Study on Content Validity and Thinking Levels of Reading Comprehension Tests in 2016-2020 Nmet (Volume I)

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Abstract: According to Bachman and Palmer's the framework of task characteristics, this paper analyzes the content validity of the English reading comprehension of NMET Volume I from 2016 to 2020 in terms of Characteristics of input and expected response. Based on the classification of thinking level, this article makes a diachronic analysis of the proportion of high-level and low-level thinking in the NMET. The results show that the content validity of the study is fairly high and meets the requirements of the New Curriculum Standard and the Examination Outline. However, there are still some problems, such as text ordering and fewer high-level thinking questions. Based on this, the author combines the Chinese College Entrance Examination Evaluation System with suggestions from three aspects, namely, the proposition designer, senior high school English teachers and students, in order to improve the reading level and thinking ability of students, so that gradually form the core competence of the English subject, and implement the fundamental task of "Cultivating People with Morality".

1. Introduction

The content validity refers to the National Matriculation Entrance Test (hereinafter referred to as "NMET") as a high-risk examination, which should be tested whether the test questions meet the content of the test objectives, and whether the coverage meets the requirements of the objectives. The development of the thinking quality helps students change from surface understanding to deep thinking, and enhance students' ability to deal with practical problems. According to the requirements of *"English Curriculum Criteria for Regular High School(2017 Edition 2020 Revision)"* (hereinafter referred to as "*New Curriculum Standards*") and "*General College Enrollment National Examination Outline (2019)*" (hereinafter referred to as "*Examination Outline*"), this paper takes reading comprehension test items in 2016-2020 NMET National Volume I as the research object, conducts analysis of content validity and thinking levels, in order to provide references for English reading comprehension propositions and teaching guide so as to improve the backwash of the NMET's effect.

2. Theoretical Basis

Characteristics of input means the testee's processing of the genre, subject matter, length, and difficulty of the article. The expected response means the testee's response and output when completing the test task. This research is based on the two directions of input and expected response in the Bachman and Palmer Test Task Feature Framework. At the same time, it is also based on the thinking stratification under the target classification theory of Bloom and Taner. The teaching objectives of students' thinking quality in the *Curriculum Standards* are based on the requirements of the six major reading skills of testees in the *Examination Outline*. According to *Examination Outline*, it is divided by low-level and high-level thinking, among which low-level thinking includes "Understanding specific information in the text", "Speculation the meaning of words and phrases based on context", and high-level thinking includes: "Understand the main idea and essentials", "Judgment and reasoning", "Understand the basic structure of the article", "Understand the author's intentions, opinions and attitudes". Finally, based on the thinking level framework of Ni Han and Luo Xiaojie and the analysis framework of Gu Xiangdong and Wang Qiuyan, the analysis framework of the reading comprehension test in 2016-2020 NMET National Volume I is formulated.

Table 1 the Analysis Framework of the Reading Comprehension Test in 2016-2020 Nmet National Volume I

	Items	Description	
Characteristics of Input	Genre	Narration, Expository, Argument, Practical writing	
	Topic Areas	Society and culture, Personal experience, Scientific knowledge, Travel, Biography, Advertising	
	Passage Length	Single passage length, Total passage length	
	Sentence	Amount of new words, Readability	
Characteristics of Expected Response	Testing Skills	Low-level Thinking	1."Understanding specific information in the text" 2."Speculation the meaning of words and phrases based on context"
		High-level Thinking	1."Understand the main idea and essentials" 2."Judgment and reasoning" 3."Understand the basic structure of the article" 4."Understand the author's intentions, opinions and attitudes"

3. Research Objects and Research Methods

3.1 Research Objects

The research objects are Reading Comprehension Section One in 2016-2020 NMET National Volume I, which consists of 5 sets respectively. Each set of test papers contains 4 reading passages, 15 reading test questions, and 30 scores. Therefore, this research has 20 passages and 75 test questions in 5 sets of test papers.

