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Exploring Musical Creativity in Taiwanese Elementary Textbooks: A Study of Elements and Mediums

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Abstract

This study aims to examine and analyze the musical creativity contents of elementary school "Arts and Humanities" textbooks in Taiwan through document analysis. The research materials are textbooks published by the Kanhsuan Educational Publishing Group and Han Lin Publishing Co., Ltd. for Grade 5 and 6 students. The frequency and percentage of musical creativity contents were recorded, and the corresponding musical elements and mediums were analyzed. The results showed that the musical elements with the highest frequency are expression, rhythm, and melody, while the musical mediums with the highest frequency are notation, body, instrument, and vocal.

Keywords— Music textbooks; Musical creativity; Elementary education; Music education.

I. INTRODUCTION

Music education reflects human emotions and reality through teaching, allowing students to feel the fun brought by music and learn the ability to express, appreciate, and musical creativity, thereby promoting the overall development of students' physical and mental health (Bai, 2018). In view of this, past studies have pointed out that musical creativity is one of the ways to cultivate students' creativity (Ozenc-Ira, 2023). Therefore, in music education, the cultivation of creativity is an important teaching goal in the subject of music. Creativity needs to be cultivated from an early age, and in elementary school, students' creativity is on a developmental trend, so when students are engaged in musical creativity, they can promote the development of creativity (Navarro Ramón & Chacón-López, 2021). In addition, a series of cross-sectional studies by Smith and Carlsson (1990) found that creativity in elementary school students dropped to a low point in grades 2 to 3 (ages 7 to 9) and peaked in grades 5 to 6 (ages 10 to 12).

In 2008, the Ministry of Education of Taiwan

promulgated the "Grade 1-9 Curriculum Guidelines," which state that art education should provide students with hands-on participation in exploring the expressive skills of various arts and encourage them to develop artistic creativity inspirations based on their personal experiences and imaginations (Ministry of Education, Taiwan, 2008). Music education is an important part of arts education; it is a basic subject and basic quality education. Compared with other arts courses, students receive the stimulation of music and at the same time can also accompany the music with body rhythms, which can better promote the development of the brain (Lu et al., 2022).

Past research has shown that students' creativity must be materialized through the creation of products (Amabile & Pratt, 2016). Musical creativity is an expression and an ability of creativity. For students, musical creativity is a product of imagination combined with life experience. Although the cultivation of musical creativity is given much attention worldwide, it remains one of the most difficult aspects of teaching and learning (Teng, 2017). Past research has shown

that musical creativity is the most troubling item for teachers in music teaching (Wu, 1993; Chen, 1995; Chu, 2019). The content in textbooks is dominated by listening and singing activities, with a low percentage of activities of musical creativity (Liu, 2020). In actual teaching, music textbooks are still the primary teaching tool, and the musical creativity contents are an important medium for guiding students in musical creativity. Therefore, if the design of the musical creativity contents in the textbooks is not reasonable, the musical creativity will be gradually neglected and more marginalized.

Although the issue of creativity has received much attention, few previous studies have focused on the analysis of musical creativity contents in elementary school textbooks. In view of this, this study analyzes and summarizes the musical creativity contents of elementary school "Arts and Humanities" textbooks in Taiwan, and finally makes recommendations based on the results, hoping to provide music teachers and textbook editors with favorable evidence to improve the teaching content of musical creativity in textbooks and develop students' ability in musical creativity.

1.1 Research Objectives

- (1) To analyze the musical creativity contents in the "Arts and Humanities" textbooks of Taiwan's elementary schools.
- (2) To analyze the musical elements used in the musical creativity contents of "Arts and Humanities" textbooks in Taiwan elementary schools.
- (3) To analyze the musical mediums used in the musical creativity contents of "Arts and Humanities" textbooks in Taiwan elementary schools.

1.2 Research Questions

- (1) How many musical creativity contents are there in Taiwan's elementary school "Arts and Humanities" textbooks?
- (2) What kind of musical elements are used in the musical creativity contents of Taiwan's elementary school "Arts and Humanities" textbooks?
- (3) What kind of musical mediums are used in the musical creativity contents of Taiwan's elementary school "Arts and Humanities" textbooks?

II. LITERATURE REVIEW

2.1 The Meaning and Value of Musical Creativity

In today's society, creativity is one of the important

indicators for selecting talents in all walks of life. Creativity in a broad sense refers to a process or product that is novel and useful in a given context (Richardson, 2020). However, creativity is complex, uncertain and changing, but it can be continuously developed through systematic education and long-term training (Ma & Li, 2022). Therefore, the "White Paper on Creativity Education" released by the Ministry Education of Taiwan in 2003 vigorously promotes creativity education (Ministry Education of Taiwan, 2003). Art education is the core curriculum for cultivating students' creativity, and musical creativity is one of the programs in music education.

Musical creativity in a broad sense includes explicit behaviors as well as internal mental activities that are concrete and expressive of the work. (Van der Schyff et al., 2018). The explicit behaviors of musical creativity consist of singing, performing, appreciating, and composing. At the same time, the inner mental activities manifest musical creativity, consisting of observation, attitude, self-efficacy, and other affective expressions (Chu, 2019).

Cultivating students' creativity in music teaching is not only conducive to the development of good learning habits and the construction of comprehensive musical intelligence, but also exercises students' creativity and critical abilities (Kupers & van Dijk, 2020). Musical creativity can be a tool for developing musical cognition for all students because it provides opportunities for self-expression and interpretation of musical ideas (Chu, 2019). Allowing students to do musical creativity expands their development of skills and understanding of music as well as fosters their problem-solving, self-expression, and interest in music learning (Guderian, 2012). This study refers to the past research and defines the scope of musical creativity contents as the content of textbooks that guide students in composing, adapting, improvising, and other related activities (Lin, 2002).

2.2 Musical Elements

Musical elements are the constituent elements of a piece of music. The musical elements can be divided into single-concept musical elements, such as rhythm, dynamics, melody, timbre, harmony, articulation, and texture, and integrated-concept musical elements, such as expression, form, and time and place. All of these elements cannot exist in music alone but must alternate and merge through the principles of unity and change to develop a variety of musical forms (Boardman, 1988; Ji, 2016). The different combinations

of musical elements make up the unique character of each piece of music, allowing one to understand the structure, expression, and even the ethnic group, region, era, and genre (Panda et al., 2023). Teaching students to analyze and summarize musical elements is essential in musical creativity education (Werry, 2020).

2.3 Musical Mediums

Musical mediums are the means of transmitting music. For example, using the throat to sing a song, or using the hands to make a beat, or drawing a score and notes on paper, are all types of musical mediums. The musical mediums are the bridge between the performer and the audience, and it is through the musical mediums that the performer has the opportunity to convey the ideas and feelings of the work to the audience (Zhang, 2017). Effective use of musical mediums such as notation, graphics/tone painting, vocal, body, instrument, and digital creativity can be used to enhance students' musical creativity level and mastery of musical elements (Lee & Robinson, 2018; Sungurtekin, 2021).

III. METHODOLOGY

This study utilized the document analysis method to examine the musical creativity contents in Taiwan's elementary school grades 5-6 "Arts and Humanities" textbooks (two versions, 8 books in total). Document analysis is a systematic procedure for reviewing or evaluating documents (Bowen, 2009).

3.1 Materials

This study focuses on Taiwan's elementary school music textbooks for grades 5 and 6. The textbooks that were analyzed are two versions of "Arts and Humanities" (Books 5A, 5B, 6A, and 6B), published by Kanhsuan Educational Publishing Group (KEP) and Han Lin Publishing Co., Ltd. (HLP) in 2022. Both versions are based on the "Grade 1-9 Curriculum Guidelines" promulgated by the Ministry of Education of Taiwan in 2008. In addition, Taiwan's "Arts and Humanities" textbooks contain three types of learning content: visual arts, music, and performing arts, and this study analyzes only the music learning content.

3.2 Instruments

This study referred to the analytical tables of musical elements and musical mediums in the past research (Ji, 2016) and invited five experts in music education to revise the analytical tables and then categorized the musical creativity contents intercepted from textbooks into ten different music elements and

six music mediums. The ten musical elements are rhythm, dynamics, melody, timbre, harmony, articulation, texture, expression, form, and time and place, while the six musical mediums are notation, graphics/tone painting, vocal, body, instrument, and digital creativity. After that, one of the textbooks was randomly selected for researcher reliability investigation, and its reliability was ≈ 0.83 .

3.3 Procedures

The musical creativity contents from each textbook were first identified and then classified according to the ten different musical elements and six musical mediums. The frequency of the musical elements and musical mediums used in musical creativity contents appears to be counted by repetition, and an activity may contain more than one musical element and medium. For instance, the activity to "design a few Tibetan dance moves and sing and dance along with the music" was considered musical creativity content since it requires students to use their imagination to design dance moves according to music style. Due to its unique ethnic character and the need for students to express themselves, the musical elements identified for this activity are time and place and expression, and the musical mediums used are body and vocal. In addition, there are musical creativity contents that cannot be clearly defined in terms of musical elements and mediums; for instance, the activity to "design music questions or games related to the content of this semester." This activity has no fixed form and requires students to use their divergent thinking to create it; therefore, it is categorized as other elements and mediums.

The percentage of pages in which the musical creativity content appears in the textbooks, the frequency and percentage of musical elements, and the frequency and percentage of the musical mediums used in the musical creativity content were integrated using Excel 2021 software. Tables and graphs were utilized for analysis and comparison.

IV. FINDINGS

4.1 Han Lin Publishing Co., Ltd. (HLP)

The total number of pages in the HLP Book 5A is 49, including seven pages of musical creativity contents, accounting for a total of 14.29%. The specific musical creativity contents are analyzed as follows:

Table 1 Musical Creativity Contents of HLP Grade 5 Book A

Page number	Musical creativity content	Musical elements	Musical mediums
76	Create rhythms and tap them with your hands, feet, shoulders or other parts of your body.	Rhythm, Expression	Notation, Body
76	Create own gong and drum sutra and perform it.	Rhythm, Expression, Time and place	Notation, Instrument
92	Change the rhythm and pitch and record it on the staff.	Rhythm, Melody	Notation
99	Create lyrics.	Expression	Others
102	Create rhythms.	Rhythm	Notation
103	Change the lyrics of the triplet rhythm to the name of a classmate or idol to sing.	Rhythm, Expression	Vocal
107	Change the rhythm and pitch to create melody, and play it on a recorder.	Rhythm, Melody, Expression	Notation, Instrument
107	Collaborate with classmates to create harmonious and fun new melodies and play them on the recorder.	Rhythm, Melody, Expression	Notation, Instrument
119	Design music questions or games related to this semester.	Others	Others
There are 49 pages in total, of which 7 pages of creative content appear, accounting for a total of 14.29%.			

The musical elements used in the musical creativity contents are rhythm, melody, expression, and time and place, of which rhythm (7 times, 39%) and expressions (6 times, 33%) are the most featured, as shown in Figure 1.

