

# Study on Students' Perception of English Discipline in Universities of Science and Engineering in China

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**Abstract**—In recent decades, English discipline in Chinese universities and colleges has achieved a remarkable development. This paper investigated how students in China's universities of science and engineering (USE) oriented the English discipline. The study intended to compare and analyze the similarities and differences between students of different majors in USE in the aspects of disciplinary orientation, research content of discipline, cultivating mode and disciplinary construction. According to the results, educators and students of English majors should learn about the academic connotation of English discipline, and attach the same importance to both skills and academics, both teaching and research for the progress of English discipline in USE. On the one hand, the English discipline could rely on the prominent disciplines of its university; on the other hand, it should orient its direction without losing its value and cultivate interdisciplinary talents with international vision.

**Keywords**—English disciplinary orientation; English disciplinary development; English education; talents cultivation

## I. INTRODUCTION

The development of English discipline in China's colleges and universities has made remarkable progress during the last decade, while some problems still exist in today's English discipline in China. Some works (Wang, 2012; Wu, 2015) found the study of academic English for science and engineering on language expression, stylistic paradigm, academic rules, thinking modes and communicative function is almost blank in our country, so English discipline in universities of science and engineering (USE) should undertake the responsibility of cultivating researchers in this field [1][2].

English discipline in Chinese universities and colleges has been remarkable progressed during the last ten years. The value of English discipline in universities was to promote the humanistic culture atmosphere of the university and the humanistic accomplishment of the students (Wu, 2015)[2]. However, those newly-born units of English education were bound to encounter many new problems, new difficulties and new challenges. Therefore, many scholars began to think about the orientation of English discipline in the practice of English talents cultivation. A number of studies (Lv, 2001; Nan, 2005; Cai, 2009) documented the current cultivation pattern and some existent problems in the

universities in China, while few scholars explored the disciplinary affiliation of English language discipline [3][4][5]. Even rarer were the researches on students' perception of disciplinary orientation of English discipline in USE in China, which was still a blank. This paper, based on previous studies and the current surveys of several representative USE in China, recognizes the advantages of English discipline in USE, and further proposes some advice to promote the development of English discipline.

## II. LITERATURE REVIEW

### A. Definition of English Discipline

English discipline and English major are two terms interrelated with each other. According to Zhang's research (2003), the definition of English major could be explained in this way: English major was one of the humanities majors, which was associated and complemented with other related humanities majors, for instance, history, literature, and philosophy, and it required that students should get professional training in English language skills and conduct special researches on English language culture [6]. Armin Krishnan mentioned in his book (2009) that from a more traditional philosophical perspective, the academic disciplines were simply particular branches of knowledge English discipline was such an academic discipline that formed the unity of knowledge that had been created by the scientific endeavor [7]. In previous studies, however, no universal definition of English discipline was made among Chinese scholars. The general view (Wang, 2001; Zhang, 2003; Lan, 2009) on English discipline was that it included the study of literature written in English language, English sociolinguistics and linguistics English [6][8][9].

### B. Studies on Disciplinary Orientation of English Discipline

Several studies have shown disciplinary orientation and attribution of English as a discipline. Wang (2001) mentioned that "discipline" in English meant "a branch of learning", and English discipline was a branch of the humanities [8]. He concluded that in the competition between each department in the universities, the neglect of English discipline development would lead to its quasi-discipline position, which was neither benefit to the students, nor to the teachers. Hu and Sun (2006) advocated that

English majors should establish their own discipline structure and lay foundations of abundant knowledge of English literature and deep humanistic accomplishment for students [10]. Although English discipline had the disadvantage that it lacked both a unifying theoretical method and a definable stable object of research, it still could be considered as an academic discipline (Terry, 1983) [11].

There are two viewpoints on the orientation of foreign languages: humanities orientation and skill orientation (Lan, 2009) [9]. Several scholars have defined English language learning as a scope of discipline (Dai & Zhang, 2007; Xu, 2015). Academic Degree Committee of the State Council 6th Subject Review Group (2013) proposed that foreign language literature was the product of the exchange of civilization and culture between China and foreign countries, and it belonged to the humanities discipline, covering studies of foreign linguistics and foreign literature [12]. Meanwhile, some researchers stated in their studies that English discipline in China was a secondary discipline under foreign language and literature (Dai & Zhang, 2007) [13]. Thus, English discipline had a valid and legal status as a discipline. Besides, Xu (2015) complemented that scholars of English discipline undertook two responsibilities: first, they should teach students master a better accomplishment of English language and literature, and help them apply language skills in practical work; second, they should do further studies and researches on English language and literature [14].