3.2 Research Methods

Based on the analytical framework put forward in this article, the following methods are proposed for statistical analysis of data. Firstly, in accordance with the requirements in *New Curriculum Standard* and *Examination Outline*, this article draws up the characteristics of the test questions, and identify the low-level and high-level thinking of the test questions. Secondly, this article uses Microsoft Office Word to count the length of a single article and total articles, and then obtains the readability of articles according to the Flesch index. Finally, this article summarizes the

whole vocabulary in the English test syllabus of junior high school and senior high school into baseword 1. After that, the vocabulary that is beyond baseword 1 is obtained by using Range, which is a corpus software.

4. Research Results and Discussion

4.1 Characteristics of Input

4.1.1 Genre

Table 2 Genre of Reading Comprehension Tests from 2016-2020

Year/Genre	A	B	C	D
2016	Exposition	Argument	Narration	Exposition
2017	Exposition	Narration	Exposition	Practical writing
2018	Practical writing	Exposition	Exposition	Argument
2019	Practical writing	Narration	Exposition	Exposition
2020	Practical writing	Exposition	Exposition	Exposition

Table 3 Proportion of Genre of Reading Comprehension Tests from 2016-2020

Year/Proportion	Exposition	Argument	Narration	Practical writing	Total
2016	2	1	1	0	4
2017	2	0	1	1	4
2018	1	1	1	1	4
2019	2	0	1	1	4
2020	3	0	0	1	4
Total/Proportion	10 / 50%	2 / 10%	4 / 20%	4 / 20%	20

As shown in Table 2 and Table 3, exposition has the largest proportion in the past five years, accounting for 50%, followed by practical writing and narration, both accounting for 20%, and argument accounts for the least, accounting for 10%. On the whole, the genre of reading comprehension test in NMET 2016-2020 meets the requirements of the *Examination Outline,* and all four genres are involved. However, from the perspective of a single test paper, there is no practical writing in 2016 and no narration in 2018. There are no arguments in 2019 and 2020, indicating that the coverage of a single test paper is incomplete. At the same time, it can be found from Table 3 that there have been at least two expositions over the years, indicating that the NMET has gradually focused on concisely and accurately expounding objective facts to help students sort out effective information. The emergence of practical writing in 2017-2020 shows that the positioning of NMET is no longer limited to examinations, but focuses on the practicality of knowledge and testing students' pragmatic competence.

4.1.2 Topic

Table 4 Topic of Reading Comprehension Tests from 2016-2020

Year/Topic	Society and culture	Personal experience	Scientific knowledge	Travel	Biography	Advertising
2016	2	1			1	
2017	1	1	1	1		
2018	1		1		1	1
2019	1		1		1	1
2020	1	1	2			
Total/Proportion	6 / 30%	3 / 15%	5 / 25%	1 / 5%	3 / 15%	2/ 10%

According to the *Examination Outline*, all reading passages from 2016 to 2020 involve six topics:

Society and culture, Personal experience, Scientific knowledge, Travel, Biography, Advertising. As shown in Table 4 above, the topics involved in the past five years have been characterized by diversity, timeliness, and education, which are also in line with the diversified requirements for discourse types in the *New Curriculum Standard*. Among them, "Society and culture" accounts for the most, accounting for 30%; "Scientific knowledge" comes in second, accounting for 25%.

The variety of topics involved in the text reflects the fairness of NMET, and can guide students to broaden their knowledge. In 2018, passage D advocates the use of new electronic equipment to help reduce energy consumption in line with the trend of energy conservation and environmental protection of the times. The test questions that conform to the trend of the times can help students shape the correct three outlooks and better adapt to the future social life. In 2020, passage B introduces the beauty and knowledge brought by rereading in repeated reading, so as to encourage students to develop the reading habit of rereading, and cultivate students' aesthetic level through aesthetic education, which is in line with the requirements for the comprehensive development of students in the new era. The topic of cultivating students highlights the fundamental task of English education, and plays the backwash effect of the NMET to achieve the goal of "promoting teaching by examination and promoting learning by examination".