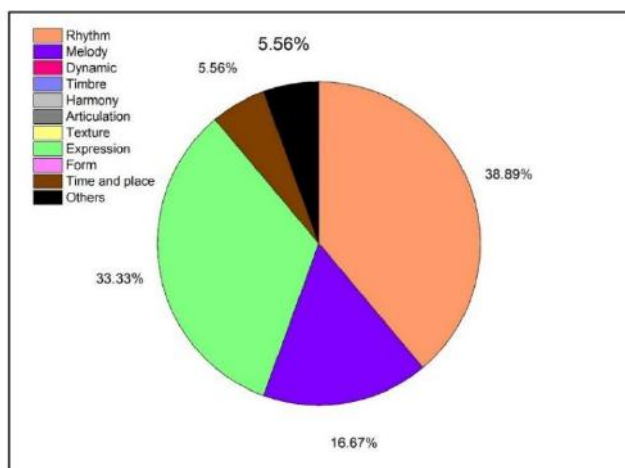


Fig.1: Musical Elements of HLP Book 5A

The musical mediums used are notation, vocal, body, and instrument, of which notation (6 times, 46%) is the most featured, as shown in Figure 2.

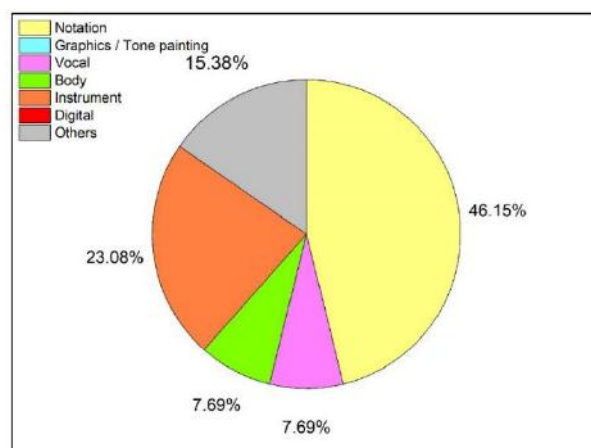


Fig.2: Musical Mediums of HLP Book 5A

HLP Book 5A includes a traditional folk song popular in the 1960s called "Temple Fair" (Figure 3), whose lyrics show the architectural features of Taiwan's temples, the people's prayers for well-being, and their reverence for the gods. The gong and drum sutra used in the song is a percussion notation method commonly used in traditional Chinese instruments and operas, using the sound of Chinese characters to simulate the sound of percussion and to record the different ways of playing percussion. In the teaching, the teacher can play the temple block, lead the students to learn the gong and drum sutra of the tanggu drum,

cymbal, and gong, and then let the students create their own gong and drum sutra and perform them. In this way, students not only appreciate the architectural

features of the temple but also get to know these traditional percussion instruments and are able to use them to create gong and drum sutras.



Fig.3: Musical Creativity Content in HLP Grade 5 Book A

The total number of pages in the HLP Book 5B is 39, including seven pages of musical creativity contents, accounting for a total of 17.95%. The specific musical creativity contents are analyzed as follows:

Table 2 Musical Creativity Contents of HLP Grade 5 Book B

Page number	Musical creativity content	Musical elements	Musical mediums
89	Design the rhythmic speech of the sounds of animals or running water in the lyrics.	Rhythm, Timbre, Expression	Vocal
89	Do three-beat body movements with the song, such as hand clapping, foot tapping, finger snapping?	Rhythm, Expression	Body
96	Use the sounds you hear every day to create different rhythms.	Rhythm, Timbre	Notation, Vocal
97	Create melodies with the recorder.	Rhythm, Melody, Expression	Notation, Instrument
97	Each group of students creates two bars of melodies on the recorder and takes over to form a piece.	Rhythm, Melody, Expression	Notation, Instrument
98	Listen to the music and explore the movements, expressions and sounds of the animals in the piece.	Timbre, Expression	Vocal, Body
100	Play the role of the animals in the music and use physical expression.	Expression	Body
101	Choose one or several pieces of music to combine the animal's movements with the music.	Expression	Body
105	Design music questions or games related to this semester.	Others	Others

There are 39 pages in total, of which 7 pages of creative content appear, accounting for a total of 17.95%.

The musical elements used in the musical creativity contents are rhythm, melody, expression, and time and place, of which expression (7 times, 39%) and rhythms (5 times, 28%) are the most featured, as shown in Figure 4.

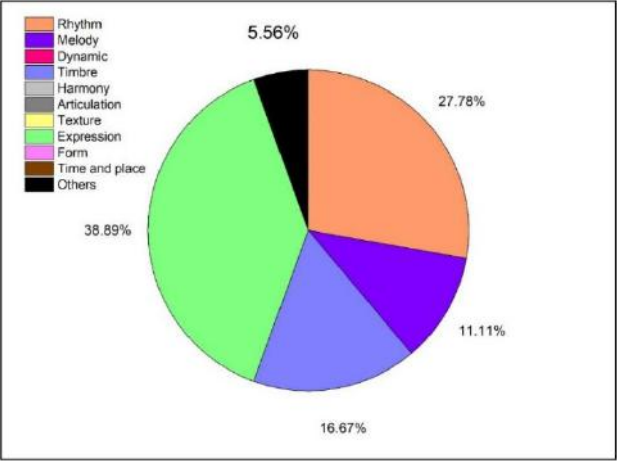


Fig.4: Musical Elements of HLP Book 5B

The musical mediums used are notation, vocal,

Table 3 Musical Creativity Contents of HLP Grade 6 Book A

Page number	Musical creativity content	Musical elements	Musical mediums
89	Design graphics to represent the elements in the music.	Others	Graphics/ Tone painting
90	Listen to music and create musical lines.	Others	Graphics/ Tone painting
91	Design different graphics according to the music.	Others	Graphics/ Tone painting
93	Create ostinato with hand bell or tambourine.	Rhythm, Expression	Instrument
98	Play along with the music on a pitch less percussion instrument or a homemade eco-friendly instrument.	Rhythm, Expression	Instrument
113	Play the roles in the story in groups.	Expression	Others
113	Create lyrics.	Expression	Others

There are 35 pages in total, of which 6 pages of creative content appear, accounting for a total of 17.14%.

The musical elements used in the musical creativity contents are rhythm, and expression, of which expression (4 times, 45%) is the most featured, as shown in Figure 6.

body, and instrument, of which body (4 times, 31%) is the most featured, as shown in Figure 5.

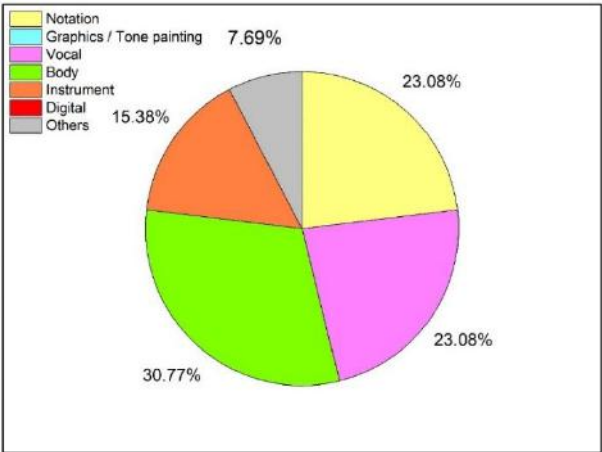


Fig.5: Musical Mediums of HLP Book 5B

The total number of pages in HLP Book 6A is 35, including six pages of musical creativity contents, accounting for a total of 17.14%. The specific musical creativity contents are analyzed as follows:

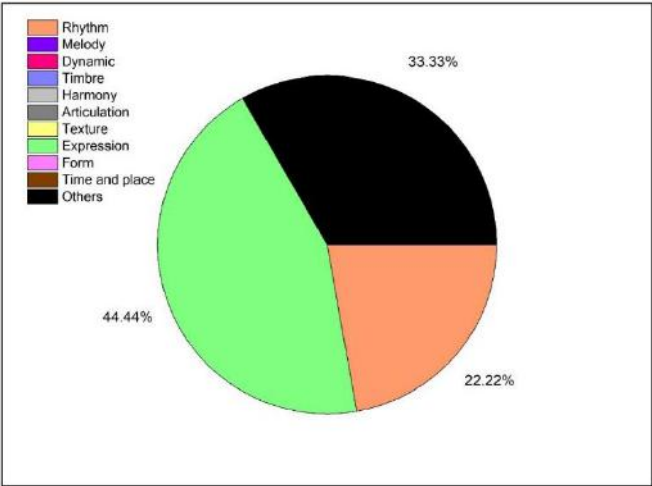


Fig.6: Musical Elements of HLP Book 6A

The musical mediums used are graphics/tone painting, and instrument, of which graphics/tone painting (3 times, 43%) is the most featured, as shown in Figure 7.

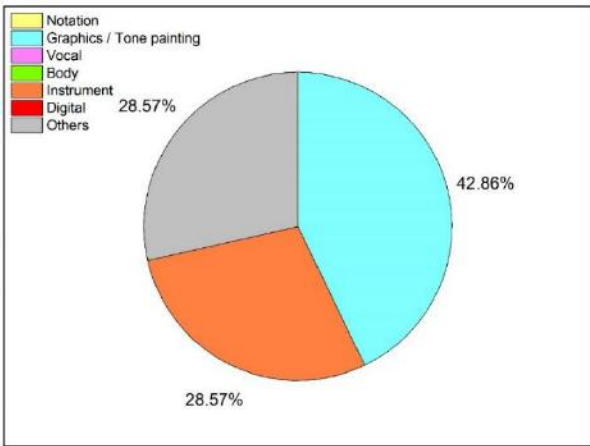


Fig.7: Musical Mediums of HLP Book 6A

The total number of pages in HLP Book 6B is 41, including eight pages of musical creativity contents, accounting for a total of 19.51%. The specific musical creativity contents are analyzed as follows:

Table 4 Musical Creativity Contents of HLP Grade 6 Book B

Page number	Musical creativity content	Musical elements	Musical mediums
102	Imagine the girl and the boy dancing and with the music showing the body.	Expression	Body
114	Add beatboxing to the song.	Rhythm, Timbre, Expression	Vocal
118	On paper, draw lines or graphics according to the feeling of the music progress.	Others	Graphics/ Tone painting
118	Choose a dance song and try to choreograph it.	Expression	Body
120	Draw different graphics for each theme of the variation.	Expression	Graphics/ Tone painting
122	Change the pitch according to the cued rhythm to create a new melody.	Rhythm, Melody	Notation
127	Mark staccato and slur for etudes.	Articulation	Notation
134	Create lyrics.	Expression	Others
134	The whole class worked together to create a graduation song.	Others	Notation
134	Students who can play musical instruments accompany the graduation song.	Rhythm, Melody, Expression	Instrument
135	Record graduation creative works.	Others	Digital

There are 41 pages in total, of which 8 pages of creative content appear, accounting for a total of 19.51%.

The musical elements used in the musical creativity contents are rhythm, melody, timbre, articulation, and expression, of which expression (6 times, 38%) is the most featured as shown in Figure 8.

