

Critical thinking skills, English language, and intercultural competence among Chinese medical student

Gao, Jie ✉

Wannan Medical College, China (gyic8085@gmail.com)
Graduate School, Lyceum of the Philippines University – Batangas, Philippines

Received: 20 July 2024
Available Online: 15 August 2024

Revised: 13 August 2024
DOI: 10.5861/ijrse.2024.24726

Accepted: 14 August 2024

ISSN: 2243-7703
Online ISSN: 2243-7711

OPEN ACCESS



Abstract

The study aimed at exploring the relationship among critical thinking skills, English language and intercultural competence among Chinese medical students. It proposed an English program to enhance these skills and competence. The study employed descriptive method and respondents answered through the e-questionnaires. A total of 630 students from four-year levels from a medical college in Anhui in the eastern part of China were involved in the study. Results showed that respondents hold a generally positive attitudes towards critical thinking, English language and intercultural competence, however, they have relatively weak confidence and abilities in understanding within the aspects of thinking critically, listening capacities and knowledge of other cultures, especially in the subscales of understanding texts from various fields, listening and comprehending spoken English in a variety of accents and dialects, and understanding foreign cultural taboos. It also indicates that critical thinking skills and English language competence are closely related, critical thinking and intercultural competence are closely related, and intercultural competence and English language competence are closely related as well. The study showed that the better the English language competence is, the better critical thinking skills are employed. In addition, the better critical thinking skill are applied, the better intercultural competence is. Therefore, an English program was put forward to help students in medical college to improve their English related abilities and skills.

Keywords: critical thinking skills, English language competence, intercultural competence, medical students, English Program

Critical thinking skills, English language, and intercultural competence among Chinese medical student

1. Introduction

With ever-increasing pace of globalization, English has become a commonly used language and played an essential role in various aspects by culturally diverse people. Taking the requirements of a citizen of the 21st century into consideration, how well a person masters English is no longer merely to do with the linguistic knowledge or capacities, such as English listening, speaking, reading and writing, but is related with the abilities to both communicate and interact across cultural boundaries as well (Byram et al.,2020). In China, with the increasing emphasis on language and culture teaching, as well as the growing awareness and stress to keep up with the pace of international exchanges and globalization, there has been a consistent movement shifting from English as a tool to English as a means to communicate and learn excellent civilizations and cultures, cutting-edge technologies, advanced ideas and concepts to promote an all-round citizens for this new era (China Ministry of Education, 2020).

Critical thinking is an indispensable skill and is widely accepted as an educational goal. It is a dynamic and multifaceted cognitive skill that empowers individuals to engage with information, question assumptions, and approach problems with a discerning mindset (Angraini et al., 2024). It is not merely the ability to memorize facts but the capacity to think independently, assess evidence, and construct reasoning arguments. In a rapidly developing world characterized by an abundance of information, critical thinking play as the compass that guides individuals through the complexities of decision-making as well as problem-solving. The significance focused in critical thinking which extends beyond academia to various aspects of life. It cultivates a mindset of intellectual curiosity, skepticism, and open-mindedness, fostering individuals as active contributors to knowledge, information and innovation, instead of passive recipients (Hobbs, 2010; Namwambah, 2020; Shaw et al., 2020). Within the specific context of medical education, critical thinking takes on more significance. Medical students, as future health care practitioners, navigate a landscape where sound judgment, analytical skills, and the ability to synthesize complex information are of priority (Zayapragassarazan et al.,2016). The practice of medicine requires more than rote memorization; it demands a dynamic and adaptive thinking process that can navigate uncertainties, diagnose accurately, and devise effective treatment plans. As critical thinking in medicine involves the ability to assess patient information, consider differential diagnoses, and make evidence-based decisions. It extends beyond clinical reasoning to encompass ethical considerations, cultural sensitivity, and effective communication with patients and health care teams (Doherty, 2020). In a field where every decision can have profound consequences, cultivating critical thinking skills is not only advantageous but essential.

