

Research on English Self-Directed Learning of Business English Majors under the Background of Artificial Intelligence

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ABSTRACT

With the development of economy and technology, the integration of artificial intelligence and education is increasingly deepening. This study focuses on students majoring in Business English at Guangzhou College of Commerce, using a questionnaire survey method to explore the current status of their English self-directed learning (SDL) under the background of artificial intelligence. Research has found that students have the following problems in self-directed English learning: insufficient goal setting and execution ability, lack of learning focus, difficulty in using AI tools, and excessive dependence on AI tools. The reasons include: students have weaker execution ability after setting goals; lack self-discipline when using AI tools for learning; lack necessary operational skills; heavily rely on AI tools. In response to the above issues, this study proposes corresponding measures: using AI tools to monitor the learning process to enhance focus; offering AI tool operation training courses; guide students to critically understand the auxiliary role of AI tools.

KEYWORDS

Artificial intelligence; Business English major; English SDL

1 Introduction

The application of artificial intelligence in the field of education is becoming more and more extensive and in-depth, making it feasible to realize the new teaching normal of “learner-centered” with the strong support of artificial intelligence. International research establishes foundational theories on self-directed learning (SDL) and AI-education integration. Holec’s (1981) conceptualization of SDL was extended by Zimmerman (1989), who delineated foreign language SDL into three competencies: intrinsic motivation activation, strategic learning application, and metacognitive regulation. Little (2011) further emphasized critical thinking, autonomous decision-making, and perspective formation as core SDL capacities. Concurrently, seminal AI contributions - from Turing’s theoretical frameworks to McCarthy’s (1956) formalization of AI as a discipline - underpin modern educational applications. Popenici (2017) defines AI as systems simulating human cognition (e.g., adaptive learning, self-correction), while anticipating AI-driven transformations of learning platforms into interactive ecosystems, enabling deeper investigation into pedagogical boundaries.

Domestic scholarship predominantly examines AI-empowered SDL through empirical lenses. Ma (2019) identifies deep learning orientation as a mediator between SDL and academic performance. Zhang and Li (2020) demonstrate AI recommendation systems’ efficacy in personalizing English learning resources, and reveal environmental constraints (e.g., institutional habits, teacher awareness) hindering Business English majors’ SDL. Subsequent studies validate AI’s positive impact across diverse cohorts: Liao (2022) addresses vocational students’ strategic deficits and confirm enhanced metacognition via AI-assisted SDL; Li (2024) highlight implementation gaps in tertiary and secondary education, respectively. Collectively, these studies acknowledge AI’s potential yet underscore a critical gap: insufficient theoretical-practical integration for optimizing English majors’ language acquisition through AI-SDL synergy.

2 Methodology

In this section, the research design, participants of the study, and data gathering procedures are illustrated.

2.1 Research Design

This research extensively searched and consulted a large number of materials through CNKI, Baidu, and other online and offline platforms, and a detailed questionnaire of 20 questions was designed, including multiple-choice questions and open-ended questions, to comprehensively understand the current situation of self-learning ability of Business English Majors under the background of artificial intelligence in terms of students’ use of artificial intelligence tools, learning habits, and English self-learning ability.

2.2 Participants of the Study

In order to understand the current situation of English self-learning ability of Business English Majors under the background of artificial intelligence, a total of 106 Business English students ranging from freshmen to seniors of Guangzhou College of Commerce were invited to participate in the questionnaire.

2.3 Data Gathering Procedures

The questionnaires were delivered by a professional platform of electronic questionnaire called “Wenjuanxing”, which is convenient for participants to fill in the questionnaire online. In consideration of the convenience and trustfulness, the questionnaire have been translated into the Chinese version, so that participants would have a direct and straight understanding of the items and descriptions of the questionnaire. Then, research subjects were told what they fill is just for the academic purpose. At the same time, before the participants filled in the questionnaire, they were also told the data that they fill would be kept confidential and make no influence on their own personal grades and life in order to make sure the results are objective and true. A total of 106 questionnaires were distributed, and 106 were actually received, all of which were valid, and there were no invalid questionnaires.