#### *C. Studies on Cultivation Pattern of Students in English Discipline*

Having firmly established the core and strategic position of English discipline, recent studies turned their attention to the cultivation pattern of students in English discipline. The most common discussion in this area was the two or more specialized expertise training mode of students, which was also called inter-disciplinary talents training mode. Inter-disciplinary talents training mode should maintain the intersection, integration and penetration of English and other disciplines, rather than the simple combination of curricula. Hu (2010) argued that the cultivating mode of English education had been established in order to satisfy the social demand for talents with two or more specialized expertise in English and other disciplines and the need for promoting foreign language and literature research [15]. However, training students in English discipline with two or more specialized expertise had been criticized in the past few years. Lan (2009) advocated that feasibility of the composite cultivation model, put forward by English Teaching Program (2000), and its supporting course system were still in question, which needed further verification [9].

#### *D. Development of English Discipline in USE*

Tony (1994) mentioned in his paper, "Bigger departments with more staff and more expensive equipment tend to have greater influence within universities than smaller and less equipped departments. In the UK, this means that vice chancellors are usually recruited from the science and engineering disciplines on the grounds of greater managerial experience." [16] Social needs included national

and individual needs. In order to meet those social needs, English departments in universities should develop themselves. One of their paramount tasks was training professional teachers, as well as managing staff of English departments. Shu (2017) advocated that for many universities, one thing they could do to promote their curricula of English discipline was to merge English language department with the department of college English, so that the courses they offered to the target students could be complementary and faculty members could have more opportunities for professional development [17]. The new English language community could form different learning units with capable leaders and come up with top-level course designs to integrate English language courses into the overall university talent development blueprint, thus contributing to the internationalization of the university and itself.

In addition, it is important to build up an accurate cultivation pattern in USE. Universities could help students improve their professional competence through stipulating the orientation, training standards as well as objectives of English discipline, constructing correct curricular system and teaching conditions, monitoring teaching process and quality of classes, and developing outstanding teams of teaching staff (Zhong & Jiang, 2015) [18]. Curricular system should be the most important procedure in the training of talents, which runs through students' four years of undergraduate studies (Si & Chen, 2015) [19]. In order to develop English discipline in USE, talents training mode must be transformed to utilize universities' own characteristics and advantages of specialties and location, thus taking on the road of innovation while not weakening the advantages of English majors (Cai, 2015) [20].

Nonetheless, the professional knowledge and academic organization ability of leaders in English discipline should be key factors in the development of English discipline. According to such factors as the orientation of the university, talent training mode, professional characteristics, leaders of English discipline could improve the top-level design of English discipline and endeavour to obtain abundant resources, after which the discipline development plan could be implemented and then evaluated (Shu, 2017) [17]. Thus, many universities would hire academic leaders at home and abroad as reserve backbone teachers for the establishment of excellent academic teams.

#### *E. Summary*

This paper draws the enlightenment from preview researches: although the basic function of English, as a language, is communication, goals of educators and learners in English disciplines are not only mastering language skills, but also having solid professional knowledge, grand humanistic concern and strong sense of social responsibility, as well as developing the habit of thinking, differentiating and analyzing. However, there was no quantitative analysis about orientation problem of English as a discipline, and no empirical data in students' perception of English discipline in USE.

**III. METHODOLOGY**

**A. Research Questions**

This paper investigates students' perception of English discipline in Chinese USE. It is also expected to put forward some suggestions for further construction of English discipline.

The study includes the following research questions:

1) *What are the attitudinal differences between English majors and non-English majors towards English as a discipline?*

a) *What are their understandings of the nature of English discipline respectively?*

b) *What are their different opinions about the future development of English as a discipline?*

2) *What are their views about the applied development of English as a discipline between English majors and non-English majors?*

**B. Subjects**

221 students were randomly selected from several USE of 211 or 985 Projects, which were strategic projects formulated by Chinese government for implementation of strategy invigorating the country through science, technology and education. Finally, 200 valid answers were screened out for survey, including 100 from English major students and 100 from non-English major students of varied disciplines. These subjects were mainly from Nanjing University of Science and Technology, and others were from Southeast University, Nanjing Agricultural University, Nanjing University of Aeronautics and Astronautics, Hohai University and so on. This paper divided subjects into English majors and non-English majors groups since there were obvious differences between two groups in their contact with English discipline.