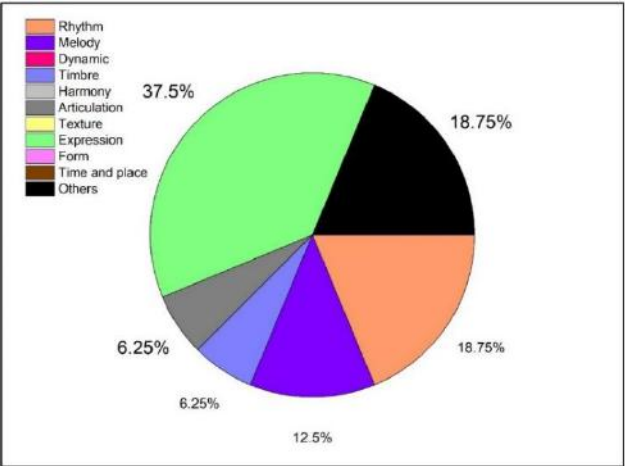


Fig.8: Musical Elements of HLP Book 6B

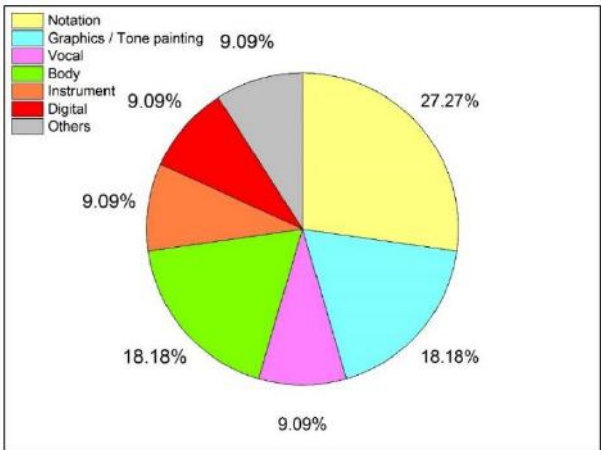


Fig.9: Musical Mediums of HLP Book 6B

The musical mediums used are notation, graphics/ tone painting, vocal, body, instrument, and digital, of which notation (3 times, 28%) is the most featured, as shown in Figure 9.

4.2 Kanhsuan Educational Publishing Group (KEP)

The total number of pages in KEP Book 5A is 31, including night pages of musical creativity contents, accounting for a total of 29.03%. The specific musical creativity contents are analyzed as follows:

Table 5 Musical Creativity Contents of KEP Grade 5 Book A

Page number	Musical creativity content	Musical elements	Musical mediums
10	Create simple body movements to match the theme music.	Expression	Body
11	Listen to the music and draw a picture of the situation in the piano quintet.	Others	Graphics/ Tone painting
14	Imagine the mood of the song and then sing and perform it.	Expression	Vocal
16	Create body movements in groups to express the music.	Expression	Body
17	Draw the melody line: listen to the music and move your hands or shoulders in rhythm with the high and low melody of the song.	Melody, Expression	Graphics/ Tone painting, Body
18	Express the feeling of the melody with the strength of the recorder sound.	Dynamic, Expression	Instrument
22	Dance while singing, to reflect the style of the song, and perform in groups.	Rhythm, Expression, Time and place	Vocal, Body
28	Perform two-part chorus in groups.	Harmony, Expression	Vocal
32	Play in groups or solo.	Expression	Instrument

There are 31 pages in total, of which 9 pages of creative content appear, accounting for a total of 29.03%.

The musical elements used in the musical creativity contents are rhythm, melody, dynamic, harmony, expression, and time and place, of which expression (8 times, 58%) is the most featured as shown in Figure 10.

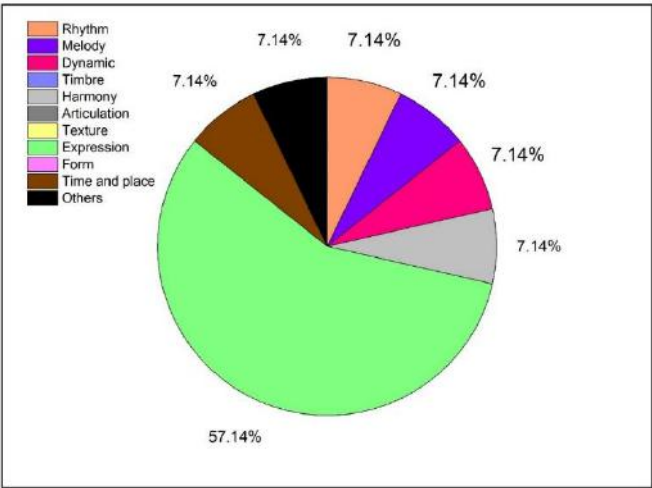


Fig.10: Musical Elements of KEP Book 5A

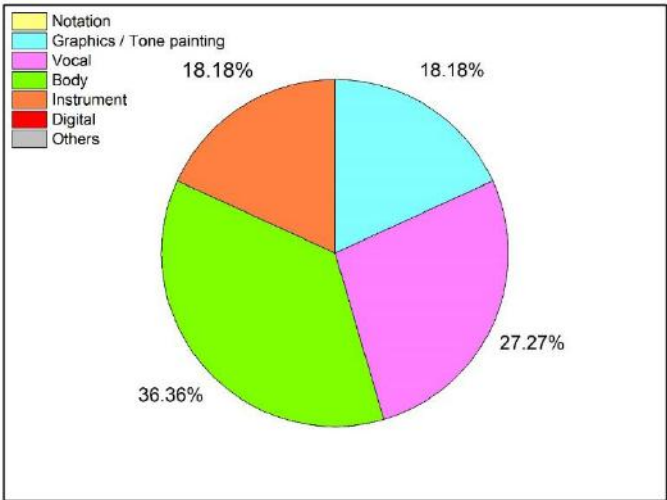


Fig.11: Musical Mediums of KEP Book 5A

The musical mediums used are n graphics/tone painting, vocal, body, and instrument, of which body (4 times, 37%) and vocal (3 times, 27%) are the most featured as shown in Figure 11.

The total number of pages in KEP Book 5B is 35, including night pages of musical creativity contents, accounting for a total of 25.71%. The specific musical creativity contents are analyzed as follows:

Table 6 Musical Creativity Contents of KEP Grade 5 Book B

Page number	Musical creativity content	Musical elements	Musical mediums
16	Use body movements to express the characteristics of each period of music.	Expression	Body
17	Play the six roles in the piece in groups and perform the situations of the piece.	Expression	Body
19	Choose an appropriate rhythm instrument and improvise with the theme.	Rhythm, Expression	Instrument
23	Choose percussion instruments and create rhythms to accompany the song.	Rhythm, Expression	Instrument
27	Use body movements to express the characteristics of each period of music.	Expression	Body
27	Free creative expression of the variation part of the piece.	Expression	Others
28	Group or individual performance.	Expression	Others
30	Teachers and students create together, using aboriginal dance steps to express in concentric circles.	Expression, Time and place	Body
80	Accompany the lion dance performance with traditional percussion instruments or everyday objects as musical instruments.	Rhythm, Expression, Time and place	Instrument
97	Create melodies according to rhythm.	Rhythm, Melody	Notation

There are 35 pages in total, of which 9 pages of creative content appear, accounting for a total of 25.71%.

The musical elements used in the musical creativity contents are rhythm, melody, expression, and time and place, of which expression (9 times, 56%) is the most featured, as shown in Figure 12.

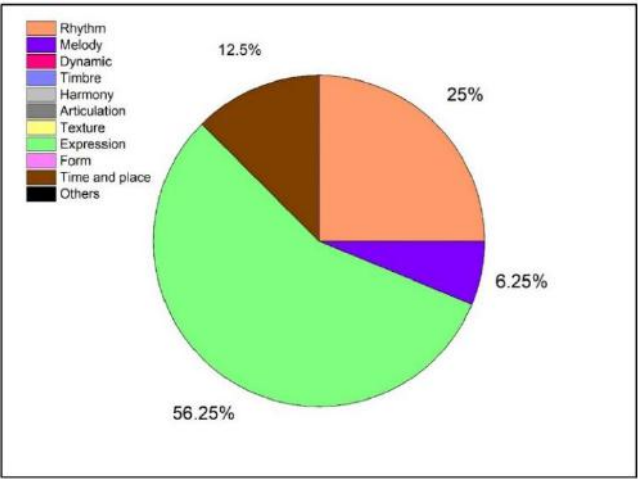


Fig.12: Musical Elements of KEP Book 5B

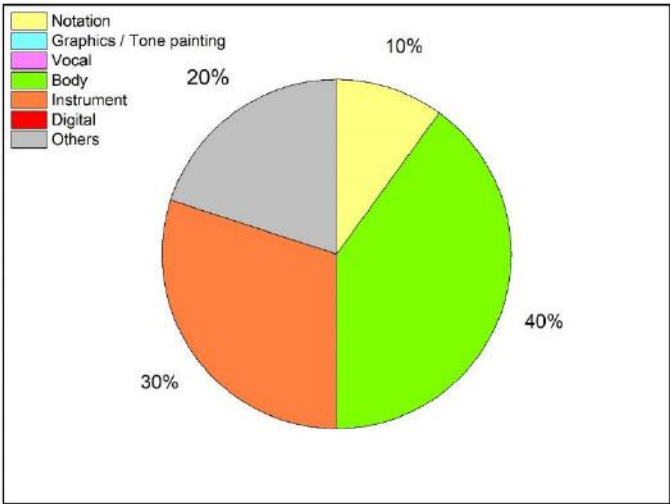


Fig.13: Musical Mediums of KEP Book 5B

The musical mediums used are notation, body, and instrument, of which body (4 times, 40%) and instruments (3 times, 30%) are the most featured, as shown in Figure 13.

The total number of pages in KEP Book 6A is 33, including eight pages of musical creativity contents, accounting for a total of 24.24%. The specific musical creativity contents are analyzed as follows:

Table 7 Musical Creativity Contents of KEP Grade 6 Book A

Page number	Musical creativity content	Musical elements	Musical mediums
15	Take turns singing or performing body rhythms in groups.	Expression	Vocal, Body
16	Sing the song in groups to express the mood of the song.	Expression	Vocal
27	Work in groups to create melody.	Rhythm, Melody	Notation
29	Free rhythm with body movements to the melody of eight-six time.	Rhythm, Expression	Body
30	Free rhythm with body movements to the melody of three beats.	Rhythm, Expression	Body
32	Feel the special style of the melody by clapping hands, stamping feet and other body movements.	Rhythm, Expression, Time and place	Body
34	Feel the special style of the melody by clapping hands, stamping feet and other body movements.	Rhythm, Expression, Time and place	Body
110	Express the rhythm of three beats with body movements.	Rhythm, Expression	Body

There are 33 pages in total, of which 8 pages of creative content appear, accounting for a total of 24.24%.

Using body movements to follow the rhythm of the melody is the main creative content of this textbook, appearing in 6 pages. The musical elements used in the musical creativity contents are rhythm, melody, expression, and time and place, of which expression (7 times, 44%) and rhythms (6 times, 37%) are the most featured, as shown in Figure 14.

