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A Study of Chinese Undergraduates' MI Distribution in EFL Class

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Abstract

This paper initiates an investigation of the college students' MI (multiple intelligences) distribution in English class. The participants are a group of Chinese sophomores from different majors: city planning, tourism, software engineering, financial administration and arts of English. With a view to make the investigation more specified in students' English learning activities, the paper doesn't use other existing MI scales, but specifies research items on Chinese college students' activities in their EFL (English as a Foreign Language) class. The result reveals students' overall and comparative MI distributions among different majors, which provides English teachers in China with fundamental information about college students' varieties, as well as referential information for English teachers in other EFL countries.

Keywords: MI distribution, EFL, ESL, Chinese undergraduates

1. Introduction

Although MI theory has been widely accepted and applied by educators, there are still some voids which have not been popularly addressed to: 1. The assessment of students' MI distribution in one subject. Since MI assessments usually aim at indentifying students' different preponderate intelligences by observing their different behaviors in different settings, informants are usually asked to indentify their learning habits in different subjects, hobbies in or out of schools, etc., when their MI distributions are assessed. However, this form of assessment may lead to less precise and practical insights than a survey focus on one subject. For instance, a student may write essays better in Chinese than in English, so his or her linguistic intelligence tend to be high in Chinese while low in English; a student who solves mathematic problems quickly and well may feel embarrassed in psychoanalysis in reading a literature. Therefore, an abstract categorizing of students' MI distribution may lead to an untrue hypothesis of students' preponderances in certain activities in one subject, which may confuse teachers from different subjects when MI theory is applied in their teaching; 2. Comparative analyses of students' general MI distribution among different groups. How to incorporate MI in teaching is an important issue whereas no uniform answers have been achieved. As Seidel says, "MI theory raises many questions for classroom practice. Should teachers try to nurture all of the intelligences equally or should they focus on identifying and developing children's strengths? Should schools offer a wider selection of courses or should they maintain a traditional curriculum and provide more varied ways of engaging students in the standard subject matter? It is important to remember that MI is not an end in itself." (Sternberg & Williams, 1998, p. 23) Obviously, every effective teaching has to adapt to the settings. Considering the differences between ESL and EFL environments, any superficial copying of MI-based teaching approach which originates from ESL countries don't always fit EFL classes. Chinese EFL classes are usually characterized by their students' big-sized number, similar educational background and same mother tongues. Although student-centered English teaching are encouraged, teacher-centered teaching is still prevailing due to the environmental limitations in China. Obviously, a comparative analyze of students' overall MI distributions among different groups provides more practical references to teachers than analysis of students' individual MI distributions.

From the author's personal teaching experience, Chinese undergraduate students from different majors are usually various in their performances when taking part in English activities. It goes without saying that English students are usually most active since they usually have more chances to contact the target language, while there are apparently differences among students from other majors. With the hypothesis that different majored students usually have overall MI distributions of their own, this paper had an MI survey among a group of Chinese undergraduates from different majors. As a MI scale based on one subject is scarcely found, this paper redesigned a scale, all the research items in which are related to subjects' real EFL activities in class.

2. Review of the Literature

2.1 MI Theory

Linguistic and Mathematic intelligences were traditional admitted intelligences which were therefore widely assessed,