3 Results and Discussion

This section presents the results of the survey and discusses the current status of English self-learning ability of Business English Majors under the background of artificial intelligence, the existing problems and causes, and countermeasures.

3.1 The Current Status of Business English Majors’ SDL in English

3.1.1 Basic Information of the Participants

Table 1 Basic information about the student

	option	percentage
gender	male	15.09%
	female	84.91%
grade	freshmen	28.3%
	sophomores	28.3%
	juniors	14.15%
	seniors	29.25%
	below 2.0	0.94%
GPA	2.0-2.9	48.11%
	3.0-3.9	48.11%
	4.0 or above	2.83%
	weak	11.32%
English self-learning ability	average	39.62%
	strong	49.06%

According to the results of the questionnaire, there are more female students than male students who participated in the questionnaire survey (see Table 1), with a percentage of 84.91% and 15.09% respectively. There is not much difference in the number of freshmen, sophomores, juniors, and seniors, accounting for 28.3%, 28.3%, 14.15%, and 29.25% respectively. In terms of academic achievement level, the GPA of students is mainly concentrated in the two ranges of 3.0-3.9 and 2.0-2.9, accounting for the same percentage (48.11% each), while the proportion of students with a GPA of 4.0 and above and below 2.0 are 2.83% and 0.94% respectively. In addition, 49.06% of the students believe that they have strong English self-learning ability and 39.62% students have average English self-learning ability. Only 11.32% of the students think that their English self-learning ability is weak, indicating that most of the students who participated in the questionnaire have medium and high grades. They have certain methods to obtain good results in English self-learning.

3.1.2 Frequency and Contents by Using AI Tools in English learning

Table 2 Students' use of AI tools in English learning

	option	percentage
Use AI tools in English learning (Frequency of using AI tools)	never	1.89%
	rarely	15.09%
	sometimes	30.19%
	frequently	42.45%
	all the time	10.38%

From the survey on student’ use of AI tools in English learning (see Table 2), data shows that most students use AI tools in their English studies. Among them, 42.45% use AI tools frequently, 30.19% use them sometimes, 15.09% rarely use them, 10.38% use them all the time, and only 1.89% of students have never used AI tools in their English studies, indicating that the use of AI tools by students in the English study of Business English majors has become very common, and only a few students have never used AI tools.

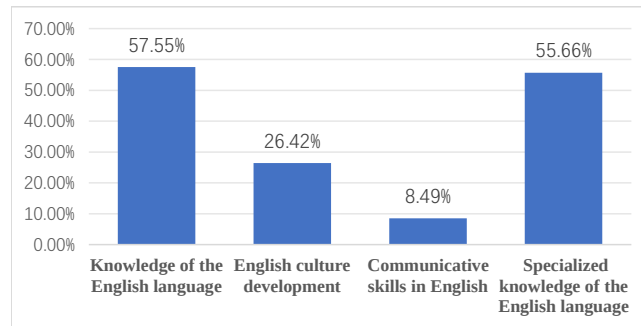


Figure 1 What students learn about English using AI tools

K--Knowledge of the English language: vocabulary, grammar, writing, translation, CET4 and CET6 examinations, IELTS preparation.

E--English culture development: stories and knowledge related to story, culture, and literature in English.

C--Communicative skills in English: business English listening and speaking, English presentations, English talk shows, watching films and TV dramas.

S--Specialized knowledge of the English language: Dissertation writing, course-related knowledge.

Figure 1 shows the main contents that students learn about English by using AI tools. The results show the majority of students use AI tools to learn English mainly about English language knowledge and English-related professional knowledge, such as vocabulary, grammar, writing, translation, CET4 and CET6 exams, IELTS preparation and dissertation writing, and the AI tools they use are mainly generative conversation applications, AI writing assistants and AI translations.