**C. Instruments and Data Analysis**

The questionnaire included 20 statements at four levels — disciplinary orientation, research content of discipline, cultivating mode and disciplinary construction, together with two open questions, of which subjects were required to answer at least one. These statements used a traditional Likert-scale to indicate students' opinions in terms of a five-point scale from degree 1 to degree 5, and investigated the attitudes (completely disagree, disagree, unsure, agree, and completely agree) of respondents. Items 1, 2, 3, 4, 5 and 6 in the questionnaire were designed for disciplinary construction. Items 7, 8, 9, 10 and 11 were designed for research content of discipline. Cultivating mode was explored by items 12, 13, 14 and 15. Disciplinary construction was investigated by items 16, 17, 18, 19 and 20.

SPSS17.0 was employed to analyze the data in the sequence of the test of reliability, obtaining of descriptive data and statistical analysis. The independent-samples t-test was used to compare mean values from two groups for quantitative data analysis.

**IV. RESULTS AND DISCUSSION**

**A. Results and Discussion for Disciplinary Orientation**

Turner (2001) claimed that academic discipline could be seen as a form of specific and rigorous scientific training that would turn out practitioners who had been “disciplined by their discipline” for their own good. English language is an academic discipline in universities, which manifests itself in culture and civilization [21]. As Chinese students have learned English subjects in primary schools or kindergarten, they always considered English language as a simple course in listening, speaking and writing. It was a common thought among English majors that English discipline was with no high remarks by non-English majors. However, this research found some different results ("Table I").

**TABLE I. STATEMENTS OF DISCIPLINARY ORIENTATION**

Items	Statements
1	English discipline is a discipline for learning English as a language.
2	English is practical, while English discipline is impractical.
3	English discipline should pay more attention to the dissemination of history, literature, language, philosophy and other humanistic knowledge.
4	The cultivation of five English skills of listening, speaking, reading, writing and translating is not the research content of English discipline.
5	English discipline does not require much research funding, nor does it deserve that much research funding.
6	The study of English discipline mainly covers the research on English language, which is irrelevant to economics, law, computer science, medicine and other disciplines.

**TABLE II. RESULTS OF INDEPENDENT-SAMPLES T-TEST ON DISCIPLINARY ORIENTATION**

Group	T-Test Values						
	N <sup>a</sup>	Mean (SD)	t	df	p	MD	95% CI
English majors	100	2.62 (0.48)	-	185.	.145	-	-
Non-English majors	100	2.72 (0.52)	4.89	78		0.42	~ 0.25

<sup>a</sup> N is the number of students.

"Table II" presented English majors got a mean value of 2.62 (sd=0.48) and non-English majors got a mean value of 2.72 (sd=0.52). Independent-samples t-test revealed no statistically significant difference between the two groups (t=-1.46, df=198, p=.145, 95%CI=-0.24~-0.04). Therefore, there are few attitudinal differences between English majors and non-English majors on disciplinary orientation. There are two summaries to make in this section: First, the major identity of students in USE had an insignificant influence on attitudes towards the part of disciplinary orientation of English. Second, the attitudes of both English majors and non-English majors in USE towards basic disciplinary orientation of English were similar.

It exceeded our expectation that English majors had similar attitudes with non-English majors towards item 1 that English discipline is a discipline for learning English as a language. English majors in USE have always emphasized five skills of listening, speaking, reading, writing and translating. Meanwhile, too much emphasis on “five skills” also has a certain negative effect, such as considering English discipline as a kind of simple language skills training institution. Courses in English linguistics account for the least proportion in the curriculum program of English majors, but students’ learning process of English courses is like overcoming a formidable obstacle. However, the rapid progress of science and engineering is continuously changing people’s modes of lives and thoughts and innovating a new cultural environment and cultural products, which inevitably updates and changes English discipline. Based on the results of this survey, non-English majors thought highly about English discipline.

**B. Results and Discussion for Research Content of Discipline**

Further statements of research content of discipline are as shown in "Table III":

TABLE III. STATEMENTS OF RESEARCH CONTENT OF DISCIPLINE

Items	Statements
7	English is a discipline featured with strong interdisciplinary nature because it can be applied to other disciplines for interdisciplinary research, such as combining with computer science for studying computer-assisted translation.
8	English discipline is one of the humanities, so its research does not need the support of knowledge in science and engineering.
9	English discipline in USE mainly focuses on applied research, so its development is limited to some certain extent.
10	The scientific research is featured with “problems solving”, that is, “to explore and resolve those ambiguous and unsettled problems, or realistic problems that bother and even threaten human survival”. English discipline does not have such problems.
11	Social investigations are enough to support the scientific research of English discipline, so there is no need of experimentation.