and always being the criterions of whether a student is eligible or not. These criterions have been influencing teachers of different subjects for many years, so do English teachers. English teachers may regard a student who can't read, discuss, or write in English as an ineligible student. While of course, these skills are very crucial in English learning since English is mainly a communication tool, EFL teachers scarcely notice students' other preponderate intelligences, and these other intelligences may be used to arouse students' interest or to improve their ability in communication. Gardner divided people's intelligence into 8 genres: verbal/linguistic intelligence, logical/mathematical intelligence, visual/spatial intelligence, bodily/kinesthetic intelligence, musical/rhythmic intelligence, interpersonal intelligence, intrapersonal intelligence, naturalistic intelligence. (Stanford, 2003, p. 1) This division challenges teachers' traditional attitudes towards teaching. Traditionally, teachers lay stress on choosing teaching materials, or on designing teaching procedures. However, less emphasis is put on students' varieties. Naturally, a series of educational reforms followed the propounding of the theory. As it was described in *Creativity and Development*, "From its introduction in 1983, the impact of Howard Gardner's *Frames of Mind: The Theory of Multiple Intelligences* has seemed to increase with each passing year. By this point in its history, there are thousands of schools that claim to use multiple intelligences (MI) theory in planning their curricula, evaluation, and/or instructional approach, and hundreds of books and guides about how to implement the theory. In a limited Internet search in 2002, more than 100,000 sites were identified as MI-theory relevant. Clearly, MI theory has established a major beachhead in the fields of educational theory, policy, and practice." (Sawyer, Steiner, Moran, Sternberg, Feldman, Nakamura, et al., 2003, pp. 139-140)

Gardner identified eight criteria to determine whether or not a capacity qualifies as an intelligence: potential of isolation by brain damage, a distinctive developmental history with a definable set of expert, the existence of savants, prodigies, and other exceptional individuals, an identifiable set of core operations or information-processing mechanisms, support from experimental psychological tasks, support from psychometric findings, evolutionary history and evolutionary plausibility, susceptibility to encoding in a symbol system. (Sternberg & Williams, 1998, p. 19) In an other word, any forms of social activities can be grouped into a certain intelligence, as long as it's inherent and can be strengthened through more practice. Obviously, Gardner's criteria provides a potentialities for future research as well as the application. As Martinez says, "In a considerable break from past epistemologies used to understand intelligence, Gardner conjoined methods and findings from several disciplines to construct a theory that has broadened traditional accounts of what constitutes intelligence." (Martinez, 2000, p. 34) According to Gardener, the current categorization of MI may be expanded as long as more groups of activities are identified, that's why his original seven categorizations of multiple intelligences can be expanded to eight ones. As a result, every teacher may turn to realize that students' different activities in or out of class are to be regarded as a form of intelligence, and may turn to think how to incorporate it in his or her teaching. In fact, many scholars have their understanding of multiple intelligences from different aspects. Checkley gives his definitions as follows: Linguistic intelligence is the capacity to use language, your native language, and perhaps other languages, to express what's on your mind and to understand other people; people with a highly developed logical-mathematical intelligence understand the underlying principles of some kind of a causal system; spatial intelligence refers to the ability to represent the spatial world internally in your mind; spatial intelligence can be used in the arts or in the sciences; certain sciences like anatomy or topology emphasize spatial intelligence; bodily kinesthetic intelligence is the capacity to use your whole body or parts of your body--your hand, your fingers, your arms--to solve a problem, make something, or put on some kind of a production; musical intelligence is the capacity to think in music, to be able to hear patterns, recognize them, remember them, and perhaps manipulate them; interpersonal intelligence is understanding other people; intrapersonal intelligence refers to having an understanding of yourself, of knowing who you are, what you can do, what you want to do, how you react to things, which things to avoid, and which things to gravitate toward; naturalist intelligence designates the human ability to discriminate among living things (plants, animals) as well as sensitivity to other features of the natural world (clouds, rock configurations). (Fasko, 2001, p. 1) Nolen's description also reveals that students with different preponderant intelligences will perform differently in certain activities. "People with verbal / linguistic intelligence tend to think in words and have highly developed auditory skills. They have great ability to use words with clarity. Those with musical / rhythmic intelligence have a firm understanding of pitch, rhythm, and timbre. Through music, they are able to convey their emotions. People with logical / mathematical intelligence are able to follow long chains of reasoning very skillfully. Visual / spatial intelligence thinkers have the ability to manipulate and create mental images in order to solve problems. People with bodily / kinesthetic intelligence can use their body in very expressive skilled ways for a distinct purpose. Those with interpersonal intelligence are often able to understand, perceive and discriminate between people's moods, feelings, motives, and intelligences. Comparatively, intrapersonal intelligence thinkers deal more with the individual self, they have the ability to know oneself and to understand one's own inner workings. People with naturalistic intelligence often show expertise in the recognition and classification of plants and animals." (Nolen, 2003, p. 1) Reflecting on EFL teaching in Chinese universities, students show various interests and performances in the class. Some students show better talents in giving presentations, some students pay close attention to reading or listening strategies, some others like to watch American movies. Obviously, understanding students' MI distribution in EFL classes will help teachers teach better.