3.1.3 English Self-learning Goal Setting and Execution

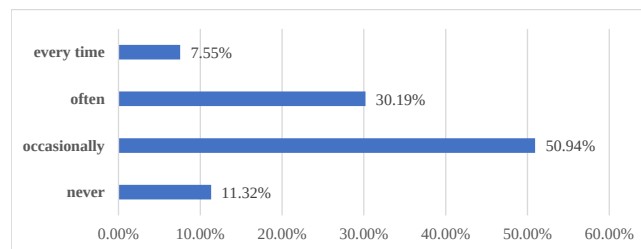


Figure 2 Students set learning goals before learning English using AI tools

Figure 2 shows that students set learning goals before learning English using AI tool. 50.94% of students occasionally set learning goals for themselves before learning English using AI tools, 30.19% of students often set learning goals for themselves before learning English using AI tools, only 7.55% of students set learning goals every time for themselves before learning English using AI tools, and 11.32% of students never set learning goals for themselves before learning English using AI tool. This suggests that most students are able to set learning goals for themselves before learning English by using AI tools, but only a few students are able to use AI tools to set learning goals for themselves before learning English every time.

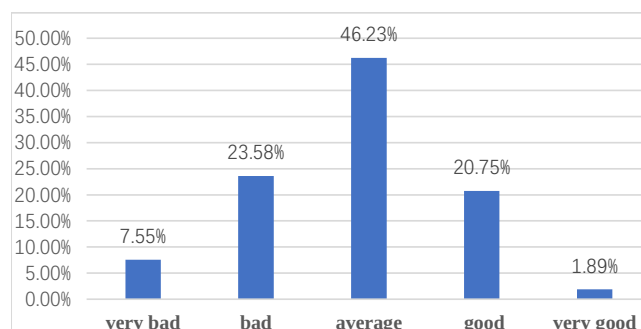


Figure 3 The degree of compliance with the learning objectives set

In Figure 3, 46.23% of the students think that the degree of compliance with the learning objectives set by themselves is average, 20.75% of the students think that the degree of compliance with the learning objectives set by themselves is good, only 1.89% of the students believe that the degree of compliance with the learning objectives set by themselves is very good. On the other hand, the students who believe that the degree of compliance with the learning objectives set by themselves is poor or very bad accounts for 23.58% and 7.55% respectively. It indicates that most students cannot

execute the learning goals they set, and only a few students are able to execute the learning goals they set well.

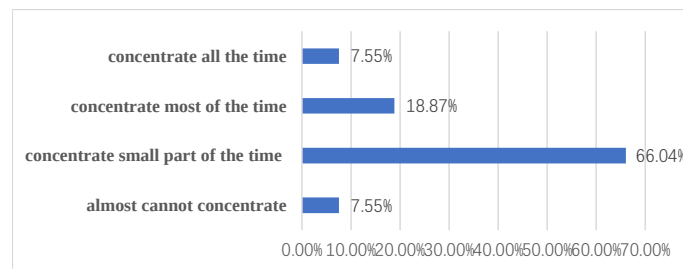


Figure 4 Students' concentration when learning English using AI tools

Figure 4 shows the concentration of students when learning English using AI tools. 66.04% of the students think that they can only pay attention for a small part of the time when learning English using AI tools, 18.87% of the students think that they can concentrate most of the time when learning English using AI tool, and 7.55% of students cannot concentrate when learning English using AI tools. Only 7.55% of the students think that they can concentrate all the time, indicating that the concentration of students is not high when learning English using AI tools.

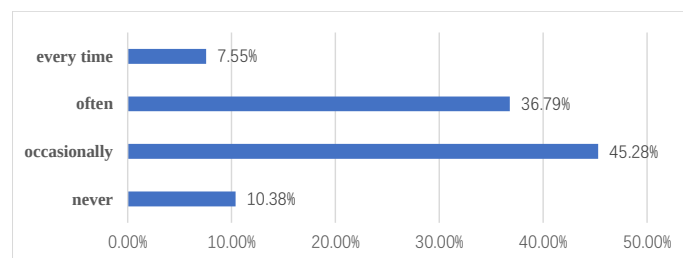


Figure 5 A situation in which students learn English with questions while using an AI tool

Figure 5 shows how students learn English with questions while using AI tools, with 45.28% of students learning English occasionally with questions, 36.79% learning English with questions regularly, 7.55% learning English with questions every time, and only 10.38% never learning English with questions. It shows that most students have a good habit of learning English with questions, but only a few students are able to do English with questions every time.