4.1.3 Passage Length

Table 5 Passage Length Of Reading Comprehension Test from 2016-2020

Year/Length	A	B	C	D	Average	Total
2016	277	278	256	326	284	1137
2017	238	297	377	331	311	1243
2018	355	415	414	455	410	1639
2019	246	331	241	350	292	1168
2020	212	313	313	329	292	1167
Average	265.6	326.8	320.2	358.2	317.8	1270.8

On the whole, the *Examination Outline* stipulates that the total length of whole passages is not less than 900 words. As shown in Table 5 above, this requirement is met from 2016 to 2020, and the average length is about 1270.8 words. Among them, the total length in 2018 is the largest, with 1,639 words, and the total length in the remaining four years doesn't fluctuate much. From the perspective of a single article, the average length of a single article in the past five years is about 317.8, which is in line with what Liu Runqing and Han Baocheng put forward. They pointed that the length of reading passage should be 200-500 words, and an intermediate or higher reading comprehension test of about 300 words is appropriate. It is not difficult to find that the ordering of discourses does not follow the order from short to long, and easy to difficult. From the testee's point of view, whether the length of the first essay is too long or the ordering is disorder will produce a fear of difficulties and affect the students' mentality.

4.1.4 Difficulty

Table 6 Amount of New Words and Readability of Reading Comprehension Test from 2016-2020

	Amount of new words	Readability				
		A	B	C	D	Average
2016	8 / 0.7%	61.7	54	69.7	44.9	57.6
2017	11 / 0.9%	43.9	77.8	53.6	70.6	61.5
2018	16 / 0.98%	56.4	69	43.4	63.6	58.1
2019	17 / 1.46%	51	76.3	50.3	51.1	57.2
2020	19 / 1.63%	43.8	68.6	56.4	62.7	57.9

Average	14 / 1.13%		51.4	69.1	54.7	58.6	58.5

According to the *Examination Outline* and *New Curriculum Standards*, the ratio of the amount of new words in the reading materials to the total number of words should be less than 2%. This article uses Range software to screen and analyze the corpus. The syllabus of the senior high school entrance examination and NMET is used as the vocabulary base list. With the help of the website (*https://www.lextutor.ca/familizer/),* it outputs the word family table, and analyzes the new words appearing in the test questions after modifying the format. The results are shown in the above table. From 2016 to 2020, the rate of new words does not exceed 2%, and the rate of new words is increasing year by year. The rate of new words affects the psychological state of students during the exam. Therefore, the rate of new words in the past five years meets the requirements of the *examination outline* and increases students' confidence.

Table 7 the Flesch Reading Ease Readability Formula (Flesch,r.f. 1948)

Readability Index	0-30	30-50	50-60	60-70	70-80	80-90	90-100
Description of scales	Very difficult	Difficult	Fairly difficult	Standard	Fairly easy	Easy	Very easy

According to Table 6, it is not difficult to find that the average readability in the past five years is 58.5, which reaches at "fairly difficult" level on the whole, and the difficulty doesn't fluctuate drastically, which is consistent with the requirements of the difficulty in *Examination Outline* , The difficulty of the test is too low or too high will lead to low distinction, and unable to accurately detect the level of students' ability. It can be seen from Table 7 that the higher the readability is, the easier the reading passage is. In consequence, the readability and reading passage are positively correlated. Judging from a single test paper, the difficulty in general remains within the range of "harder" and "standard". Among them, Passage B in 2017 is the easiest to read with the index of 77.8. Passage A in 2017 and passage A in 2020 are the hardest, with the index of 43.8 and 43.9 respectively. The NMET is a selective examination, so the order of difficulty should follow from easy to difficult, and the degree of difficulty should not fluctuate too much as well. Only if it is controlled within the scope of the *Examination Outline*, the reading level of students can be effectively tested.

