The Influence of Discourse Cognitive Construction Ability on the Writing Performance of Application-oriented English Majors

Qiuyi Feng
Haikou University of Economics, Haikou 570203, China.

Abstract: The improvement of critical thinking ability is a process of human brain's cognition, reasoning and judgment of objective things. This experiment starts with the learners' discourse cognitive construction model, and attempts to study the effect of the training of discourse cognitive model based on critical thinking habits on the English writing performance of the application-oriented English majors with three different levels of language expression ability, so as to help the learners improve their English writing in the construction of conscious discourse cognition.

Keywords: Discourse Cognitive Construction Ability; English Writing Results; Critical Thinking

1. Introduction

At present, the research on English writing teaching has always been the focus of teaching reform in colleges and universities, and there are many qualitative studies. However, under the background of educational big data, there are still few quantitative studies on the cognitive process of writing. The impact of discourse cognitive construction ability on English writing level and its individual differences need to be further discussed.

In the field of English discourse teaching, the research on discourse cognition mainly includes the following aspects: ① Research on discourse cognitive model, which discusses the important role of cognitive model in presupposition operation and discourse interpretation in the text, and puts forward different discourse cognitive models: Proposition Structure Model; Image Schema Model; Metaphor Mapping Model; Metonymy Projection Model; ② Study on lexical elements in the process of discourse cognitive construction: "lexical choice", "sentence structure" and "discourse layout" are the "semantic prominence" strategies in the process of discourse cognitive construction. ③ Research on the cognitive construction of discourse and the knowledge support in its construction, which emphasizes the knowledge of discourse builders is an important element. ④ Study of textual metaphor, which can be used as a macro conceptual structure to form textual metaphor from top to bottom, playing a core value role in discourse reasoning.

On the whole, in recent years, the macro research of discourse cognitive model has gradually shifted to the micro research of discourse formation cognitive process, and its research method has gradually shifted from qualitative research to quantitative research. However, there are few quantitative studies combining discourse cognitive construction based on the cultivation of "critical thinking ability" with educational big data technology. Therefore, from the perspective of cognitive linguistics, this study attempts to discuss the embodiment of different English discourse cognitive construction habits caused by students' differences in English learning cognitive styles and ways of thinking in big data mobile teaching, and puts forward the necessity of rebuilding good cognitive habits of critical thinking in English discourse construction , so as to gradually evolve habits into a driving force and effectively improve students' English discourse writing performance, realizing large-scale personalized English education for the cultivation of innovative talents.

2. Research design

2.1 Research questions

Question 1: What is the effect of cultivating discourse construction cognitive model based on critical thinking on students' English discourse writing level? What are the main factors?

Question 2: How does the cognitive model of discourse construction based on critical thinking affect the discourse construction ability of students at different levels of language expression?

2.2 Subjects

The research subjects are 103 first-year English majors from a university, and the experiment time is 10 weeks.

2.3 Instrument

This study adopts the methods of classroom experiment and questionnaire to investigate the students' English discourse construction ability before and after the experiment. It adopts the discourse construction method of cultivating new critical thinking habits and the dynamic comparison and verification method of data behavior before and after education big data, test the impact of the new teaching reform methods on the development of students' learning cognitive thinking habits, compare the data, and analyze the data ratio with SPSS software.

2.4 Research procedure and data collection

Experiment hypothesis: From the perspective of cognitive language psychology, cognitive thinking approaches such as causal text schema discourse construction, metaphorical discourse semantic construction, importance order discourse logical construction and contrastive discourse thinking mode construction have a positive impact on the development of critical thinking habits of English learners.

Step 1: Pretest all the subjects.

Pretest content: A written test paper is designed to investigate the vocabulary, grammar, discourse analysis and English comprehensive application ability of English majors. CET-4 can be used to test the students' comprehensive skills of writing, reading and translation.

At the same time, a pretest questionnaire (five point scale) was used to investigate the students' traditional English teaching methods.

Step 2: Correct students' pretest answers, analyze questionnaires, and put them on record.