TABLE IV. RESULTS OF INDEPENDENT-SAMPLES T-TEST ON RESEARCH CONTENT OF DISCIPLINE

Group	T-Test Values						
	N <sup>a</sup>	Mean (SD)	t	df	p	MD	95% CI
English majors	100	2.65 (0.52)	-	185.78	.000	-	-
Non-English majors	100	3.06 (0.67)	4.89			0.42	0.58 ~ 0.25

"Table IV" conveyed that English majors got a mean value of 2.65 (sd=0.52) and non-English majors got a mean

value of 3.06 (sd=0.67). Independent-samples t-test revealed no statistically significant difference between the two groups (t=-4.89, df=185.78, p=.000, 95% CI=-0.58~-0.25). The results indicated that there were some statistically significant differences in this section. Therefore, a few attitudinal differences between English majors and non-English majors on research content of discipline.

Here were three summaries to make in this section: First, most college students in USE supported that English was a discipline featured with strong interdisciplinary nature, but they thought the research of English discipline did not need the support of science and engineering knowledge. Second, most English majors considered the development of English discipline was limited in USE, but only some non-English majors’ opinions were the same with English majors. Third, a fairly large amount of English majors deemed the research of English discipline included ambiguous and unsettled problems in people’s lives, and it also needed the research methods of social surveys, experimentation and so on. For non-English majors, even though they agreed with English majors to certain extent, their attitudes were relatively ambiguous.

Although both English majors and non-English majors acknowledged strong interdisciplinary nature of English discipline, students and teachers of non-English majors in USE considered the researches of English discipline focus on the literature, inter-cultures, interpreting and some aspects of language learning, rather than the combination of computer science, pathology or other discipline. In fact, with the involvement of computers and other scientific research tools, the intersection of English and other disciplines is becoming more and more common. For instance, researchers combine linguistics and physics to study sound, intonation, stress, wavelength, etc, which is called phonetics. In linguistic researches, new materials, master new methods, and utilize new technologies are necessary, because new research materials promote the emergence of new theories and methods or vice versa. However, a considerable number of English majors thought research of English discipline did not need the support of knowledge in science and engineering because that the study of English majors in the period of graduate focused on culture and applicable skills. Thus, it is important to add courses and practical training about scientific research of English discipline.

**C. Results and Discussion for Cultivating Mode**

Statements of the cultivating mode are as shown in "Table V":

TABLE V. STATEMENTS OF CULTIVATING MODE

Items	Statements
12	The English discipline should first provide students with a solid foundation concerning English language skills and profound humanistic qualities, and then combine with applied disciplines through selecting non-English major courses or participating in minor and double degree programs.
13	English teaching should be at the core of the development of English discipline, although excessive input in teaching will affect the progress of its scientific research.
14	Those who learn English language very well are talents of English discipline.
15	Talents of English discipline can cope with all kinds of English tests.

Interdisciplinary mode of English majors has been very popular in recent years. Educators seemed to be most concerned about the tendency of mixing subjects in the form of interdisciplinary subjects and courses, as it simply might demand too much from students and teachers (Howard Gardner, 1999) [22].

TABLE VI. RESULTS OF INDEPENDENT-SAMPLES T-TEST ON CULTIVATING MODE

Group	T-Test Values						
	N <sup>a</sup>	Mean (SD)	t	df	p	MD	95% CI
English majors	100	2.81 (0.5)	-1.11	198	.267	-0.09	-0.24~0.07
Non-English majors	100	2.9 (0.57)					

"Table VI" presented that English majors got a mean value of 2.81 (sd=0.5) and non-English majors got a mean value of 2.9 (sd=0.57). Independent-samples t-test revealed no statistically significant difference between the two groups (t=-1.11, df=198, p=.267, 95%CI=-0.24~-0.07). Therefore, there are few attitudinal differences on between English majors and non-English majors cultivating mode.