4.1.5 Characteristics of Expected Response

Table 8 Thinking Levels Of Reading Comprehension Test from 2016-2020

	Low-level Thinking			High-level Thinking			
	A2	A3		A1	A4	A5	A6
2016	10	1		1	3	0	0
2017	7	2		1	4	0	1
2018	8	1		2	2	0	2
2019	7	1		2	5	0	0
2020	8	1		2	4	0	0
Total	40 / 53.3%	6 / 8%		8 / 10.7%	18 / 24%	0 / 0%	3 / 4%
Proportion	61.3%			38.7%			

According to Ni Han and Luo Xiaojie's thinking level framework, compared with Bloom's cognitive ability stratification theory, these six skills are divided into high-level thinking and low-level thinking. Low-level thinking includes "knowledge, understanding, application and High-level thinking includes "analysis, synthesis, and evaluation." At the same time, according to the six reading skills that students should master in the *Examination Outline*, in order to facilitate the statistical compilation of data, this article encodes these skills: A1 is "Understanding the main idea and essentials"; A2 is "Understanding the specific information in the text"; A3 is "Speculation the meaning of words and phrases based on context"; A4 is "Judgment and reasoning"; A5 is to

"Understand the basic structure of the article"; A6 is to "Understand the author's intentions, opinions, or attitudes". As shown in Table 8 above, low-level thinking includes A2 and A3, and high-level thinking includes A1, A4, A5, and A6.
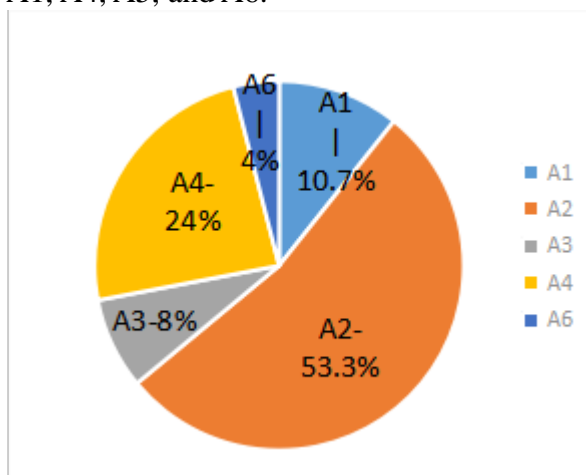

Fig.1 Distribution of Six Reading Skills from 2016-2020

On the whole, the low-level thinking test items in the past five years far surpassed the high-level thinking test items. Among them, A2 has the highest ratio, which is 53.3% and more than half of the total. The proportion of A5 is 0, so it can be inferred that not all skills have been involved in the past five years, and the examination of students' thinking and reading skills is not comprehensive. Generally speaking, the amount of low-level thinking test items in the past five years fluctuates in the range of 9 to 11, and the amount of high-level thinking test items fluctuates in the range of 4 to 7, which are relatively stable. The largest proportion of the high-level thinking is A4, which shows that with the continuous penetration of the teaching goals about thinking quality, our country has gradually paid attention to the critical and logical thinking ability of students.
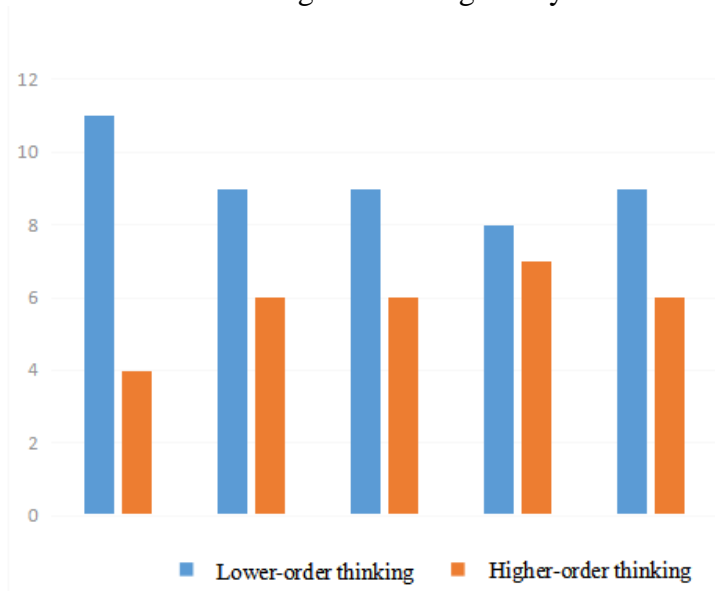