In the increasingly globalized world, English language competence has become an essential skill, facilitating communication and collaboration across diverse cultures and nations. Mastery of the English language is not only beneficial but necessary in various fields and international relations. Proficiency in English enhances individual employability, allowing for greater job prospects in multinational companies and international markets. It also facilitates higher education opportunities, as many prestigious universities and academic programs are conducted in English. Beyond professional and academic advantages, English language competence enriches personal development, enabling access to a wide range of cultural experiences, literature, and media from around the world.

For medical students, the importance of English language competence is even more obvious. Medicine is a field that relies heavily on precision, clarity, and effective communication. Therefore, proficiency in English is crucial for medical students to excel in their studies and future careers. Medical literature, research papers, and case studies are predominantly published in English, making it imperative for medical students to have a strong command of the language to stay abreast of the latest developments and best practices in their field. Reading and

understanding complex medical texts is a daily requirement for medical students. This includes textbooks, journal articles, patient records, and treatment guidelines. Strong reading skills in English are essential for quickly and accurately interpreting this critical information, which is vital for making informed decisions in patient care.

Writing is another critical skill for medical students. They are often required to produce research papers, case reports, and clinical notes. Clear and concise writing in English is essential for conveying information accurately and professionally. Many medical students also need to publish their research findings in international journals, which necessitates a high standard of academic writing in English. A 2018 study in *Academic Medicine* found that students with better writing skills in English were more successful in publishing their research and advancing their careers. Listening and speaking skills are just as important. Medical students must be able to understand spoken English in various accents and dialects, as they will interact with patients and colleagues from diverse backgrounds. They also need to express themselves clearly and confidently, particularly in high-pressure situations where effective communication can make a significant difference. According to a 2020 study in *Communication & Medicine*, strong listening and speaking skills in English are associated with better patient outcomes and more effective teamwork in healthcare settings. Intercultural competence is another core quality of well-equipped internationalized talents. It is also proposed in the 5th Global Survey published by the International Association of Universities that universities are encouraged to provide events for students to enhance intercultural awareness and competence, and thereby improving their global readiness to function in this globalized world (Marinoni, 2019). Furthermore, the significance of intercultural competence has extended beyond individual interactions to the broader realms of education, business, health care, etc. Professionals who are equipped with intercultural competence also contribute to the creation of collaborative environments, foster innovation and address global challenges in such as dynamic environment (Simões et al.,2023).

In healthcare, intercultural competence is crucial for providing patient-centered care, understanding diverse health practices, and mitigating health disparities. Medical students, as future healthcare practitioners, are entrusted with the responsibility of providing care to culturally diverse patient populations. Beyond the technical aspects of medical knowledge, an understanding of cultural nuances becomes imperative in fostering positive patient outcomes and promoting health equity, as cultural competence in health care involves the ability to recognize and address the cultural, social, and linguistic factors that influence health (Yakar et al.,2018). So effective patient-doctor communication is dependent on a medical practitioner's awareness of diverse cultural norms, health beliefs, and communication styles. Additionally, as medical practice becomes increasingly globalized, with health care professionals collaborating across borders, intercultural competence is an essential skill for effective teamwork and collaboration. Recently, there has been a heatedly growing interest in defining and understanding intercultural competence and critical thinking within scholar circles and educational contexts. Most of the studies focus on either intercultural competence or critical thinking, with little touch on students English language competence (López-Rocha, 2021; Meiramova, 2017; Pu et al.,2019; Vu et al.,2021). There are a couple of studies showing the significance of intercultural competence in the context of healthcare (Gibson et al.,2005; Zayapragassarazan et al.,2016), which is the possible stage to-be-followed for medical students, calling for the concern about the relatively low level of critical thinking among medical practitioners and emphasizing the necessity for cultivating thinking critically. However, few have focused on medical students, where early preparation of the competences may help them be better prepared for the future employment.