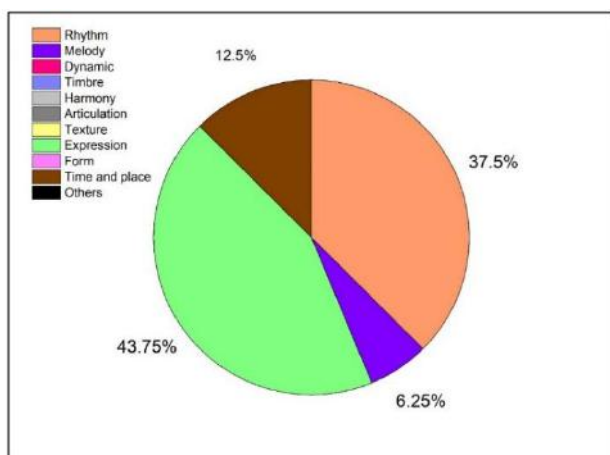


Fig.14: Musical Elements of KEP Book 6A

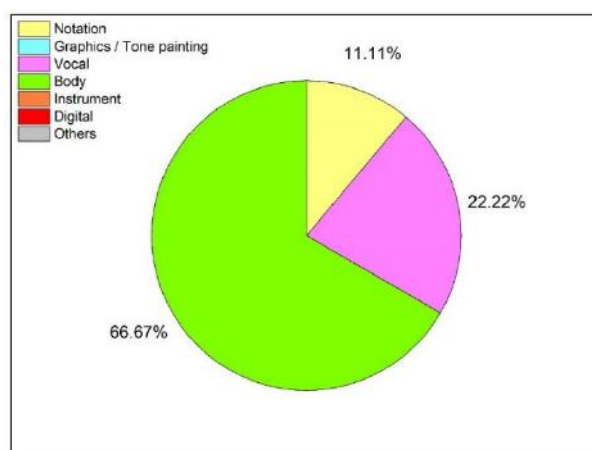


Fig.15: Musical Mediums of KEP Book 6A

The musical mediums used are notation, vocal, and body, of which body (6 times, 67%) is the most featured, as shown in Figure 15.

KEP Grade 6 Book A has a highly interactive melody activity of musical creativity (Figure 16) in which the teacher guides students in pairs to practice playing the question-and-answer phrases of the melody on the recorder according to the score in the textbook. Then try to create a melody in the form of a question and answer based on the exercise just now, and record it on the staff. The pattern of melody progressions can be created using scales, sequences, or skip intervals to make the melody richer or more varied, which is also a means to develop students' musical creativity skills.

● 唱唱下面的一段式曲調，哪段樂句有結束的感覺？

春天來了

日本兒歌

問句

答句

上面的曲調好像兩個人一問一答的在對話呀！通常一段式曲調，就是像這樣，由一個問句和一個答句構成的。

● 吹奏下面的曲調，完成一段式曲調創作。

問句

答句

Fig.16: Musical Creativity Content in KEP Grade 6 Book A

The total number of pages in KEP Book 6B is 37, including 12 pages of musical creativity contents, accounting for a total of 32.43%. The specific musical creativity contents are analyzed as follows:

Table 8 Musical Creativity Contents of KEP Grade 6 Book B

Page number	Musical creativity content	Musical elements	Musical mediums
10	Improvise a two-bar melody using the Chinese and Japanese pentatonic scales, and play it on a recorder.	Rhythm, Melody, Expression, Time and place	Notation, Instrument
14	Dance with the music, showing the rhythm of three beats.	Rhythm, Expression	Body
16	Add improvised body movements to the rhythm exercises.	Rhythm, Expression	Body
19	Use rhythm instruments and recorders to play songs in an ensemble to express the Hawaiian flavor.	Rhythm, Melody, Harmony, Texture, Expression, Time and place	Vocal, Instrument
26	According to the melody and rhythm of each period, express yourself freely with body movements.	Rhythm, Melody, Expression	Body
27	Create melody according to variation form.	Rhythm, Melody, Form	Notation
28	Sing along with the piano and express the song with body movements.	Rhythm,	Body
35	Accompany the song with rhythm instruments.	Rhythm, Rhythm,	Instrument
90	Use ready-made CDs, learned songs or simple instruments to soundtrack the costume show.	Rhythm, Timbre	Vocal, Instrument, Digital
104	Mark the dynamics marks on your own in the score.	Dynamic	Notation
106	Design four different body movements, gestures or marks to represent the four pieces of music.	Expression	Graphics/ Tone painting, Body
109	Design appropriate background music for the graduation ceremony.	Timbre	Digital

There are 37 pages in total, of which 12 pages of creative content appear, accounting for a total of 32.43%.

The musical elements used in the musical creativity contents are rhythm, melody, dynamic, timbre, harmony, texture, expression, form, and time and place, of which expression (8 times, 29%) and rhythm (8 times, 29%) are the most featured, as shown in Figure 17.

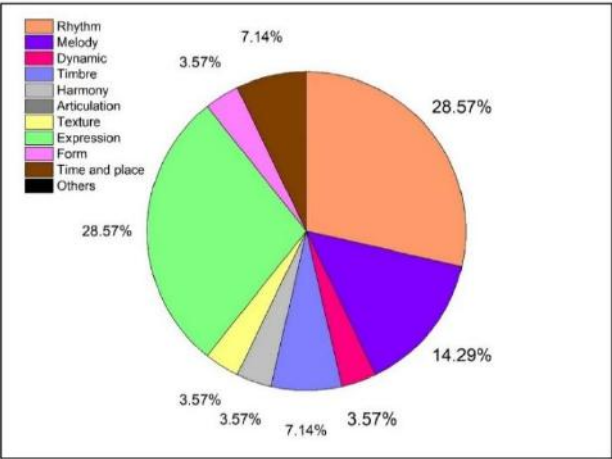


Fig.17: Musical Elements of KEP Book 6B

The musical mediums used are notation, graphics/ tone painting, vocal, body, instrument, and digital, of which body (5 times, 29%) and instrument (4 times, 23%) are the most featured as shown in Figure 18.

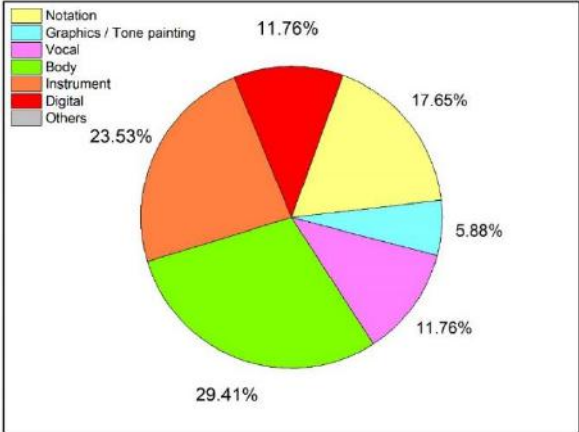


Fig.18: Musical Mediums of KEP Book 6B

V. DISCUSSION

The aim of this study was to examine and analyze the musical creativity contents within Taiwan’s elementary school “Arts and Humanities” textbooks. The research questions proposed were: (1) How many musical creativity contents are there in Taiwan’s elementary school “Arts and Humanities” textbooks? (2) What kind of musical elements are used in the musical creativity contents of Taiwan’s elementary school “Arts and Humanities” textbooks? (3) What kind of musical mediums are used in the musical creativity contents of Taiwan’s elementary school “Arts and Humanities” textbooks?

Table 9 Comparison of musical creativity contents frequency in HLP and KEP

Version	Total pages (page)	Pages of musical creativity contents (page)	Percentage (%)
HLP	164	28	17.07
KEP	136	38	27.94

In relation to the first research question, Table 9 shows that KEP (27.94%) has the highest percentage of musical creativity contents among the two versions, appearing once every 3.6 pages on average, while the HLP (17.07%) has a lower percentage with musical creativity contents appearing once every 5.9 pages on average. This shows that KEP pays more attention to the arrangement of musical creativity contents.

Table 10 Comparison of musical elements used in musical creativity contents in HLP and KEP

Version		Musical elements										
		Rhythm	Melody	Dynamic	Timbre	Harmony	Articulation	Texture	Expression	Form	Time and place	Others
HLP	Frequency (time)	17	7	0	4	0	1	0	23	0	1	8
	Percentage (%)	27.87	11.48	0	6.56	0	1.64	0	37.70	0	1.64	13.11
KEP	Frequency (time)	19	7	2	2	2	0	1	32	1	7	1
	Percentage (%)	25.68	9.46	2.70	2.70	2.70	0	1.35	43.24	1.35	9.46	1.35

In relation to the second research question, Table 10 shows that, excluding the musical elements that cannot be clearly defined (others), the HLP textbooks featured more musical creativity content with expression (37.7%), rhythm (27.87%), and melody (11.48%). Similarly, the KEP textbooks featured more musical creativity content with expression (43.24%), rhythm (25.68%), and melody (9.46%). In addition, the KEP textbooks also featured time and place (9.46%). This result is similar to the findings of Wei-Chen Yeh (2012). However, there is a difference in that KEP has a higher use of time and place elements, showing that KEP places more emphasis on ethnic music education.

First, the use of the expression in the musical creativity contents is mostly according to the style of the song and the plot development of the story to express personal musical creativity ideas, such as designing performance forms for the song. Second, the use of rhythm is mostly the practice of rhythm adaptation and using percussion instruments to accompany songs. Third, the use of melody is mostly for creating melodies with the given tones and continuing to arrange the melody. Last, the use of time and place is mostly presenting a certain music style or the characteristics of a certain period or place in musical creativity, such as expressing music with aboriginal dance steps. In actual teaching, the use of these

elements is also relatively simple. For instance, students are asked to use percussion instruments to accompany the songs. Most of the percussion instruments are unpitched, unlike piano and violin, which require fundamental playing skills. Students are only required to create their rhythms to participate in the musical expression activity, which is easy to understand and execute (Beegle, 2022).

The two versions of the textbook did not utilize all of the ten musical elements in the musical creativity content. The elements of dynamic, harmony, texture, and form were not used in HLP textbooks, and the element of articulation was not used in KEP textbooks. Some of the possible reasons for this are that the majority of the textbook is based on monophonic melodic songs and less frequently presents polyphonic works, while harmony, texture, and form are usually associated with polyphony (Liu, 2016). In the polyphonic works, students are also only asked to appreciate and learn to sing and are not asked to create. However, these elements are all important foundations of musical creativity. Students can develop a basic understanding of harmony and form in the lower learning stage (grades 1-3), such as creating body rhythms to express the sensation of different chords, while in the higher learning stage (grades 4-6), the concepts of harmony and form are integrated into the

creation of melody forms, deepening the learning of musical creativity (Li, 2020).
harmony and form concepts by means of activities of

Table 11 Comparison of musical mediums used in musical creativity contents in HLP and KEP

Version		Musical mediums						
		Notation	Graphics/ Tone painting	Vocal	Body	Instrument	Digital	Others
HLP	Frequency (time)	12	5	5	7	8	1	6
	Percentage (%)	27.27	11.35	11.38	15.91	18.18	2.27	13.64
KEP	Frequency (time)	5	3	7	19	9	2	2
	Percentage (%)	10.64	6.38	14.89	40.43	19.15	4.26	4.25

In relation to the third research question, Table 11 shows that, excluding the musical mediums that cannot be clearly defined (others), the HLP textbooks featured more musical creativity content through notation (27.27%), instrument (18.18%), and body (15.91%); while the KEP textbooks featured more musical creativity content through body (40.43%), instrument (19.15%), and vocal (14.89%). In the musical creativity contents, the use of notation is mostly to record the rhythm and melody in the staff or brackets; the use of vocal is mostly to design the singing form; the use of instrument is mostly to use percussion instruments or homemade instruments to accompany songs; and the use of body is mostly to design dance movements and sing and dance with the music.