2.2 MI Assessment

Because, according to MI theory, intelligences are potentials exercised only in the context of certain experiences and environments, it is especially important that classroom assessments be highly contextualized. Separating bits of knowledge from the contexts in which they have meaning, or separating the child from an environment with real problems to solve or materials to work with, is unlikely to demonstrate what a child has learned or can figure out. (Sternberg and Williams, 1998, p. 29) In order to make the assessment contextualized, the research items in this paper are all related to students' daily activities in their EFL class. There are four basic principles for MI assessment: 1. Assessments have to be contextualized in order to be intelligence-fair; 2. Assessments should allow for diverse modes of response or multiple ways to demonstrate understanding; 3. Assessments should help to track the growth over time of children's ability to use their intelligences; 4. Assessment is a fundamental part of the learning process. Through engaging in reflection and self-assessment, students can come to understand their own intelligences and how they work. (Sternberg and Williams, 1998, pp. 29-31) Obviously, an effective MI study should benefit the teaching or studying. Therefore, the author conducted all the EFL activities related to the assessment before doing the survey in order to make the survey more contextualized, and with a view to make the result more insightful for EFL teachers, the paper tries to find out students' overall MI distribution rather than their individual MI distributions, since in EFL countries, teachers can hardly divide students into different groups according to their MI distribution or repeat the same teaching procedure in different ways, because the students' numbers are usually too large and their English classes are quite limited.

Mostly, MI assessments aim at reforming the curriculum systems, such as the MIDAS (Multiple Intelligence Developmental Assessment Scale), however, a MI scale specified in EFL class has never been developed, and MI assessment has never been conducted among Chinese college students.

3. Statement of Purpose

With a view to make the investigation specified to students' performances in EFL class, the author didn't use the popular measuring tools like MIDAS, but redesigned the measuring tool. All the research items are related to students' performances in EFL class.

This paper merits investigation for two reasons: (1). Provides a MI assessment scale specified in EFL class; (2). Investigate the possibility that there exist relations between college students' majors and their MI distribution.

4. Methodology

4.1 Subjects

The research is conducted among 100 sophomores whose majors are city planning, tourism, software engineering, financial administration and arts of English (20 students from each major). Their age structure is from 19 to 22. In BHBH (Beihang University, Beihai), all the students whose majors are not English will have the standard English proficiency test at the end of each semester, and according to the test results, they will be grouped into three different genres of classes: beginning class, average class, advanced class. All the participants whose majors are not English had taken their English proficiency test at the end of last semester and were all grouped into the average classes. Therefore, their English proficiencies are regarded as similar to those of each other.

4.2 Instruments

Two instruments are used in this survey: (1). a questionnaire designed by the author, all the research items are related to students' multiple intelligences in EFL class (2). SPSS 13.0 (Statistical Product and Service Solutions) are used in analyzing the statistics.

The questionnaire comprises of the following research items:

Items 1, 5, 9, 14, 17 are related to students' **musical / rhythmic** intelligences:

1. I have a strong rhythm sensation when reading paralleled sentences. (MR1)

5. I want to read a story about how Beethoven successes. (MR2)

9. I hope the teacher can play some English songs for us during the break. (MR3)

14. I like to read an article accompanied by related background music. (MR4)

17. I wish to have an English singing contest with other students in the class. (MR5)

Items 3, 7, 10, 23, 34 are related to students' **intrapersonal** intelligences:

3. When the English text is close to my real life, it will attract me. (INTRA1)

7. I want the teacher to tell us more practical strategies in learning English. (INTRA2)

10. When my English teacher is correcting my mistakes, I'm fully absorbed. (INTRA3)

23. I like to read English texts related to famous people's biography. (INTRA4)

34. My teachers' encouragement will help me to learn well. (INTRA5)

Items 18, 19, 2, 6, 8 are related to students' **logical / mathematical** intelligences.