Some studies have explored the possible relationship between the two variables of intercultural competence and critical thinking. In the study of Su et al. (2020), where the status of intercultural competence and critical thinking abilities were explored among 480 nursing undergraduates and the findings displays that the weighted scores of the variables in this context is relatively low so as to call for related courses to improve students' competences. However, there are little data concerning the potential correlated influence of English language competence or in the context of medical students in this area.

In Dai's research (2021), the relationships among critical thinking disposition, intercultural competence and

English language proficiency were investigated among 210 sophomores who major in English, showing that the participants have positive critical thinking dispositions and an upper-mediate level of intercultural competence, and both critical thinking disposition and intercultural competence have significant predictive effect on English language proficiency. However, when it comes to the context of students medical and clinical fields, the significance of intercultural competence and critical thinking weigh the same as or even more than that of English language competence solely when compared with students of English majors who set English language competence as the starting point to develop intercultural competence and critical thinking, while for medical students, the thinking patterns are of more importance than language itself.

According to a study published in BMC Medical Education, medical students who are not proficient in English often struggle with understanding medical texts, participating in discussions, and performing well in exams that are conducted in English. This language barrier can hinder their academic performance and limit their access to global medical knowledge and opportunities. Despite the clear need for English language skills, many medical programs do not provide adequate support for non-native English speakers. Thus, there is a lack of targeted English language training within the medical curriculum, which creates a significant gap in ensuring that all students can achieve the proficiency needed to succeed in their studies and future careers. Medical curricula typically focus more on biomedical knowledge and technical skills, with limited emphasis on cultural training. Programs that do include intercultural competence often treat it as a supplementary topic rather than an integral part of medical education. This gap indicates a need for a more structured and comprehensive approach to integrating intercultural competence into the medical curriculum.

Thus, this study aims to bridge the gap to explore the relationship among critical thinking skills, English language and intercultural competence among medical students in China. First, the study will demonstrate the explanation and understanding more comprehensively and profoundly of the three variables-critical thinking skills, English language competence, and intercultural competence both in general and with a special focus within the medical contexts, and the findings will be helpful and inspirational in English and intercultural competence learning and teaching. Second, the research may also help teachers in the related fields better understand the relationship among critical thinking skills, English language and intercultural competence, thus enhancing both students' and teachers' awareness of effective ways of improving these capacities. Lastly, the study makes contributions to the existing literature related with critical thinking skills, English language and intercultural competence.

Objectives of the Study - This study is conducted with the aim of exploring the intertwined relationships among critical thinking skills, English language and intercultural competence among medical students in China. Specifically speaking, the research address the following objectives: to identify the critical thinking skills of respondents in terms of analyzing, evaluating, creating, remembering, understanding and applying; to identify the English language competence among respondents in terms of their reading, writing, speaking, listening and comprehension abilities; to determine the intercultural competence among respondents in terms of knowledge of self, knowledge of others, attitudes, intercultural communicative skills, intercultural cognitive skills and awareness; to establish the relationships among the variables of critical thinking skills, English language and intercultural competence of the participants; and to propose an English language program to enhance medical students' critical thinking skills, English language proficiency, and intercultural competence.

2. Methods

Research Design - This research applied a descriptive approach to investigate relationship critical thinking skills, English language and intercultural competence among Chinese medical students. Descriptive approach is one of the quantitative approaches that involves interpretation of phenomena through the numerical data collected from questionnaires or surveys, which later is examined applying mathematical techniques, such as statistics (Creswell, cited in Cecilie, 2019). Its aim was to explore whether there is a significant correlation among the three variables as proposed. Moreover, the method was also used to examine whether the data

collected were positive, negative or no correlations among the three variables.

Participants of the Study. In order to investigate the interplay of critical thinking skills, English language and intercultural competence among medical students in China, the researcher selected a medical college at Anhui Province in China. There were 425 English learners as participants of this research from different programs. There are more than 5000 medical students in the medical college selected. Sampling was determined by applying the Raosoft calculation online, with a 95 confidence level and 2.5% margin error.