On the basis of the data of the survey, this paper had four summaries to make about the attitudes of English majors and non-English majors towards cultivating mode of English discipline: First, most college students in USE knew less about interdisciplinary programs of English discipline. Second, both English majors and non-English majors had the same opinion that English teaching should not be at the core of the development of English discipline. Third, not all non-English majors in USE could orient the ability of talents of English majors. Finally, most English majors in USE thought they could cope with any kind of tests.

In terms of talents of English discipline, the results were beyond expectation. Both English majors and non-English majors orient the talents of English discipline in an incomplete way. Teachers in English majors have many teaching tasks such as improving students' research abilities, and students in English majors also have many learning tasks, such as mastering basic linguistic knowledge. While students

of non-English majors considered English majors do well in literature translation and English literature appreciation. Nevertheless, not only in USE, but also in other types of universities, non-English majors have the stereotypes towards English majors that English majors mastered a high level of English language and translating skills. What was unexpected was the choice of item 15 of English majors. The teaching target of English discipline is not to cope with tests, but most English majors thought talents of English discipline can cope with all kinds of English tests. This could be attributed to the curriculum and the emphasis to applicable skills in the USE. Actually, after four-year undergraduate studies, English majors should not only master language skills, but also have solid professional knowledge, grand humanistic concern and strong sense of social responsibility, as well as develop the habit of thinking, differentiating and analyzing.

*D. Results and Discussion for Disciplinary Construction*

Statements of Disciplinary Orientation are as shown in "Table VII":

TABLE VII. STATEMENTS OF DISCIPLINARY ORIENTATION

Items	Statements
16	English discipline in USE is a marginal one that is not taken very seriously.
17	The development of English discipline should be the work of English majors and has nothing to do with other majors.
18	The construction of English discipline does not require a high level of scientific research.
19	According to the 2012 CIA World Factbook, English skills have a positive correlation with per capita export value. Therefore, China's foreign economy and trade as well as cultural exchanges cannot proceed successfully without the support of English discipline.
20	As the saying goes language can determine how far thoughts can go; therefore, the development of English discipline in USE can promote the innovation and progress of universities.

TABLE VIII. RESULTS OF INDEPENDENT-SAMPLES T-TEST ON DISCIPLINARY ORIENTATION

Group	T-Test Values						
	N <sup>a</sup>	Mean (SD)	t	df	p	MD	95% CI
English majors	100	3.20 (0.38)	3.69	198	.000	0.21	0.1~0.33
Non-English majors	100	2.98 (0.43)					

"Table VIII" demonstrated that English majors got a mean value of 3.20 (sd=0.38) and non-English majors got a mean value of 2.98 (sd=0.43). Independent-samples t-test revealed no statistically significant difference between the two groups (t=3.69, df=198, p=.000, 95%CI=0.1~0.33). The results indicated that there were a great many statistically significant differences. Therefore, English majors and non-English majors expressed different attitudes towards

disciplinary construction of English discipline in some aspects.

On the basis of the results of questionnaire, remarkable difference were found in the position of English discipline in universities and the function of English discipline on the innovation and progress of universities. However, it was surprising that non-English in USE would recognize English discipline could promote the innovation and creativity of universities. It could be inferred that the profound humanistic thoughts of English discipline instilled fresh and unique feelings into USE.

Four summaries of disciplinary construction were found from previous results: First, English majors were not confident in the value of their discipline in USE. Second, non-English majors believed that their departments could do something to support the construction of English discipline. Third, although non-English majors in USE were unsure about the status of English discipline, they still admitted that the construction of English discipline played an important role in the innovation and progress of university. Finally, most college students in USE recognized a high level of scientific research was one of requirements to construct and develop English discipline.

Generally speaking, the orientation of science and engineering university is a research-oriented or teaching-research-oriented university. Therefore, the combination of academic cultivating mode and instrumental cultivating mode on English discipline conform with the overall strategic goal of the university and the social needs of advanced talents in English majors. Even though non-English majors notice the importance of research activities of English discipline to some extent, they still neglect the academic level is one of the basic requirements of English as a discipline.

#### *E. Results and Discussion for Open Questions*

Open questions in this survey were used to encourage subjects to give their genuine and unique answers. In this way, this paper can get their direct orientation and suggestion about the development of English discipline.

The first question is what the advantages of the development of English discipline in USE are.

On the basis of results, this paper made four summaries. First, affected by the rigorous and realistic style of science and engineering disciplines, the academic researches of English discipline were stricter. Second, English discipline could be as same as science and engineering disciplines, which pay attention to the practical and applied significance of the results. Third, it was very helpful to enhance critical and logical thinking of English majors. Finally, the teaching staff of English discipline could acquire appreciable amount of knowledge about science, and they had sufficient equipment and technology for experiments.