3.1.4 Attitude Toward English Self-learning and Its Effect

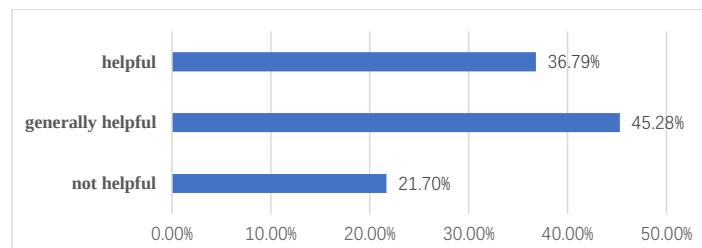


Figure 6 the help of AI tools for students' English learning

Figure 6 shows the help of AI tools for students' English learning. 36.79% of students think that the use of AI tools is helpful for English learning, 45.28% of students think that AI tools are generally helpful for English learning, and only 21.7% think that AI tools are not helpful for English learning. It shows that most students think that AI tools can help them learn English.

Figure 7 shows the change in students' interest in learning English when using AI tools for English learning. While 29.25% of students believe that there is a slight increase in learning interest when using AI tools for English learning,

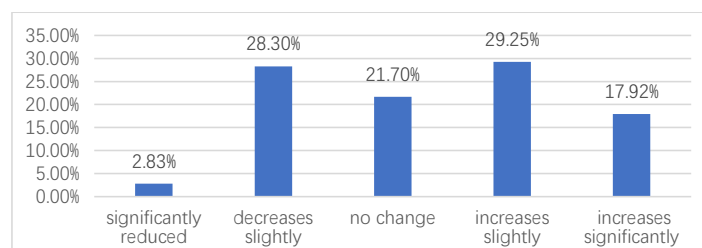


Figure 7 change of students' English learning interest when using AI tools

17.92% of students believe that there is a significant increase in learning interest when using AI tools for English learning. On the other hand, 21.7% of students believe that there is no change in learning interest when using AI tools for English learning, and 28.3% of students believe that there is a slight decrease in learning interest when using AI tools for English learning, only 2.83% of students believe that their interest in learning is significantly lower when using AI tools for English learning, indicating that the effect of AI tools on stimulating students' interest in learning is not significant.

Table 3 The impact of artificial intelligence on English Self-learning

impact	option
Positive	Real-time feedback can be provided You can plan your own time Assist in literature reading and translation
Negative	Too much reliance on AI tools Neglect of basic vocabulary and grammar The AI operation ability is not good

Table 3 shows that in the open questions on the impact of AI on students' self-learning, artificial intelligence can provide students with real-time feedback during the English self-learning process so that students can understand their own learning status in time and adjust their learning strategies. It also allows students to plan their own learning time, arrange the learning process reasonably, and improve learning efficiency. In terms of assisting in literature reading and translation, as well as paper writing and polishing, artificial intelligence has greatly reduced the difficulty for students when dealing with complex texts, enabling students to have a deeper understanding of professional knowledge and improve academic achievements.

However, many students also experience an over-reliance on AI tools, which weakens their ability to think and solve problems on their own. Due to over-reliance, some students gradually neglect the learning of basic vocabulary and grammar, resulting in a weak foundation in the language. In addition, the problem of poor operation ability of AI tools is also prominent, which makes students unable to give full play to the advantages of the tools in the process of learning, and even affects their learning enthusiasm due to operational obstacles.