Both versions of the textbook featured less musical creativity content through graphics/tone painting and digital creativity. This result is similar to the findings of Jining (2016). The reason for the low use of digital creativity may be due to the unbalanced development of the economy, culture, and education in various regions. The editors of textbooks may consider that some places do not have the conditions for using multimedia, so there are fewer digital medium settings; however, with the advancement of technology, digital will become more popular and a powerful auxiliary tool (Ho, 2009). In teaching, software can be used to allow students to create simple music and feel the fun of musical creativity. Past research has pointed out that graphics/tone painting is mostly used in the lower elementary grades (Huang, 2019); this may be because graphics/tone painting usually uses lovely images to represent the characteristics of melodies, such as fireworks when the music is strong and water drops when it is weak. While students in grades 5-6 have built up some logical thinking and may be able to

immediately respond to the characteristics of the melody without graphics. But graphics/tone painting can stimulate student’s subconscious thoughts and inspiration and provide more freedom for expression in comparison to only using notation; for students who are not very articulate, graphics/tone painting is a very suitable musical medium.

VI. CONCLUSIONS AND RECOMMENDATIONS

Elementary school “Arts and Humanities” textbooks in Taiwan emphasize more on expression, rhythm, and melody in the use of musical elements while lacking in the use of dynamics, harmony, articulation, texture, and form. In terms of musical mediums, elementary school “Arts and Humanities” textbooks in Taiwan cover all six mediums in their musical creativity contents. However, there is more use of notation, instrument, vocal, and body, and less use of graphics/tone painting and digital. Through this study, it is hoped that the use of musical elements of dynamics, articulation, texture, harmony, and form, and the use of musical mediums of graphics/tone painting and digital will be increased in the design of musical creativity content for future music textbooks.

This study presents certain limitations; thus, there is a need to be cautious with the observations. For instance, this study only conducts a comparative analysis of textbooks and does not analyze the effects of musical creativity education. It is suggested that future research could include observations of actual teaching situations to test the actual teaching outcomes of musical creativity. In addition, Taiwan may launch a new music textbook in 2024; this study suggests that the differences in musical creativity contents in pre-

and post-versions of the textbook can be compared to analyze whether there are changes in Taiwan for musical creativity education.

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Exploration of the Approaches of Artificial Intelligence-Assisted College English Teaching

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Abstract

Responding to the rapid development of artificial intelligence, this paper mainly discusses the opportunities and challenges brought by artificial intelligence to college English teaching, as well as the approaches of artificial intelligence-assisted college English teaching, aiming to provide thinking for the further development of college English teaching in the artificial intelligence environment.

Keywords— *artificial intelligence, approaches, college English teaching*

I. BACKGROUND

The rapid development of artificial intelligence has put forward new requirements for the reform and further development of college English teaching. Different from traditional modern teaching methods, artificial intelligence needs to be deeply integrated with college English teaching both in depth and breadth. Professor Wen Qiufang from Beijing Foreign Studies University pointed out that theoretically, the impact of AI represented by ChatGPT on English teaching in China will exceed that of general courses.

II. OPPORTUNITIES FOR COLLEGE ENGLISH TEACHING IN THE CONTEXT OF ARTIFICIAL INTELLIGENCE

Thanks to the development of artificial intelligence, more and more intelligent learning platforms and tools become available to English learners, providing wide ranges of learning materials, giving them personal and

dynamic learning feedbacks, and cultivating their potentials in learning and thinking.

i. Realization of Personalized Teaching Mode

Artificial intelligence can promote learners' autonomous learning efficiently. Based on learner' profiles and learning data, artificial intelligence can track students' learning data in real-time (such as vocabulary mastery, weak points in grammar, listening comprehension speed, etc.) through learning analysis technology, and generate personalized learning plans based on the data, dynamically adjusting the difficulty and progress of learning content. For example, intelligent teaching platforms can push targeted exercises according to the types of students' mistakes in learning, helping them efficiently make up for their shortcomings and solving the "one-size-fits-all" problems in traditional "large-class teaching".

ii. Intelligent Expansion of Teaching Resources

Artificial intelligence is like a treasure house,

gathering massive learning resources in multiple forms such as text, audio, and video. Artificial intelligence technology has enriched the forms and acquisition methods of English teaching resources. On the one hand, virtual teaching assistants supported by technologies such as intelligent speech recognition and natural language processing, and large language models represented by ChatGPT, can simulate real dialogue scenarios, assist students in listening and speaking practice, answer grammar questions, and even generate customized learning materials. They can realize automatic correction of compositions and real-time evaluation of spoken language. At the same time, resource libraries based on big data can automatically screen high-quality materials (such as foreign articles and film clips suitable for students' levels), broadening students' channels of language input.

iii. Improvement of Teaching Efficiency and Interaction

Artificial intelligence platforms and tools is expected to simplify the teaching process. For example, automatic correction systems can quickly score objective questions, saving teachers' time; intelligent interactive courseware can stimulate students' sense of participation through gamified designs (such as word challenges and situational dialogue simulations), transforming the classroom from a "teacher-led" mode to a diversified mode of "teacher-student interaction and student-student interaction". Language learning scenarios combined with VR/AR technologies, such as virtual English laboratories, allow students to improve their application abilities in simulated cross-cultural communication environments.

III. CHALLENGES FACED BY COLLEGE ENGLISH TEACHING IN THE ARTIFICIAL INTELLIGENCE ENVIRONMENT

i. Adaptation Problem Between Technology

Application and Teaching Needs

Some intelligent teaching tools have a tendency of "valuing technology over teaching". For example, the accuracy of speech recognition is insufficient, and the analysis of learning data is divorced from teaching objectives, leading to a disconnection between technology and actual teaching needs, which instead increases the use burden of teachers and students.

ii. Transformation of Teachers' Roles and Improvement of Ability Requirements

The popularization of artificial intelligence has put forward new requirements for teachers: teachers need to transform themselves from single knowledge imparters into knowledge imparters, teaching designers, learning supervisors, and transmitters of emotional values. Teachers must not only master the operation of intelligent tools but also have the ability to analyze data and design personalized teaching plans. However, some teachers have a low acceptance of new technologies, and some have much trouble learning some specialized skills about artificial intelligence, and others can not get enough professional training, then thus there are some difficulties in the transformation process, which is actually a big challenge.

iii. Test of Students' Autonomous Learning Ability and Independent Thinking Ability

Artificial intelligence not only provides a large number of resources for student' autonomous learning but also provides personalized learning platforms and means, which is actually a good choice for students. However, the biggest challenge for students is that they will over-rely on the answers provided by intelligent tools, and gradually they will lack the ability of independent thinking and the ability to distinguish the accuracy of answers. Especially for subjective part of language learning, such as translation and writing, the answers given by different platforms are too rigid or even wrong. Faced with massive information, students are reluctant to carefully analyze sentence structures or

relevant contexts, resulting in inaccurate language input or lack of independent thinking ability in the long run.

IV. INNOVATIVE APPROACHES OF COLLEGE ENGLISH TEACHING IN THE ARTIFICIAL INTELLIGENCE ENVIRONMENT

The assistance of artificial intelligence in college English teaching needs to be combined from several dimensions, which is a big task, not only involving setting teaching goals, adjusting teaching concepts, enriching curriculum systems, selecting suitable tools, and improving teachers' AI capabilities but also balancing technology and humanity.

i. Constructing a Curriculum System Integrating "Technology + Teaching"

Make full use of artificial intelligence to design a hybrid teaching mode of "online intelligent preview + offline interactive deepening": the former means online learning of basic knowledge through intelligent platforms, and the latter means offline classrooms learning which focuses on discussions, practices, and emotional exchanges, so as to achieve a balance between technology and humanity. This is such an overall learning pattern, interacting artificial intelligence and learning deeply and thoroughly.

ii. Strengthening the Integration of the Whole Process of Listening, Speaking, Reading, Writing, and Translation with Technology

Combine English teaching objectives with artificial intelligence by selecting suitable artificial intelligence tools and avoiding blindly introducing technologies. For example:

Listening training: Use artificial intelligence tools to provide personalized listening materials and feedbacks for students with different listening levels, help them analyze personal problems in vocabulary, grammar, etc. in listening, and provide corresponding training to improve their listenings. At the same time,

intelligent tools can provide intensive and extensive listening materials, including those of different themes such as news, long dialogues, short passages, and lectures, and provide diagnostic analysis to strengthen their weak points.

Oral practice: Intelligent platforms can provide students with personalized oral materials and real-time intelligent feedback systems, which can help them to analyze students' oral problems and provide specific solutions and personalized improvement exercises. With the help of advanced natural language processing and virtual reality technologies, artificial intelligence can construct highly realistic dialogue scenarios, enabling students to improve their spoken language in simulated English communication environments.

Reading training: Provide reading materials suitable for students' levels through intelligent platforms, which has rich materials, and students can develop good reading habits through self-management, and their reading levels can be improved step by step. At the same time, intelligent tools can provide personalized guidance by analyzing students' problems in reading to improve their reading ability.

Writing and translation practice: Intelligent systems have a large number of model essays, such as narration, description, argumentation, etc, which can provide students with writing and translation examples of different themes for learning and accumulation. At the same time, intelligent correction can quickly and accurately analyze students' problems in writing and translation, and provide intelligent guidance according to different themes to improve writing and translation levels.

iii. Improving Teachers' Skills and Abilities

The integration of artificial intelligence and college English teaching is inseparable from the improvement of teachers' skills and technical abilities. Colleges and universities need to regularly carry out special trainings at different levels, such as training on artificial

intelligence itself to help teachers understand the cutting-edge developments and requirements, training on intelligent teaching operations including the operation of basic intelligent tools, data collection and data analysis, and training on teaching reform, trying to solve problems or make further development in the process of integration. Regularly organize teachers to carry out relevant intelligent teaching discussions or seminars to solve problems encountered in actual teaching operations, and at the same time organize teachers to carry out teaching reforms to explore the integration of artificial intelligence and college English teaching.

iv. Cultivating Students' Autonomous Learning and Independent Thinking

In the artificial intelligence environment, analyze students' learning characteristics, match relevant intelligent learning platforms and tools, encourage students to independently use learning platforms, formulate personalized learning plans, implement dynamic learning state management and feedbacks on the platform, continuously improve their own learning, and enhance autonomous learning ability. Regularly organize students to discuss, especially the answers given by different platforms, which can make them think actively. In the process of analysis and discussion, guide students to think independently and learn to identify and judge the correctness of answers. Form a closed-loop management, encourage students to carry out learning according to personalized plans, and teachers need to check and feedback at different times, do a good job in learning reflection and subsequent learning adjustment, and avoid completely letting go and over-reliance on technology.