Step 3: Firstly, according to the differences in students' specific cognitive styles and thinking habits reflected in the pretest, design and customize personalized text writing tasks on hot topics of College English. Then, establish the corresponding specific application principles and strategies of the teaching model for the development of critical thinking cognitive habits. After that, conduct classroom text construction training and analysis twice a week, and regularly release cognitive thinking learning resources and text construction tasks (at least two per week) by using big data platforms (correction network, Chaoxing learning link, Wechat group, Chinese university Mooc resource, etc.). Fourthly, detect the dynamic changes of students' data behavior every week, and establish a data collection model of learning habits based on big data. Finally, taking the discourse construction of critical thinking habits as the research breakthrough, explore effective ways to measure English learning thinking cognitive habits, and reveal the specific influencing factors of the formation of English learning thinking cognitive habits of individual and group learners in the educational digital age.

Step 4: Post-test all the subjects after 10 weeks.

Post-test content: A written test paper is designed to investigate the vocabulary, grammar, discourse analysis and English comprehensive application ability of English majors. CET-4 can be used to test the students' comprehensive skills of writing, reading and translation.

At the same time, the post-test questionnaire (five point scale) was used to investigate the subjects' views on the cognitive teaching model of the development of critical thinking cognitive habits.

Step 5: Correct students' pretest answers, analyze questionnaires, and put them on record.

Step 6: Experts were asked to compare the subjects' development of English discourse critical thinking habits, the level of English comprehensive skills and the data of two questionnaires before and after the test.

Step 7: SPSS was used to analyze the data and draw a conclusion.

3. Results and discussion

According to the students' comprehensive test of language expression before the experiment, it is divided into three levels: high (85-100 points), medium (70-84 points) and low (below 69 points). The division of these three levels is mainly based on the students' comprehensive evaluation results, and the main observation points are the students' vocabulary level, grammar level and discourse construction level. Next, take the above discourse cognitive construction mode for training, explain different discourse construction modes to students every week, let students imitate the corresponding discourse structure mode, and intervene and detect the critical cognitive thinking habit in combination with the students' specific experimental results. The specific data behavior changes are as follows:

3.1 Paired sample t-test before and after the experiment

There is a significant difference between the pretest and the post-test. Paired sample t-test shows that the difference between pretest and post-test is. 000, less than the significant level of. 05, reaching the significant level. It is shown in Table 1.

Table 1. Paired sample t-test of subjects' English writing scores before and after the test

	M	N	SD	t	p
pretest	64.170	103	14.3564	-10.125	.000
Post-test	75.4466	103	10.84176		

3.2 Multiple linear regression analysis of vocabulary, grammar and logic in students' post-test scores

Multiple regression linear analysis was carried out with students' post-test scores of English writing as dependent variables and vocabulary size, logical cognition and grammar level as independent variables. The results show that vocabulary size, logical cognition and grammatical level are the main factors affecting students' English writing post-test scores, among which logical cognition is the most influential, followed by grammatical level, and finally vocabulary size. It is shown in Table 2.

Table 2. Multiple linear regression analysis of influencing factors of students' English writing post-test

Independent variables	β	t	p
Vocabulary size	4.369	2.438	.017
Logic recognition	5.095	3.847	.000
Grammar Level	5.14	2.988	.004

3.3 Comparison of logical cognition use frequency of students with different comprehensive levels in post-tests

3.3.1 Discourse construction ability of high-level students (13 persons)

Students at this level have achieved better learning and application results through the training of discourse cognitive construction model, and their language expression ability has been improved. The use categories of discourse cognitive construction model are relatively balanced. The discourse framework awareness has been significantly improved; the students' cognitive awareness of causality and importance of discourse construction accounts for the largest proportion. The comparison of the specific logical cognitive frequency shows that the use frequency of the four discourse logical cognitive construction methods of high-level students from high to low is reflected in importance (30%) and causality (30%), comparison (23.3%), and finally metaphor (16.7%).