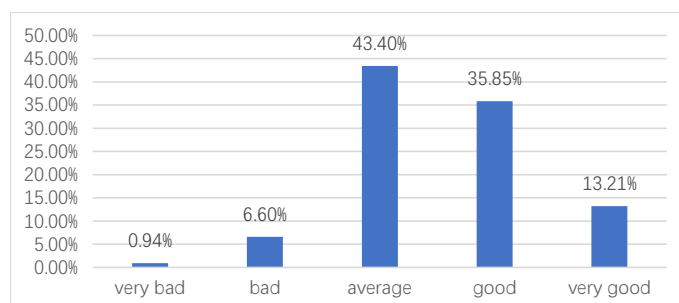


Figure 8 The effect of using AI tools for English self-learning

Figure 8 shows the effect of using AI tools for English self-learning. 43.4% of students think that the effect of using AI tools for English self-learning is average, 35.85% of students think that the effect of using AI tools for English self-learning is good, 13.21% of students think that the effect of using AI tools for English self-learning is very good, and only 6.6% and 0.94% of students think that the effect of using AI tools for English self-learning is poor or very bad, indicating that the auxiliary effect of AI tools on English self-learning is more obvious. But there is still room for improvement. In summary, artificial intelligence presents a mixed situation of advantages and disadvantages in English self-learning for Business English majors, which has shown a positive role in improving the learning effect and assisting the learning process, but it has also caused problems such as differentiation of learning interests, over-dependence, neglect of basic learning and insufficient operational ability, resulting in different evaluations and differences of views on students' learning effects.

3.2 Problems and Reasons in English SDL for Business English Majors

3.2.1 Poor Goal Setting and Limited Execution Ability

The first obvious problem for Business English Majors in English self-learning is poor goal setting and limited execution ability. Figure 2 "Students set learning goals before learning English using AI tools" and Figure 3 "The degree of compliance with the learning objectives set" (in section 3.1.3) indicate that students fail to effectively execute their own learning goals in the process of using AI tools for English self-learning, which may be related to the fact that many students have developed bad learning habits and lack awareness of active planning and self-management in the long-term learning process. In high school, students rely on teachers' supervision and guidance to study, and after entering college, it is difficult for them to adapt quickly to a more liberal learning environment. For example, when using AI tools for English learning, they do not make a detailed study plan in advance, and the learning schedule is arbitrary, lacking

coherence and systematization. Meanwhile, setting learning goals needs specific directions and measures for improvement, but the lack of effective tracking and evaluation of goals makes it difficult for students to achieve learning goals and gradually they may lose learning motivation.

3.2.2 Lack of Learning Concentration

The second problem for Business English Majors in English self-learning is lack of learning concentration. Figure 4 “Students’ concentration when learning English using AI tools” (in section 3.1.3) shows that when using AI tools for English learning, 66.04% of students can concentrate small part of the time, and 7.55% of students almost cannot concentrate. This indicates that the concentration of most students is not high, which may be due to the distractions of the learning environment, a lack of personal self-control, or the unattractiveness of the AI tool itself. College students are in the stage of abundant social and recreational activities, and their self-discipline ability is weak. When using AI tools to learn business English, it’s easy to be distracted by outside parties.

3.2.3 Difficulty in Using AI Tools

The third problem for Business English Majors in English self-learning is the difficulty in using AI tools.

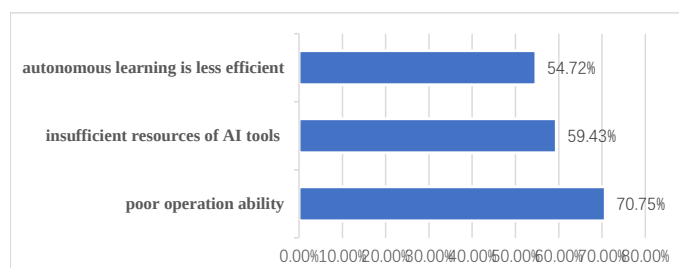


Figure 9 Having trouble learning English with AI tools

Figure 9 shows that 70.75% of students will encounter problems of poor operation ability when using AI tools to learn English, and 59.43% of students will encounter problems of insufficient resources of AI tools, which may be related to students’ insufficient mastery of AI tools. AI tools in the field of Business English are multi-functional, such as the Grammarly, which not only checks for grammatical errors, but also provides professional vocabulary suggestions, and optimizes the structure of the article. However, many students only grasp the basic functions and are unable to take full advantage of the advanced features of the tool to improve their learning. In addition, new AI tools are constantly emerging, but some students are afraid to learn new tools while preferring using old ones with limited features, which prevents them from accessing new learning resources to improve their learning efficiency.

3.2.4 Heavy Reliance on AI Tools

The forth problem for Business English Majors in English self-learning is heavy reliance on AI tools.