18. When my English teacher analyzes the stems, prefixes or suffixes of a word, it's easier for me to memorize it. (LM1)

19. I wish my English teacher can analyze the grammatical rules in the text for us. (LM2)

2. I like to do exercises such as words distinction; they help me to learn in depth. (LM3)

6. I like to write English argumentations. (LM4)

8. Reading strategies, such as the way to guess out the word meaning in a sentence, help me to read efficiently. (LM5)

Items 13, 29, 4, 11, 15 are related to students' **visual / spatial** intelligences.

13. It's easier for me to memorize the new words, phrases or expressions if my English teacher attaches each of them with a picture. (VS1)

29. I like to watch an English movie rather than read a passage. (VS2)

4. When the English text is about the famous resorts in the world, I would be very glad to read it. (VS3)

11. When my English teacher provides me with the framework of a passage, I can understand it better. (VS4)

15. I like to read the English wall papers. (VS5)

Items 12, 39, 16, 20, 35 are related to students' **naturalistic** intelligences.

12. If the words are categorized according to the genres in our real world, I will remember them more easily. (NATUR1)

39. When the English text is related to botanies or animals, I will be interested in reading it. (NATUR2)

16. If our English teacher moves our class out of the classroom, we may learn more efficiently. (NATUR3)

20. I like to listen to English weather reports. (NATUR4)

35. I am sensitive to the words or phrases related to people's facial expressions or gestures. (NATUR5)

Items 21, 22, 36, 40, 24 are related to students' **verbal / linguistic** intelligences:

21. I often imitate the English pronunciation from the tapes or from my English teacher. (VL1)

22. I can make a very good presentation in front of my English teacher and classmates. (VL2)

36. I like to form English sentences verbally or in writing. (VL3)

40. I want to have an English chanting contest in the class. (VL4)

24. I think word explanations in English are more clarifies than those in Chinese. (VL5)

Items 25, 26, 27, 30, 31 are related to students' **interpersonal** intelligences:

25. I like to have a debate with other students in an English class. (INTER1)

26. I use the words or phrases I learned to communicate with others. (INTER2)

27. I like to propose or answer questions in an English class. (INTER3)

30. I like to share my English composition with others in class. (INTER4)

31. Working with my group mates helps me to accomplish my task in class. (INTER5)

Items 28, 32, 33, 37, 38 are related to students' **bodily / kinesthetic** intelligences.

28. I like to have a dictation when I know the words. (BK1)

32. When my English teacher provides me with a writing template, I would like to write a composition in the class. (BK2)

33. I like to use the phrases and expressions that I learned in paper-based translation work. (BK3)

37. I want to play an English drama with my classmates. (BK4)

38. Writing out the words helps me to memorize them easily. (BK5)

Students measure the above statements according to the following standard for evaluation:

1=Mostly Disagree, 2=Slightly Disagree, 3=Not for Sure, 4=Slightly Agree, 5=Mostly Agree

4.3 Procedures

The survey was carried out according to the following procedures:

(1) All the EFL activities listed in the questionnaire are conducted through the subjects during the first half of the semester (the whole semester lasts for 19 weeks);

(2) The questionnaire was experimentally tested among 20 students in the 13th week in the semester.

(3) The research items with low credibility was reformed.

(4) The new questionnaire (see appendix) was filled out by the subjects and collected back by the author during the 15th and 16th week in the semester;

(5) SPSS 13.0 was applied in analyzing the credibility of the results;

(6) Students' MI distributions in different majors are categorized and compared with each other.

4. 4 Analyses

The subjects' overall MI distributions in EFL class were firstly analyzed by SPSS 13.0. The Cronbach Alpha is calculated in order to guarantee the credibility of the study. Means of different research items were then calculated in groups. For example, the means of the five research items related to Musical/Rhythmic Intelligence are calculated as a whole. In this way, students' MI distributions are compared. Then, all the data are separated into 5 groups according to students' different majors, and their means in different intelligences are recalculated in the same way. As a result, their MI distributions among different majored students are analyzed and compared with each other.