3.3.2 Discourse construction ability of middle-level students (64 persons)

After the training of discourse cognitive construction model, students at this level have the strongest causal cognitive awareness of discourse construction, and the use frequency of discourse construction model of contrast and importance has also increased. The

comparison of specific logical cognitive frequency shows that the use frequency of four discourse logical cognitive construction methods of middle-level students from high to low is reflected in causality (51.1%) and comparison (29.8%), importance (17.0%) followed by metaphor (2.1%). At this level, students' discourse cognitive model has made some progress, and students' awareness of discourse framework has been significantly improved, but students' language expression ability limits the improvement of their discourse construction ability.

3.3.3 Low level students' discourse construction ability (26 persons)

After the training of discourse cognitive construction model, the students at this level have the strongest causal cognitive awareness of discourse construction. The comparison of the specific logical cognitive frequency shows that the use frequency of the four discourse logical cognitive construction methods of low-level students from high to low is reflected in causality (85.0%), comparison (10.0%), importance (5.0%), and finally metaphor, with the use frequency of 0. Students at this level have made some progress in their discourse cognitive model, but due to their weak vocabulary and grammar ability, their progress effect has not changed much. Students' discourse cognitive construction model is relatively single, and their discourse frame consciousness is not obvious enough. Their language expression ability has a great restriction on the level of discourse construction.

4. Conclusion

To sum up, students' writing performance is directly affected by the author's discourse cognitive construction ability, followed by their grammar level and vocabulary. Adopting the cognitive discourse construction model based on the cultivation of critical thinking habits can improve students' discourse conception ability, analogical reasoning ability, logical natural transition ability and primary and secondary discourse layout ability of discourse logic, so as to effectively improve students' cognitive ability of discourse construction, which is conducive to the effective improvement of students' discourse construction quality. Therefore, in students' discourse writing, we should first guide students to establish a correct internal discourse cognitive structure, so that students can have a clear logic and expression level. Secondly, we should help students improve their comprehensive ability of grammar and vocabulary, so as to promote the improvement of students' discourse construction ability. At the same time, teachers should start with students' specific discourse writing, analyze the types and characteristics of students' solidified discourse cognitive construction framework in English writing, and trace the root causes of their thinking and cognitive habits, so as to consciously cultivate students' critical thinking habits in English discourse teaching. Strengthening critical thinking habits is a thinking method that can be consciously mastered through repeated training later on, so as to strengthen students' confidence in improving the quality of English discourse writing.

In short, in the Internet plus education, as a new form of education, teachers use big data teaching platform, such as Chaoxing intelligence classroom, Chinese good university MOOC, Rain classroom, composition correction network and other mobile classroom teaching, flip classroom teaching mode, online and offline mixed teaching mode, etc. From the personalized micro perspective of English learners' discourse cognitive construction habits, we can monitor the path of the formation and development of English learners' critical thinking, release the task of discourse cognitive model training for the cultivation of critical thinking ability, and set the submission time limit, which can better supervise students to complete the task. Students are also gradually adapting to this big data mobile classroom teaching mode, gradually forming good habits and gradually forming new and effective critical thinking habits, so as to promote the innovative application of educational technology in large-scale personalized teaching in the new era and realize the cultivation of personalized innovative talents.

References

[1] Fati W, Baoyuan Y , Shihua H. Research framework of learning habit dynamics based on educational big data. China Audio Visual Education 2019 (1): 70-76.

[2] Qiang J,Wei Z, Song L, *et al*. Research on accurate and personalized learning path mining in the context of big data——Group behavior analysis based on apriorall. Research on Audio Visual Education 2018; 39 (2): 45-52.

[3] Surong D, Xingwei M. Textual cohesion model of metaphor. Journal of Foreign Languages 2017; (3): 33-37.

Fund Project: Education and Teaching Reform Fund Project of 2020 Haikou University of Economics "On the Cognitive Path of Cultivating Critical Thinking of Application-oriented English Majors under the Background of Educational Big Data" (Project Number: Hjyj2020040).