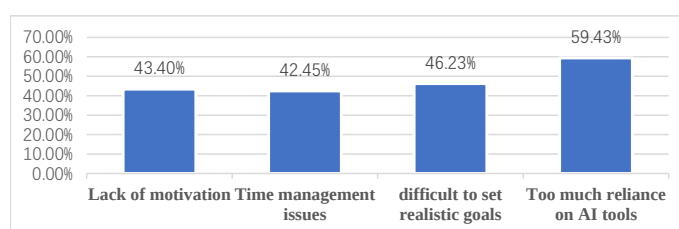


Figure 10 Challenges in maintaining English Self-learning

Figure 10 shows the fact that 59.43% of students rely too much on AI tools to maintain their English self-learning ability, which indicates that in the process of English learning, some Business English majors are more limited in thinking, accustomed to relying on existing knowledge and answers provided by AI tools, and lack independent thinking and innovative thinking. When dealing with practical problems in Business English, such as business negotiation case analysis, it is usual for students to take the initiative to analyze the problem from multiple angles and propose unique solutions. However, some students have shortcomings in social interaction and are not good at cooperating and communicating with their classmates. In a group Business English project, they feel difficult to communicate and collaborate effectively with others. Instead, they are more inclined to use AI tools to complete tasks alone, resulting in social skills not being exercised, which further affects the development of teamwork and communication skills, forming a vicious circle.

3.3 Strategies to Improve English Self-learning for Business English Majors

3.3.1 Supervising Learning Process with AI Tracking

In the process of self-learning in English, students could use some time-management AI tools to monitor their learning

behavior. For example, TomaToDo could help students track how much time they spend using apps like Baicizhan, including how long they log on the app each time and how many times they use it each day. Besides, it could count the number of new vocabulary learned and reviewed by students every day by docking with the data of the vocabulary app. For example, if a student sets a study time of 30 minutes a day but only learns for 10 minutes for three consecutive days, TomaToDo will send a push notification to remind students that their study time is not up to standard and display a trend chart of their study time in recent days to urge them to catch up with the progress. If students review certain business vocabulary many times, they will also be reminded to increase the number of revisions to strengthen their memory.

3.3.2 Improving Concentration with AI Focus Time

During self-learning in English, students could use AI tools to provide concentration. For example, Forest could help students reduce distractions by setting focus time during which their phones will not be able to use other unrelated apps. At the end of the focus time, students are able to harvest the planted trees in the virtual forest, and this visual sense of accomplishment could motivate them to stay focused.

3.3.3 Providing AI Tools Training Courses

A training course on the basic operation of AI tools could be set up, through which students could better learn how to operate and use AI tools proficiently, such as explaining the basic grammar check, spelling correction and other functions of Grammarly, and supporting a simulation practice system to help students master and use the AI tool proficiently through timely feedback. Besides, schools could carry out some AI knowledge lectures, debate competitions, or infiltrate social media such as Douyin to popularize AI knowledge to students, and help them rationally view AI tools and use AI tools.

3.3.4 Critically Understanding the Auxiliary Role of AI Tools

Students should be encouraged to view the advantages and disadvantages of AI technology dialectically. Apart from the merits of AI tools mentioned above, case studies like cross-border e-commerce contract negotiations could be used to reveal the limitations of AI in complex scenarios and emphasize its essential attributes as a "mind-enhancing tool". Students are required to independently complete the business case analysis framework, and then combine AI suggestions for secondary optimization, so as to strengthen students' critical examination of AI output and students' critical thinking.

4 Conclusion

Through the collation and analysis of 106 student questionnaires, this study roughly illustrates the current situation of Business English major students of GCC in terms of using artificial intelligence tools for English self-learning. It is found that students have problems such as unbalanced English self-learning ability, low compliance with learning goals, difficulties in the learning process, and over-reliance on AI tools in self-learning. The reasons for these problems mainly lie in the following aspects: students are unable to make full use of the learning resources of artificial intelligence, lack the necessary operational ability when using artificial intelligence tools to learn, and lack a certain degree of execution. Specific solutions to these problems include enhancing awareness of self-learning, providing training on AI tools, eliminating distractions, improving concentration, making plans, promoting self-discipline, and increase hands-on learning opportunities. All these strategies may provide a valuable basis for the improvement of the English self-learning ability of Business English majors in the context of artificial intelligence.

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