V. KEY COMPETENCES OF COLLEGE ENGLISH TEACHERS IN THE ARTIFICIAL INTELLIGENCE ERA

Integrating artificial intelligence with English

teaching does not mean that it will replace teachers but reconstruct their roles. With the help of artificial intelligence, teachers can change their roles, vigorously promote flipped classrooms, and let students become the main body of classroom learning, actively and independently learn based on projects. Teachers are required to have composite abilities of "technology integration + teaching innovation + humanistic guidance".

Technical application ability is needed. Teachers are expected to master the operation logic of mainstream intelligent teaching tools, be able to use data analysis to interpret learning reports, and accurately identify students' learning difficulties instead of being "kidnapped" by technical tools.

Teaching design ability is required. Teachers should be able to design in-depth teaching activities based on artificial intelligence resources, such as using virtual assistants to create debate scenarios and guide students to improve critical thinking in interactions, instead of relying solely on content automatically generated by the system.

Cross-cultural guidance ability is included. Artificial intelligence can solve problems related to language forms, but the transmission of cultural connotations needs to be led by teachers. Therefore, teachers are expected to cultivate students' cross-cultural communication literacy by analyzing cases of cultural differences not covered by intelligent systems.

Learning support ability is also necessary. Teachers should transform their roles from "knowledge imparters" to "learning facilitators", and provide emotional support and strategic guidance for personalized problems (such as insufficient learning motivation) exposed in artificial intelligence feedback.

VI. CONCLUSION

Artificial intelligence brings opportunities for

personalized and efficient development of college English teaching, but its value must be realized based on the principle of “technology empowering rather than replacing”. Promoting the in-depth integration of the two needs to take teaching objectives as the core, balance the application of technology and humanistic care. Teachers need to actively adapt to technological changes, improve their composite abilities, and deeply integrate artificial intelligence resources with teaching objectives, ultimately realizing the transformation from “standardized teaching” to “personalized education” and cultivating high-quality talents with both language ability and cross-cultural competitiveness.

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Physical Status of Female Wrestlers Aged 14-15

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Abstract

Using conventional research methods in Physical Education and Sports, the article evaluated the physical fitness of female Freestyle Wrestling athletes aged 14-15. The results showed that the physical fitness of female athletes aged 14-15 was not good, the physical fitness of the majority of athletes was classified as Average and Fair, especially there were still a few athletes classified as below average physical fitness.

Keywords— *professional fitness, female athlete, freestyle wrestling, age 14-15.*

I. INTRODUCTION

Freestyle wrestling was introduced to Vietnam in the late 1970s. Due to its attractiveness in training and competition, freestyle wrestling has quickly developed widely in the northern region of our country. In recent years, freestyle wrestling has continuously won high rankings at the Asia Pacific tournaments, the Southeast Asian Wrestling Championships and at the Sea Games. Especially at the most recent Seagames, Women's Freestyle Wrestling has brought the Vietnamese sports delegation very noble medals such as the 24th Seagames held in Thailand, the Wrestling team won 8 gold medals, of which the Women's Freestyle Wrestling contributed 4 gold medals out of a total of 9 sets of medals, contributing to the overall success of the Vietnamese sports delegation. At the 25th Seagames held in Laos, the Women's Freestyle Wrestling team brought the Vietnamese sports delegation 1 gold medal, 2 silver medals, and at the 26th Seagames, the Women's Freestyle Wrestling team brought the Vietnamese sports delegation 1 gold medal, 2 silver medals. Especially at the 27th Seagames in Myanmar, the Women's Freestyle Wrestling team brought home 4 gold medals for the Vietnamese sports delegation.

Despite such proud achievements, there are still many limitations in the training of female Freestyle wrestlers, especially in terms of specialized physical

training. This is clearly shown when Vietnamese athletes perform in competitions. In the early stages of the competition, Vietnamese athletes can dominate athletes from other countries, but towards the end of the competition, their physical strength decreases, the effectiveness of movements, speed and frequency decrease significantly, leading to poorer overall results. Based on the above reasons, we conducted a study: "THE STATUS OF SPECIALIZED PHYSICAL STRENGTH OF FEMALE FREESTANDERS AGED 14-15".

Research method: the research process used the following methods: pedagogical testing and statistical mathematics.

The collected data were processed using SPSS 16 software.

II. RESEARCH RESULTS AND DISCUSSION

2.1. Developing standards for assessing the physical fitness of female Freestyle wrestlers aged 14-15

2.1.1. Comparing the physical fitness test results of female Freestyle wrestlers aged 14 and 15

In order to have a basis for building standards for assessing general physical fitness or for each age group, the topic compared the results of physical fitness tests of female Freestyle Wrestling athletes aged 14 and 15. The results are presented in Table 1.

Table 1. Comparison of physical fitness test results of female Freestyle wrestlers aged 14 and 15

3	Test, index	Age 15 (n=22)		Age 16 (n=18)		t	P
		x	ĐLC	x	ĐLC		
1	30m high start run (s)	4.53	0.17	4.29	0.08	5.546	<0.01
2	15 s(sl)	14.68	1.39	15.92	0.28	-3.699	<0.05
3	1 minute prone push-up (sl)	31.86	0.94	33.78	1.06	-6.046	<0.01
4	On-the-spot long jump (cm)	212.67	1.62	214.64	1.00	-4.491	<0.01
5	30s (times)	15.05	1.05	16.78	1.06	-5.181	<0.01
6	30s (times)	16.68	1.13	17.94	0.64	-3.345	<0.05
7	30s (times)	26	1.31	28.06	0.73	-5.848	<0.01
8	1 minute (times)	21.86	1.91	23.67	0.84	-3.559	<0.05
9	1 minute (times)	24.77	1.15	26.89	1.18	-5.076	<0.05
10	1 minute (times) crawling (sl)	25.91	0.87	27.78	0.88	-6.709	<0.01
11	1 minute (times) back bend (reverse)	25.05	1.43	27.17	1.25	-4.937	<0.05
12	Maximum continuous maximum ...	5.77	0.16	5.25	0.15	10.481	<0.01
13	30m high start run (s)	16	1.45	17.17	0.79	-3.065	<0.05
14	15 s(sl)	41.45	0.52	40.82	0.36	4.340	<0.01

(Note: Degrees of freedom = 38, t05 = 2.021)

From the results in Table 1, it can be seen that the difference in test results between the ages of 14 and 15 is statistically significant (with $p < 0.05$). Thus, it is necessary to develop separate assessment criteria for each age group.

2.1.1. Testing the dispersion and representativeness of the average number of

physical fitness assessment tests of female Freestyle wrestlers aged 14-15

To ensure the scientific nature of the assessment criteria, the study tested the dispersion and representativeness of the average number of physical fitness assessment tests of female Freestyle Wrestling athletes aged 14-15. The results are presented in Table 2 and Table 3.

Table 2. Results of testing the dispersion and representativeness of the average number of physical fitness assessment tests of female Freestyle Wrestling athletes aged 14

No	Test, index	Parameters			Shapiro-Wilk (W)
		$\bar{x} \pm \delta$	Cv	ϵ	
1	30m high start run (s)	4.53±0.17	3.75	.036	.839
2	15 s(sl)	14.68±1.39	9.47	.297	.851
3	1 minute prone push-up (sl)	31.86±0.94	2.95	.201	.807
4	On-the-spot long jump (cm)	212.67±1.62	0.76	.345	.848
5	30s (times)	15.05±1.05	6.98	.223	.887
6	30s (times)	16.68±1.13	6.77	.241	.891
7	30s (times)	26±1.31	5.04	.279	.810
8	1 minute (times)	21.86±1.91	8.74	.407	.837
9	1 minute (times)	24.77±1.15	4.64	.246	.878
10	1 minute (times) crawling (sl)	25.91±0.87	3.36	.185	.877
11	1 minute (times) back bend (reverse)	25.05±1.43	5.71	.305	.826
12	Maximum continuous maximum ...	5.77±0.16	2.77	.035	.858
13	30m high start run (s)	16±1.45	9.06	.309	.822
14	15 s(sl)	41.45±0.52	1.25	.111	.849

Table 3. Results of testing the dispersion and representativeness of the average number of physical fitness assessment tests of female Freestyle Wrestling athletes aged 15

No	Test, index	Parameters			Shapiro-Wilk (W)
		$\bar{x} \pm \delta$	Cv	ε	
1	30m high start run (s)	4.29±0.08	1.86	.018	.818
2	15 s(sl)	15.92±0.28	1.76	.067	.861
3	1 minute prone push-up (sl)	33.78±1.06	3.14	.250	.839
4	On-the-spot long jump (cm)	214.64±1	0.47	.236	.844
5	30s (times)	16.78±1.06	6.32	.250	.827
6	30s (times)	17.94±0.64	3.57	.177	.788
7	30s (times)	28.06±0.73	2.60	.162	.808
8	1 minute (times)	23.67±0.84	3.55	.166	.838
9	1 minute (times)	26.89±1.18	4.39	.183	.868
10	1 minute (times) crawling (sl)	27.78±0.88	3.17	.181	.863
11	1 minute (times) back bend (reverse)	27.17±1.25	4.60	.294	.824
12	Maximum continuous maximum ...	5.25±0.15	2.86	.035	.878
13	30m high start run (s)	17.17±0.79	4.60	.185	.850
14	15 s(sl)	40.82±0.36	0.88	.086	.888

The results in Table 2 and Table 3 show that the average and standard deviation of the tests ensure dispersion and representativeness, allowing them to be used to develop standards for assessing the professional physical fitness of female Freestyle Wrestling athletes aged 14-15.

2.1.3. Building standards for assessing the physical fitness of female Freestyle wrestlers aged 14-15

To ensure scientific validity, the research topic follows the process of determining evaluation standards including the following contents:

- Building a scale for the tests according to 10 points, through the C scale (10-point scale).

- Developing a comprehensive assessment standard for the physical fitness of female athletes aged 14-15: through the study, 14 tests were obtained to assess the physical fitness of female Freestyle wrestlers aged 14-15. Thus, the maximum score achieved by an athlete is 140 points, the minimum is 14 points. The project proceeds to develop a comprehensive assessment standard for the physical fitness of female Freestyle wrestlers aged 14-15 according to 5 levels: Good, fair, average, weak and poor and the distance between the levels is: $(X_{\max} - X_{\min})/5 = (140 - 14)/5 = 25.2$ (pts). The results of developing a comprehensive assessment standard for the physical fitness of female Freestyle wrestlers aged 14-15 are presented in Table 4.

Table 4. Comprehensive assessment standards for professional physical fitness of female Freestyle wrestlers aged 14-15

No	Standard	Points (maximum 140 points)
1	Good	> 114.8
2	Fair	89.6 – 114.8
3	Average	64.4 – 89.5
4	Weak	39.2 – 64.3
5	Poor	< 39.2

2.2. Current physical condition of female Freestyle wrestlers aged 14-15

To assess the physical fitness of female Freestyle Wrestling athletes aged 14-15, the project conducted tests on athletes aged 14-15 in provinces,

cities and sectors with strong Wrestling movements in the North through 14 selected tests (as presented in Tables 2 and 3). At the same time, the test results were

compared with the comprehensive assessment criteria (Table 4) to classify the physical fitness level of female athletes. The results are presented in Table 5.