Instruments of the Study. The instruments included three survey questionnaires, each designed to collect related data regarding the seven research objectives. Participants' profiles, including sex, year level, place of origin was collected before the questionnaires. Part 2 is Critical Thinking Skills Questionnaire (Kobylarek et al.,2022). This tool measures the skills of analyzing, evaluating, creating, remembering, understanding and applying among Chinese medical students. It aims at assessing the participants' critical thinking skills within the contexts of English classes. Each indicator was scored on a Likert scale, which ranged from 1 (strongly disagree) to 4 (strongly agree). English Language Competence Questionnaire (Eslit, 2023) is Part 3. This questionnaire gauged students' English competence in reading, writing, speaking, listening and comprehension. It explored how well students can do in their English learning process. Items were measured on a Likert scale. Intercultural Competence Questionnaire (Peng et al.,2015) is the last part. This questionnaire assessed students' knowledge of self, knowledge of others, attitudes, intercultural communicative skills, intercultural cognitive skills and awareness, which aims to measure to what extent can students successfully cope with intercultural knowledge and skills.

Content validity and pilot testing were conducted using a smaller sample to test the reliability of the selected instruments. Necessary adjustments were made based on the feedback from the pilot test. As can be observed, all the Cronbach's Alpha coefficients of the indicators were above 0.8, it indicates good internal consistency and stability among the presented items within the instrument. This shows that the highest coefficient of 0.945 was found in the creating subscale. Then followed by the speaking competence subscale of a coefficient of 0.939, the comprehension subscale of 0.918, the listening subscale of 0.905, all of which are above 0.9, indicating excellent reliability. The subscales of awareness had 0.895, writing had 0.894, analyzing had 0.889, understanding had 0.886, reading had 0.881, knowledge of other had 0.880, intercultural cognitive skills had 0.868, intercultural communicative skills had 0.845, attitudes had 0.842, applying had 0.831, knowledge of self had 0.821, the same with remembering of 0.821, all of which were considered good. It was obvious to find that the lowest coefficient of 0.819 was the subscale of evaluation, but it was still good as an indicator. The Alpha values suggested that the participants had good understanding of both the questions and answered appropriately, thus proving the survey questionnaires had good reliability and consistency.

Data Gathering Procedure. Before the actual data collection, the researchers had already gotten permits and clearances from the target respondents who signed the consent before the survey. The questionnaires were distributed electronically through online survey platforms named Wenjuanxing, a commonly applied survey platform in China. Responses were kept anonymous to maintain confidentiality.

Data Analysis. The data were processed through the statistical software Statistic Package for the Social Science (SPSS 27). Both descriptive statistics and Pearson's correlation coefficient were used to derive the mean and standard deviation for each of the variables and to determine the correlation between critical thinking skills, English language and intercultural competence.

Ethical Consideration. All student-participants were informed clearly on the purpose of the study and were assured that their identities will remain confidential. Consent forms were signed prior the actual data gathering. The researcher ensured that participation was voluntary, and respondents were allowed to withdraw at any point without any repercussions.

3. Results and discussion

Table 1

Summary Table on Critical Thinking Skills

Indicators	Weighted Mean	Verbal Interpretation	Rank
Analyzing	3.02	Agree	1.5
Evaluating	3.02	Agree	1.5
Creating	2.98	Agree	4
Remembering	2.82	Agree	5
Understanding	2.78	Agree	6
Applying	3.01	Agree	3
Composite Mean	2.94	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 1 presents the overall assessment of critical thinking skills. The composite mean of 2.94 indicates that the respondents agreed in general that they possess the critical thinking skills presented in the table and can apply them successfully in suitable situations. Among all the indicators, both analyzing and evaluation got the highest weighted mean of 3.02, followed by applying with weighted mean of 3.01 and creating with weighted mean of 2.98. Remembering and understanding came as the last two indicators with weighted mean of 2.82 and 2.78 respectively. The results of the present study is similar with the study conducted by Franz et al.(2022). A study analyzed the learning habits of 102 Chinese medical students in an integrated curriculum and found that students often employ high-utility learning techniques such as practice testing and distributed practice, which are linked to better analytical and evaluative skills. Further research emphasized the importance of critical thinking in medical education, indicating that while medical students and professionals often excel in higher-order thinking skills, the appropriate teaching and assessment methods are still lacking (Sharples et al., 2017). However, there is study noting that students frequently struggle with the initial phases of remembering and understanding new information. This suggests a potential area for educational improvement, where reinforcing foundational knowledge could complement their existing strengths in higher-order thinking (González et al., 2018)