Fig.2 Distribution of Thinking Levels from 2016-2020

From single test paper, it can be seen from Figure 2 that the number of high-level and low-level thinking differs the most in 2016, and the proportion of low-level thinking test questions is too high. In the following years, the fluctuation of the gap is steady, and it is the smallest in 2019, which

tends to be equal. Test items in Passage A from 2018 to 2020 are all detailed questions, which locates the specific information in the passage and is easier for candidates to keep calm during the exam. For example, item 22 of Part A in 2020: *At which station can you find the lost property office?* Testees only need to refer to *The lost property office is open Monday to Friday 7:30am to 5:00pm and is located at Roma Street station in the Lost property section*. Obviously, it's easy for the majority of students. However, although the total number of high-level thinking test items in 2019 and 2020 has relatively increased, the proportion of A5 and A6 is 0, which does not fully meet the requirements of the *Examination Outline*, and to some extent is not conducive to the comprehensive assessment of student abilities.

5. Conclusions and Recommendations

This research analyzes the English reading comprehension tests of 2016-2020 NMET (Volume I) and finds that the test items closely focus on the requirements of the *Examination Outline* and *New Curriculum Standard*. First of all, the genre of the text is diverse, and all the four genres required in the outline are involved. Secondly, the topic has the characteristics of diversity, contemporaneity and education, which meets the requirements of the developing times for the comprehensive development of students. Thirdly, the length and readability of the article are moderate, in line with outline and students' testing mentality. Finally, the examination of students' reading skills and thinking ability levels is fairly broad.

However, there are some problems worthy of improvement in the test paper, for example: some articles do not follow the order of short to long, easy to difficult; the reading skills tested are not comprehensive, and the skill of "Understanding the basic structure of the article" is not involved; the thinking level remains low-level thinking. These problems also reflect the current situation of senior high school English reading teaching. Although teachers are committed to the cultivation of the core competence of the English subject in teaching, and guiding students to transform "knowledge" into "ability", there are still several problem. Firstly, guided in a narrow range of reading, students are exposed to fewer thinking situations, and their abilities of understanding and analyzing are not comprehensive enough. Secondly, teachers are still limited to reading textbooks, and rarely guide students to broaden reading channels and methods to enrich their knowledge background. Thirdly, the teacher's reflection on the text is not deep enough, which causes students to stay at the surface reading. It is difficult to analyze the text in an open and innovative way. Fourthly, the assigned exercises do not cultivate students' various reading skills in a targeted manner, and the mechanical brushing of the questions leads to the solidification of students' thinking.

Therefore, based on the *Examination Outline* and *New Curriculum Standards*, this article combines the main content of "*One Core, Four Layers and Four Wings*" in the "*China College Entrance Examination Evaluation System*", and puts forward some suggestions from three levels: proposition designer, senior high school English teachers and students.

5.1 Suggestions to Nmet Proposition Designer

5.1.1 The Genre Should Be Distributed Evenly, and the Topic Should Be Diversified

The purpose of NMET is to select all-round developing talents that meet the requirements of the society. Therefore, the genre should not be limited to expository and practical writing, and the layout should be more even. Argument focuses on testing students' critical and logical thinking ability and improving students' thinking quality. Therefore, the proportion of argument and narrative should also be increased. At the same time, in order to ensure the validity and fairness of the test, the topic should be wider and penetrate into all aspects of life. It is closely linked to the educational

goals of "Cultivating People with Morality"

5.1.2 The Difficulty Should Be Reasonable, and the Types Should Be Varied

In order to stabilize the testee's mentality and reading speed, the text should follow the order of easy to difficult, short to long. The fluctuation of readability cannot be too large so as to avoid very difficult or easy passages. However, the quality of the propositions also depends on the distinction of the test. It is necessary to ensure that those with strong ability get higher grades and those with weak ability get lower grades. The reading comprehension test items in NMET (Volume I) still use relatively easy multiple-choice questions. The range of students' answers is limited to the four options, and innovative thinking cannot be reflected in the answers. Therefore, proposition designer can consider adding some open or semi-open test questions, such as short answer or reading follow-up writing, to further test the students' high-level thinking, and to give full play to the function of selecting talents in NMET.