Table 5. Current status of physical fitness classification of female Freestyle wrestlers aged 14-15

No	Classification	Age 14 (<i>n</i> = 17)		Age 15 (<i>n</i> = 16)	
		<i>m_i</i>	Tỷ lệ %	<i>m_i</i>	Tỷ lệ %
1.	Good	3	17.65	3	18.75
2.	Fair	4	23.53	3	18.75
3.	Average	7	41.18	8	50.0
4.	Weak	3	17.65	2	12.50
5.	Poor	0	0	0	0

From the results in Table 5, it can be seen that the majority of female athletes in both the 14 and 15 age groups have an average physical fitness level (accounting for 41.18% in the 14 age group and 50.0% in the 15 age group), the rate of good and excellent is not high (good accounts for 7.14%, good accounts for 35.71%); At the same time, the athletes with poor physical fitness level account for a relatively high rate (accounting for 17.65% in the 14 age group and 12.50% in the 15 age group).

The above results show that the physical fitness level of female athletes is not high, and the physical fitness training for female Freestyle Wrestling athletes in the 14-15 age group is not good.

III. CONCLUSION

The majority of female athletes in both the 14 and 15 age groups have an average physical fitness level (accounting for 41.18% in the 14 age group and 50.0% in the 15 age group), the rate of good and excellent is not high (good accounts for 7.14%, good accounts for 35.71%); At the same time, the rate of athletes with poor physical fitness is relatively high (accounting for 17.65% in the 14 age group and 12.50% in the 15 age group). The above results show that the physical fitness level of female athletes is not high, and the physical fitness training for female Freestyle Wrestling athletes in the 14-15 age group is not good.

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A Study on the Role of Language Transfer Theory in Junior High School English Grammar Teaching

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Abstract

English and Chinese, as two languages, have some similarities and many differences. Students will be influenced by Chinese unescapably when learning English grammar. These influences caused by Chinese, of which have a positive effect, namely, positive transfer, promoting students' learning initiative and effectiveness. And on the contrary, a negative influence, namely, the negative transfer, hindering students' learning initiative and effectiveness. It is found that if positive transfer is promoted and negative transfer is reduced, Chinese will play a more positive role in junior high students' English grammar learning and improve their initiative and effectiveness in English grammar learning. Based on this, this research puts forward corresponding measures, including applying language transfer to English grammar teaching, enhancing initiative of English grammar learning and applying contrastive analysis and error analysis to English grammar teaching.

Keywords— language transfer theory; junior high school students; English grammar teaching

I. INTRODUCTION

Generally speaking, language is made up of sentences, which consists of words and some special symbols. If we put some words and some symbols together randomly, that will not make a sentence. There must be some rules to organize these words, this is grammar. There is no doubt that in today's rapidly developing world, English remains a powerful tool for communication, and at the same time, Chinese people are attaching more and more importance to English learning. Grammar is a part of English teaching. In foreign language teaching, it is necessary, but not self-sufficient. We should be clear about its role in junior high school.

Throughout the history of foreign language teaching, second language educators have alternated

between teaching methods that encourage students to analyze language in order to learn it, and teaching methods that encourage students to use language in order to acquire it. Ultimately, to this question, should we teach grammar? Ellis (1997) gives a positive answer: Yes. Grammar teaching cannot be separated from the classroom. It should not only tell students how to speak and write, but also explain to them why they speak and write the way they do.

Grammar teaching has been neglected in China since the rise of communicative approach in the 1980s. In communicative language teaching, many teachers seem to think that students can obtain new structures through active practice and use. During this period, a great deal of research and writing has been done on communicative teaching. However, second language

acquisition is usually achieved in an acquisition-rich environment. In an environment with few learning opportunities such as China, there are few opportunities for natural exposure to the target language. We cannot expect students to acquire grammatical ability only through interaction and communication. Since the 1990s, more and more attention has been paid to grammar teaching. The newly issued "High School English Curriculum Standards" requires teachers to clarify the purpose of grammar teaching and adapt to grammar teaching methods.

Recently, many Chinese teachers attach great importance to grammar teaching. However, there is a common phenomenon in grammar class, that is, teachers teach grammar mechanically. They just list grammar one after another on the board without adding the following explanation. They ask learners to memorize the items mechanically. Judging from the history of English grammar teaching at home and abroad, the focus of the debate on grammar has shifted from "whether to teach" to "how to teach". Therefore, it is the most urgent task for English educators and teachers to study the "time-saving and efficient" English grammar teaching mode.

In fact, for second language learners, they can't help but be unconsciously affected by the negative transfer of their mother tongue in English grammar learning. Therefore, in this context, it is particularly important for English teachers to cultivate students' awareness of positive transfer of Chinese and improve their initiative and effectiveness in learning English grammar.

Language transfer research has many inspirations for our foreign language teaching and research. Language transfer research not only focuses on the objective similarity of language but also emphasizes learners' subjective cognition and contextual factors (Cai, 2024), providing important inspirations for second language teaching. Both the contextual factors of second language acquisition and the learners themselves have undergone significant changes (Yan,

2025). Comparative analysis is an indispensable auxiliary means in foreign language teaching, and transfer research is inseparable from error analysis (Guo, 2001). If language transfer theory is better used with contrastive analysis and error analysis, junior high school students' English grammar learning initiative and effectiveness will be improved to some extent.

II. THEORETICAL FOUNDATION

2.1 Language Transfer Theory

Language transfer has been an important research topic in the fields of applied linguistics, second language acquisition and language teaching for at least a hundred years (Dai & Wang, 2002). Language transfer refers to the psychological process whereby prior learning is carried over into a new learning situation, or the influence as a result of similarities and differences between the target language and any other language that has been previously acquired (Odlin, 1989). According to the influence of the first language on the second language learning, there are two kinds of language transfer: when the first language plays a positive role, it will help the second language learning. This effect is positive, which is the so-called positive language transfer. Negative transfer refers to the impeding of current learning and thinking owing to the application of non-adaptive or unsuitable information or behavior. So, negative transfer is a kind of interference effect of prior knowledge causing a slow-down in learning or solving of a new assignment when compared to the performance of a hypothetical control group without any respective previous experience.

It is essential to know that the positive and negative transfer are not mutually incompatible and therefore, in fact, real-life transfer effects are likely to be a mixture of both. Even though negative transfer may not help learners in the second language learning, from another perspective, we may reduce the negative transfer or just take a right attitude to it.

2.2 Contrastive Analysis and Error Analysis

Contrastive analysis is a method of comparing languages in order to identify potential errors, with the

ultimate aim of distinguishing between what needs to be learned and what does not, as well as judging which areas are easy to learn and which are difficult to learn in the context of second language learning (Gass & Selinker, 2001:72). Early contrastive analysis was associated with behaviorism and structuralism (Hu, 2015:268). Its disadvantages are that, first of all, the difference between mother tongue and target language can be defined linguistically, but sometimes it can be difficult psychologically. An item that is linguistically difficult may not be psychologically difficult. Second, contrastive analysis cannot predict all errors, and there are some errors that contrastive analysis cannot predict. Thirdly, the difficulties predicted by contrastive analysis are not accurate. Some of the difficulties predicted are actually not difficult for learners.

By using contrastive analysis, it is difficult to explain all errors, because some errors made by the second language learners result from other factors except for L1 inference (Ellis, 1994). There are some distinctions between error and mistake: if the learner is short of knowledge, errors will be made, because he or she does not know the right form or is unable to use language correctly (Hu, 2015: 269). And also, if the learner fails to perform their competence, mistakes will be made. It means that the learner has already learned the knowledge or skill but simply fails to function it correctly due to lack of attention or other factors (Hu, 2015: 269).

There are different types of errors. In terms of source of errors, it includes inter-lingual errors (or transfer errors) and intra-lingual errors (or developmental) errors (Hu, 2015: 269). In terms of the nature of errors, it includes omissions, additions, double markings, misformations and misorderings (Hu, 2015: 269).

III. RESEARCH RESULTS AND DISCUSSION

After looking up relevant information, this research adopts the method of interview and questionnaire. This study interviewed 8 English teachers from grade two in Beisu middle school in

Jining, Shandong Province and took 325 students in grade two of Beisu middle school. In order to ensure the authenticity and validity of the data, the questionnaire was anonymous.

3.1 Interview Results and Discussion

This research interviewed all the 8 English teachers in Grade two of Beisu Middle School. According to the interview, the advantages and disadvantages of English grammar of junior high school students are as follows (see table 3.1).

Table 3.1 Results and Discussion of the Interview

Advantages	Disadvantages
Part of speech	Modal verb
The five basic sentence patterns	Attributive clause
Adverbial clause	Tense
Passive voice	Inversion, emphasis

As can be seen from the above table, students' advantages in English grammar learning were parts of speech, sentence patterns, adverbial clauses and passive voice. And modal verbs, attributive clauses, tenses, inversion sentences and emphatic sentences were their disadvantages. According to the interview results, this research designed relevant questions (Questions 9~18) in the questionnaire to find out the relationship between English grammar learning and language transfer.

3.2 Questionnaires Results and Discussion

In order to ensure the reliability and validity of the questionnaire, this research distributed questionnaires in a small range to test the reliability and validity. After the test, this research distributed a total of 325 questionnaires in eight classes, and collected 319 questionnaires, with a recovery rate of about 98%. Among them, 12 were invalid, 207 were valid, and the effective rate was about 94%.

The questionnaire consists of 20 items and is divided into 5 dimensions. Based on these five dimensions, this research discussed and analyzed the results of the questionnaire.

1. The Importance and Difficulty of English Grammar Learning

In this section, students are asked to answer

questions based on their own actual situations through questionnaires. The first four questions are mainly related to the key and difficult points in English classes. By identifying the key and difficult points in English

learning among the four teaching parts of Vocabulary, Writing, Listening and Speaking, and Grammar, the importance of grammar learning can be judged (Questions 1 to 4, see table 3.2).

Table 3.2 Students' Learning Situation of English Grammar

Questions	Choices	Proportion
1. Which of the following parts does your English teacher teach for the longest time?	a. Vocabulary.	0%
	b. Writing.	0%
	c. Listening and Speaking.	0%
	d. Grammar.	88%
	e. Reading.	12%
2. Which of the following parts do you think is the most difficult in learning English?	a. Vocabulary.	0%
	b. Writing.	20%
	c. Listening and Speaking.	25%
	d. Grammar.	28%
	e. Reading.	27%
3. Which aspect of the following English knowledge do you most want to master better?	a. Vocabulary.	11%
	b. Writing.	17%
	c. Listening and Speaking.	23%
	d. Grammar.	37%
	e. Reading.	12%
4. What do you think of the differences between English and Chinese?	a. There are significant differences.	48%
	b. There are some differences.	47%
	c. There is not much difference.	3%
	d. I don't know.	2%

According to the data in the above table, English teachers spent the most time in teaching grammar, and English grammar learning was the focus and difficulty of junior high school students' English learning. As important and difficult point, the difficulty of English grammar learning is partly due to the differences between English and Chinese. At the same time, most of these students want to learn grammar well, as well as other English skills such as listening, speaking, reading and writing. This is more necessary for them to learn

English grammar.