5. Results

Table 1 reveals the overall distribution of students' multiple intelligences. The analytical result of SPSS 13.0 shows the Cronbach's Alpha is 0.807, and $P<0.0001$. Therefore, the results of the survey are quite credible. The results show that the most popular EFL activities are related to students' Intrapersonal Intelligence (m=4.286) and Visual/Spatial Intelligence (m=3.848); the least popular EFL activities are related to students' Interpersonal Intelligence (m=3.084) and Verbal/Linguistic Intelligence (m=3.000). (See Table 1)

Table 2 compares different majored students' MI distribution. The results suggest that English students show better Musical/Rhythmic Intelligence (m=3.780) and Bodily/Kinesthetic Intelligence (m=3.780) than other majored students in their EFL class, and they also show better Verbal/Linguistic Intelligence (m=3.340) and Interpersonal Intelligence (m=3.290) than other majored students; Tourism students show strongest Logical/Mathematic Intelligence (m=3.560); Although all the students show strong Intrapersonal Intelligence, city planning students do best of all (m=4.370), and they also show strongest Visual/Spatial Intelligence (m=3.960) and Naturalistic Intelligence (m=3.700). (See Table 2)

6. Discussion

Although students from different majors show different MI distributions, they also have some common grounds. All the students show the strongest Intrapersonal Intelligence and Visual/Spatial Intelligence, while they also show the weakest Verbal/Linguistic Intelligence and Interpersonal Intelligence. Obviously, Chinese college students show strong interests in EFL activities related to their Intrapersonal Intelligence. All the research items related to Intrapersonal Intelligence focus on 3 aspects of the EFL activities: learning strategies, psychological encouragement, and students' reflectively thinking on their own lives. Obviously, students like to learn English with the help of some practical strategies. Most Chinese students lack the environment to use English, and they assess their English abilities by taking exams. Therefore, they learn English mainly for passing important exams. As a result, some strategies which claim to be able to help them memorize more efficiently are usually very popular among the students, and so do the skills in answering English questions. This is actually the reason why there are so many language centers booming up in China, but most of them are teaching students how to memorize words and how to pass the exams. Another unneglectable reason for the above result is that Chinese students usually lack the self-confidence in using English, so teachers' encouragement usually takes effects. The last reason is that Chinese students tend to conduct EFL activities more close to their life. So some ESL (English as a Second Language) activities may turn out to be abortive in EFL class when the situation described in the activities show little resemblance to students' real life. The second strongest intelligence for Chinese undergraduates is their Visual/Spatial Intelligence, which reveals that Chinese students like to learn through intuitional materials, such as English movies, slide shows, and pictures, etc. Because Chinese students scarcely practice their English in face-to-face communications, they show coincident weakness in their Verbal/Linguistic Intelligence and Interpersonal Intelligence in EFL class. It doesn't mean that they don't like to communicate with others in Chinese, but only in English. The scale merits on this point since other forms of MI scales may not detect it. Obviously, English communication is the most crucial ability needed to be strengthened among Chinese undergraduates.

According to Table 2, students of different majors also show different MI distribution in their EFL class:

English students. They have more English classes than other majored students. They perform English dramas, watch English movies, and frequently have English dialogues with foreign teachers from English-speaking countries. As a result, they show very strong Musical/Rhythmic Intelligence, Bodily/Kinesthetic Intelligence, Verbal/Linguistic

Intelligence and Interpersonal Intelligence.

Tourism students. They are the second group which cries for English in their future jobs except for English students. Therefore, they also work hard in English. Since the research items for Logical/Mathematic Intelligence are mainly related to strategies or skills in English learning, such as the memorizing skills for English words, the result suggests that Tourism students learn English in different ways comparing with those of English students. English students may regard practice in English using as the most efficient way in memorizing those words, phrases, or structures, because they have more chances in doing that; however, Tourism students don't have that many chances in using English everyday, they have to turn to learning strategies which help them learn more efficiently. It also represents the situation of many other majored students who wants to learn English well or to pass important English exams.