5.1.3 Reading Skills and Thinking Levels Should Be Comprehensive

This article finds that not all of the six reading skills have been involved in the past five years. Therefore, the proportion of each skill should be considered when setting the questions, and the reading level of students should be tested more comprehensively. It is not difficult to find that most items still focus on the searching and understanding of micro-detailed information. There are relatively few test items to analyze the passage from a macro perspective. The proposition designer should reasonably increase the proportion and score of the high-level thinking test points. It should not stop at the level of "memory" and "understanding". Students' critical, logical and creative thinking abilities should also be tested in a balanced manner.

5.2 Suggestions to Senior High School English Teachers

5.2.1 Broaden the Breadth of Reading

From "*China College Entrance Examination Evaluation System*", it can be learned that teachers should make full use of teaching materials to guide students to master basic linguistic knowledge and pragmatic skills, and consolidate the foundation while keeping in line with the times and international standards. Teachers should infiltrate basic linguistic knowledge in text teaching, broaden the scope of students' reading. From social life to scientific inquiry, from traditional Chinese culture to foreign culture, teacher should guide students to read passages of different themes and genres to form a sense of discourse. The broadening of reading breadth can not only stimulate students' interest in learning, but also maintain a stable mentality during exams and improve students' reading literacy.

5.2.2 Deepen the Depth of Reading

Reading that stays in superficial level cannot trigger students' in-depth thinking, and cannot achieve the purpose of "promoting teaching by examination". Teachers should guide students to understand the deep connotation of the text from a holistic perspective. When choosing text, the difficulty should be in line with the level of NMET, so as to avoid students' fear of difficulty. At the same time, when reading the text, using reading skills such as the combination of intensive and extensive reading can help students accurately locate the details, control the structure macroscopically, and explore the connotation in depth. Guided by core competence and discourse, teachers should create authentic context, develop students' thinking ability, and guide students

in-depth thinking in the form of problem chains. After class, teachers can increase the practice of high-level thinking in a targeted manner, and give real and effective feedback to students.

5.3 Suggestions to High School Students

Students should always keep their dominant position in mind and adhere to the concept of "promoting learning by examination". First of all, students are supposed to continue to consolidate and expend the vocabulary in the syllabus, and carry out reading activities under the guidance of teachers. Secondly, while completing reading activities, students should not only aim at finishing tasks, but should flexibly use a variety of learning strategies, cultivate learning habits independently, and broaden reading horizons. Students can test their current reading level according to the self-evaluation scale of reading comprehension ability in the "*Chinese Ability Rating Scale*", for the sake of formulating clearer learning goals and cultivating their independent thinking skills.

6. Conclusion

This article finds that the English reading comprehension tests of 2016-2020 NMET (Volume I) generally meet the requirements of the *Examination Outline* and *New Curriculum Standard*, and the content validity is relatively high. However, some test papers still have problems such as one-sidedness and high-level thinking. With the advancement of the college entrance examination reform, the testees should be selected in accordance with the requirements of "basic, comprehensive, applicable, and innovative" in the "*China College Entrance Examination Evaluation System*"; At the same time, teachers should effectively use the backwash effect of NMET, and pay attention to the cultivation of students' thinking ability; Students should make full use of the "*Chinese Ability Rating Scale*" to cultivate good reading habits, so as to achieve "promoting teaching by examination, promoting learning by examination, and examination learning by teaching", and truly improve students' reading level and reading literacy.

Acknowledgement

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