2. The Influence of Chinese on English Grammar Learning, Practice and Use

To explore the influence of Chinese on English, this study sets up four questions covering three aspects: English learning, English practice and English use, and also investigates the specific extent of this influence. From the perspective of students, it is the most genuine way to explore the influence of Chinese on English grammar teaching (Questions 5~8, see table 3.3).

Table 3.3 The Influence of Chinese on English Grammar

Questions	Choices	Proportion
5. How much do you think the classroom model taught in Chinese has helped you learn English grammar?	a. None.	0%
	b. Some.	12%
	c. Many.	88%

	d. I don't know.	0%
6. Do you often use Chinese grammar knowledge when you are learning English grammar?	a. Yes.	100%
	b. No.	0%
7. When expressing English sentences, how often do you organize your language in your native language in advance in your mind?	a. Usually.	94%
	b. Sometimes.	6%
	c. Never.	0%
8. How much Chinese thinking mode have you been influenced by when doing exercises after class?	a. Many.	23%
	b. Some.	48%
	c. Few.	25%
	d. None.	4%

These students are influenced by Chinese when learning, practicing and using English grammar. According to the data, firstly, when learning English grammar, students all thought that the class taught in Chinese was of a certain degree of help. And they all used Chinese grammar to understand English grammar. Secondly, their Chinese thinking pattern affected them when they practiced grammar. Thirdly, Chinese often played an important role in the use of grammar to form sentences. This is reflected in the fact that most students often organized the language in Chinese in advance in their minds and expressed English sentences by means of translation. These effects, good and bad, do not mean that the bad effects are really bad,

they can be reduced. The discussion on this aspect will be carried out in the fourth part.

3. Positive Transfer and Negative Transfer of Chinese to English Grammar

This study sets questions to explore the specific influence of Chinese on students' English grammar learning, mainly in terms of students' self-confidence, which can affect students' subjective initiative in English learning. Furthermore, regarding the influence of Chinese on specific English grammar knowledge, this study also sets up some questions to explore the positive and negative transfer situations of key and difficult points in English grammar learning (Questions 9 to 18, see table 3.4, table 3.5 and table 3.6)

Table 3.4 The Impact on Students' Confidence in English Grammar Learning

Questions	Choices	Proportion
9. Will learning English grammar that is the same as or similar to Chinese increase your confidence in learning English grammar?	a. Yes.	98%
	b. No.	2%
10. How does learning English grammar, which is different from Chinese, affect your confidence in learning English grammar?	a. Negative.	56%
	b. No impact.	25%
	c. Positive.	11%
	d. I don't know.	8%

There are some similarities between Chinese grammar and English grammar, but there are more differences. These differences had an impact on students' grammar learning. In terms of psychology, through questions 9 and 10 (see table 3.4), we can

conclude that the similarities between Chinese and English grammar increased students' learning confidence, while the differences negatively affected more than half of students' learning confidence.

Table 3.5 Positive Transfer of Chinese to English Grammar Learning

Questions	Choices	Proportion
11. When learning the classification of parts of speech in English, do you rely on Chinese?	a. Totally.	75%
	b. Usually.	24%
	c. Never.	1%
	d. I don't know.	0%
12. When learning the five basic sentence patterns of English, do you rely on Chinese?	a. Totally.	63%
	b. Usually.	31%
	c. Never.	6%
	d. I don't know.	0%
13. When you were learning English adverbial clauses, how did the knowledge you mastered about Chinese adverbial clauses affect you?	a. Negative.	39%
	b. No impact.	58%
	c. Positive.	1%
	d. I don't know.	2%
14. When learning the passive voice, have you realized that English uses passive structures more than Chinese?	a. Yes.	56%
	b. No.	44%

As can be seen from the table 3.5, more than half of the students relied on Chinese to consciously compare English and Chinese when learning parts of speech, sentence patterns, adverbial clauses and passive voice,

to better grasp grammar knowledge. Therefore, these knowledge points are students' strengths as observed by the teachers in daily teaching, according to the interview.

Table 3.6 Negative Transfer of Chinese to English Grammar Learning

Questions	Choices	Proportion
15. When you are learning modal verbs in English (such as can, may, must, should, etc.), do you rely on Chinese?	a. Totally.	68%
	b. Usually.	30%
	c. Never.	2%
	d. I don't know.	0%
16. When learning English attributive clauses, how does Chinese affect you?	a. Significant.	33%
	b. Some.	45%
	c. Not much.	21%
	d. I don't know.	1%
17. Do you find it difficult to master English tenses in your learning process?	a. Yes.	92%
	b. No.	8%
18. How has the sentence structure of Chinese influenced you in the learning of inverted and emphasized sentences in English?	a. Negative.	44%
	b. No impact.	31%
	c. Positive.	20%
	d. I don't know.	5%

However, as the teacher has also observed, the

students were not good enough in learning modal verbs,

attributive clauses, tenses, inversion sentences and emphatic sentences in spite of the use of Chinese, and these points have become their weakness. And, as we can see from the table 3.6, especially when students were learning inverted sentences and emphatic sentences, Chinese had a negative effect on 44 percent of them.

Through the discussion and analysis of the results of these questions, we can understand that language transfer theories, such as contrastive analysis, are

related to students' initiative and effectiveness in learning English grammar.

4. Ways to Improve their Grammar Used by Students.

After understanding that the theory of language transfer has a certain relationship with students' initiative and effectiveness in learning grammar, this research analyzes the results of the following questions to find ways to promote the positive transfer of Chinese to English grammar learning and reduce the negative transfer (Question 19, see table 3.7).

Table 3.7 Students' Methods of Improving Grammar

Questions	Choices	Proportion
19. Have you ever had the experience of improving your English grammar through the following ways? (At least choose one)	a. Review grammar knowledge.	90%
	b. Do grammar error correction exercises.	56%
	c. Review the grammar mistakes.	95%
	d. Listen to the recording and imitate the grammatical expressions.	6%
	e. Read the article and analyze the long and difficult sentences.	93%
	f. Practice English writing.	87%
	g. Never improved grammar proficiency.	5%

Through investigation and analysis of the ways students have used to improve their grammar, it can be concluded that reviewing grammar knowledge, practicing grammar knowledge, including mistakes correction of grammar, analyzing long and difficult sentences in articles, reviewing wrong grammar practices and practicing English writing were effective ways for most students to improve their grammar. Notably, 95 percent of students improved their grammar by reviewing mistakes. Reviewing grammar mistakes means that students analyze their own mistakes, which was very effective for their grammar learning.

5. The Mutual Promotion Relationship between Students' Attitude towards Grammar Learning and the Improvement of Grammar Level.

Students' subjective initiative plays a significant role in English learning, and English grammar learning is a key and difficult point in English learning. This means that there is a certain relationship between English grammar learning and students' subjective initiative in learning English, which may promote, inhibit or complement each other. To explore the relationship between the two, this study set up the following questions for students to answer based on their own actual situations (Question 20, see table 3.8).

Table 3.8 The Relationship between Learning Attitude and Grammar Learning

Questions	Choices	Proportion
20. If you have a better grasp of English grammar, which or which of the following situations will happen to you? (At least choose one)	a. I think English grammar is very important.	86%
	b. I think English grammar is very simple.	74%
	c. I have great confidence in English grammar.	98%
	d. I'm reviewing and learning English grammar.	81%
	e. I prefer doing grammar exercises.	95%
	f. None of the above.	2%

Generally speaking, we often notice that the increase of learning confidence and correct attitude towards English grammar will promote students' learning of English grammar. In fact, as can be seen from the table 3.8, after students improved their English grammar level, they would be more aware of the importance of grammar, more confident in learning, and would pay corresponding practical actions, such as reviewing grammar and doing grammar questions. That is to say, if students' grammar has been improved, then their learning attitude will be more correct, learning confidence will be stronger. In this way, the cycle repeats, learning confidence and attitude and learning performance have a mutually reinforcing relationship.

IV. CONCLUSION

Through the discussion and analysis of the interview and questionnaire, this research has made some findings on the application of language transfer theory in junior middle school English grammar teaching.

First, it is feasible to apply the language transfer theory to junior high school English grammar teaching. Because of the similarities and differences between Chinese and English, students unconsciously transfer Chinese to English when learning English grammar. Positive transfer is beneficial to their English grammar learning, while negative transfer is not. For junior high school students in the stage of constructing English grammar framework, it is necessary and helpful to give

full play to the positive transfer and reduce the negative transfer of Chinese. This requires every junior high school English teacher to actively guide and cultivate students' language transfer awareness and ability in class.

Second, it is high time that teachers should enhance students' initiative of English grammar learning. The initiative of junior high school students in learning English grammar is reflected in their learning confidence and attitude. Chinese and English have similarities and differences, language transfer theory can help them better learn and understand their similarities and differences, so as to increase their confidence in learning English grammar, cultivate their good learning attitude, making them learn grammar in a better state. In this way, difficult as the English grammar is, students have more confidence in English learning and have more courage to challenge themselves. According to the interlanguage theory, too simple knowledge will make students feel bored, too difficult knowledge will make students lose confidence. However, the knowledge with a certain degree of difficulty is more suitable for students to learn, this is also called "i+1" principle. Teachers should choose grammar of appropriate difficulty to stimulate students' interest in learning by choosing real language materials, enriching classroom content and adopting correct error correction methods, so as to change the long-standing dull, time-consuming and inefficient phenomenon of grammar teaching (Cheng, 2004). Students will have a better grasp of English grammar,

and then, their initiative will increase. This cycle will reinforce each other.

Finally, it is an effective way to increase positive language transfer and reduce the negative transfer. The application of contrastive analysis theory and error analysis theory can promote the application of language transfer theory in junior middle school English grammar teaching, especially the positive transfer of Chinese.

On the one hand, the use of contrastive analysis theory can promote the positive transfer of Chinese, reduce negative transfer or transform it into positive transfer. In junior middle school English grammar teaching, teachers should cultivate students' awareness and ability of language transfer in daily teaching. In teaching, when encountering English grammar that is the same as Chinese grammar, contrastive analysis between English and Chinese can be properly conducted to guide students to realize the similarities between English grammar and Chinese grammar, and encourage them to consciously carry out language transfer when they encounter similar situations next time.

On the other hand, the use of error analysis theory can reduce the negative transfer of Chinese. Contrastive analysis theory can promote positive transfer of Chinese, reduce negative transfer. For students' difficulties in grammar learning, a teacher should do the following three things. First, guide the students to figure out whether this is an error or a mistake. Secondly, teachers need to guide students to categorize errors. Finally, teachers need to encourage, supervise, and lead students to review grammar errors. With constant practice and review of grammatical errors, the negative transfer of Chinese to English grammar will be reduced.

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