City Planning students. They have many chances to make model sets of the city, they learn painting, they learn knowledge about plants and animals, and they frequently go to landscape gardens to see plants by themselves. As a result, they show very strong Visual/Spatial Intelligence and Naturalistic Intelligence. And they also show strongest Intrapersonal Intelligence among different majored students. Since the research items for Intrapersonal Intelligence are mainly related to students' reflectively thinking in EFL class, the result suggests that City Planning students are more likely to learn materials or participate in activities close to their real life.

7. Implications

The overall and separate MI distributions among Chinese undergraduates from different majors indicate that some of the EFL activities which require students to play the drama may receive non-ideal effects among non-English majored students. However, the study also indicates that students' intelligence can be improved when they have more opportunities to practice it. That's the reason why different majored students have different MI distributions. Therefore, English teachers in EFL environment need to insist on providing students with various opportunities in English communication, although it may not do the need at first.

According to the study, EFL activities related to Intrapersonal Intelligence and Visual/Spatial Intelligence are the most popular among all Chinese undergraduates. With a view to arouse students' interests in participating into EFL class, English teachers need to use materials more close to students' life, and present the material in more intuitional ways.

Students of different majors show different MI distributions, so English teachers are to flexibly use their teaching approaches when facing different students.

Generally speaking, English teachers in EFL class are challenged by students who tend to learn in different ways from those of ESL students, so the teachers have to reconsider the teaching procedures in every aspect.

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Table 1. Students' Overall MI Distribution (n=100)

Multiple Intelligences	Means	Standard Deviation
Musical/Rhythmic Intelligence	3.634	0.451
Logical/Mathematic Intelligence	3.452	0.568
Intrapersonal Intelligence	4.286	0.423
Visual/Spatial Intelligence	3.848	0.513
Naturalistic Intelligence	3.460	0.622
Verbal/Linguistic Intelligence	3.000	0.767
Interpersonal Intelligence	3.084	0.700
Bodily/Kinesthetic Intelligence	3.622	0.598

(α=0.807, $p<0.0001$)

Table 2. Comparative Analyses of Different Majored Students' MI Distribution (n=100)

Multiple Intelligences	Students from Different Majors	Means	Standard Deviation
Musical/Rhythmic Intelligence	City Planning	3.620	0.405
	Financial Administration	3.410	0.447
	Software Engineering	3.640	0.467
	Tourism	3.720	0.585
	English	3.780	0.569
Logical/Mathematic Intelligence	City Planning	3.460	0.578
	Financial Administration	3.380	0.591
	Software Engineering	3.340	0.723
	Tourism	3.560	0.433
	English	3.520	0.500
Intrapersonal Intelligence	City Planning	4.370	0.313
	Financial Administration	4.270	0.345
	Software Engineering	4.310	0.607
	Tourism	4.250	0.485
	English	4.230	0.313
Visual/Spatial Intelligence	City Planning	3.960	0.462
	Financial Administration	3.800	0.523
	Software Engineering	3.870	0.650
	Tourism	3.750	0.510
	English	3.860	0.416
Naturalistic Intelligence	City Planning	3.700	0.637
	Financial Administration	3.290	0.537
	Software Engineering	3.450	0.689
	Tourism	3.410	0.529
	English	3.450	0.689
Verbal/Linguistic Intelligence	City Planning	2.810	0.670
	Financial Administration	2.760	0.611
	Software Engineering	3.310	0.835
	Tourism	2.780	0.826
	English	3.340	0.702
Interpersonal Intelligence	City Planning	3.060	0.633
	Financial Administration	2.930	0.555
	Software Engineering	3.200	0.808
	Tourism	2.940	0.749
	English	3.290	0.724
Bodily/Kinesthetic Intelligence	City Planning	3.680	0.521
	Financial Administration	3.520	0.634
	Software Engineering	3.610	0.738
	Tourism	3.520	0.650
	English	3.780	0.425