.911	0.737	4.639
	M	4.04	4.07	3.74	4.15	3.83	4.07	3.74	3.59	3.63	3.74	3.72	3.35	45.65
Total	N	104	104	104	104	104	104	104	104	104	104	104	104	104
	SD	0.749	0.623	0.845	0.798	0.859	0.825	0.737	0.76	0.708	0.835	0.892	0.711	6.026
	M	3.64	3.74	3.57	3.85	3.51	3.81	3.53	3.43	3.56	3.54	3.5	3.13	42.81

SD, Standard deviation; M, Mean.

Table 5 Independent Sample T Test of Overall Score and Language Proficiency Level

	F	df	Sig.	SD	95% Confidence Interval of the Difference	
					Lower	Upper
Overall score	3.361	102	0.000	1.084	-7.25	-2.951