The second question is how English discipline could combine itself with the dominant discipline of USE for further development.

Four summaries were found from the answers of subjects. First, English language skills of students in USE were worse than those of comprehensive universities in general. However, English discipline was necessity in universities because teachers could apply their studies to improve learning skills of students of science and engineering disciplines. Second, plenty of advanced documents about science and engineering disciplines were in foreign languages, especially in English language, so English discipline could be combined with dominant disciplines to cultivate interdisciplinary talents. Third, USE could combine English discipline with dominant disciplines of science and engineering, which could help students learn advanced technology and apply it to the progress of EST (English for science and engineering). Finally, English literature had its own study field, therefore the cooperation of English discipline and dominant discipline could help improve researchers' cultural background, inject inspiration into their minds, and innovate the level of national science and engineering, which eventually benefits cultural output of our country.

Most subjects could give objective answers about open questions, but some thought there were no advantages of the development of English discipline in USE. Generally speaking, the subjects offer very useful information for this paper. The common standpoint was that USE should construct English discipline with their own characteristics and advantages. Thus, they suggested that universities establish a compound major with "English majors plus universities' prominent majors". For instance, if a student graduate with combined majors of English and mechanic, one can get a career either as a mechanical interpreter or as a teacher of relevant ESP (English for Special Purposes) courses. Therefore, graduates with strong English proficiency and professional background of science are truly international talents with global vision and international philosophies.

## V. CONCLUSION

### *A. Findings*

In total, two parts ( $p > .01$ ), including disciplinary orientation and cultivating mode, in questionnaires had no statistically significant difference between English majors and non-English majors, while two parts ( $p < .01$ ), including research content of discipline and disciplinary construction contained remarkable connection with the major identities of two groups. Hence, the results of the questionnaire demonstrated that there was moderate, not excessive, difference between English major and non-English major in the perception of students and teachers of English discipline in Chinese USE.

In terms of content of discipline, there was some difference between two groups. Most college students in USE thought the research of English discipline does not need the support of science and engineering knowledge; some non-English majors did not know researches of English discipline might need the support of experimentation. With respect to disciplinary construction, there were some new

findings. English majors were not confident in the value of their discipline in USE; non-English majors believed that their departments could do something to provide the construction of English majors in English department with certain support; non-English majors admitted that the construction of English discipline played an important role in the development of the university itself; most college students in USE recognized that a high level of scientific research was related to construction and development of English discipline. As for disciplinary orientation and cultivating mode, no differences existed in two groups.

### *B. Implication*

Some novel and surprising results were found in this survey. Due to the arrangement of curricula and the emphasis to applicable skills in the USE, English majors were confident in their ability to pass any kinds of tests. Besides, even though science and engineering disciplines were main force in the scientific researches of USE, non-English majors still thought English discipline could promote the innovation and creativity of schools. They supported the idea that language played a significant role in thinking. However, English majors were not confident in the value of English discipline in universities. While a great many non-English majors did not consider English discipline as a marginal and unvalued one.

According to previous surveys, we could obtain many significant suggestions. First, affected by the strict and realistic style of science and engineering disciplines, the academic researches of English discipline were more rigorous, more practical and more applicable, thus it was very beneficial to practice critical and logical thinking of English majors. Second, in order to improve English majors' disciplinary confidence in USE, English discipline should focus on cultivating students' academic interest rather than examination-oriented abilities. Third, English discipline could be combined with dominant disciplines to cultivate interdisciplinary talents. Forth, the staff of English discipline could acquire some appreciable knowledge about science and apply it to the progress of EST (English for science and engineering). Finally, researchers of English discipline could learn and use advanced equipment and technology of experiments in science and engineering disciplines to improve its creativity of academic researches.

### *C. Limitation and Expectation*

Nonetheless, this work still had limitations embedded within it. Having only 200 subjects to conclude whole situation of China limits the study's statistical power, and may have some marginally significant findings. Also, there was no previous research on students' perception of English discipline in USE. Therefore, very few related documents could be directly referenced.

This study only explores representative USE in China, future studies are expect to enlarge the amount of subjects and expand the scope of USE. It would be interesting to conduct comparative studies about cognition of English discipline in USE and comprehensive universities.

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