Table 2

Summary table on English Language Competence

Indicators	Weighted Mean	Verbal Interpretation	Rank
Reading	2.53	Agree	2.5
Writing	2.53	Agree	2.5
Speaking	2.52	Agree	4
Listening	2.38	Disagree	5
Comprehension	2.55	Agree	1
Composite Mean	2.50	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 2 presents the summary of participants' English language competence, ranking each key abilities according to their composite mean scores, which represents the average score across five essential areas: reading of 2.53, writing of the same 2.53, speaking of 2.52, listening of 2.38 and comprehension of 2.55. Each key indicator is also assigned a verbal interpretation that indicates participants' levels of agreement. Most composite means provide an overall assessment of agreement of participants' English language abilities, except the listening competence, which indicates that participant have little confidence in this competence in English.

Paige et al. (2024) explores the role of critical thinking in reading comprehension among 360 students. It finds that medical students who employ critical thinking strategies exhibit better comprehension skills. The study suggests that integrating critical thinking with reading tasks can significantly enhance students' ability to understand and analyze complex texts. The study conducted by Kim et al. (2021) investigates how different types of writing tasks affect medical students' academic performance. It shows that students who engage in structured writing activities perform better in comprehension and application tasks. In the research conducted by

Al Roomy (2022), it discusses how critical thinking and reading skills improves students' overall language proficiency. It notes that while students develop strong reading and writing skills, listening remains a challenging area, requiring more targeted interventions to enhance comprehension. The paper of Tran et al.,(2020) explores the common listening comprehension difficulties among college students. It identifies poor listening skills as a significant barrier to effective learning and suggests targeted interventions to improve this critical skill for both teachers and students especially regarding the phonological and lexical difficulties.

Table 3 presents the overall assessment of intercultural competence. The composite mean of 2.82 indicates that the respondents agreed in general that they possess the intercultural competence presented in the table and can apply them successfully in appropriate situations. Among all the indicators, attitudes got the highest weighted mean of 2.96, followed by knowledge of self with weighted mean of 2.95 and awareness with weighted mean of 2.91. Intercultural communicative skills and intercultural cognitive skills came as the fourth and fifth indicators with weighted mean of 2.85 and 2.75 respectively. Knowledge of others obtained the lowest score of 2.47. It is also the only one with verbal interpretation of disagree, showing that students lack knowledge in the area of knowledge of other cultures.

Table 3

Summary Table on Intercultural Competence

Indicators	Weighted Mean	Verbal Interpretation	Rank
Knowledge of Self	2.95	Agree	2
Knowledge of Others	2.47	Disagree	6
Attitudes	2.96	Agree	1
Intercultural Communicative Skills	2.85	Agree	4
Intercultural Cognitive Skills	2.75	Agree	5
Awareness	2.91	Agree	3
Composite Mean	2.82	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

The results of the ethnographic research conducted in culturally diverse medical school settings reveal that students from different sociocultural backgrounds demonstrate distinct learning behaviors. These studies show that Chinese medical students develop a deep understanding of their cultural identity and how it compares to others through immersive experiences and direct interactions (Liu et al.,2022). Other systematic reviews of intercultural competence development among university students highlight the importance of attitudes, knowledge, and skills. Chinese students are shown to benefit from structured programs that foster these competencies, enabling them to effectively apply intercultural settings (Huang et al., 2021).

Table 4

Relationship between Critical Thinking Skills and English Language Competence

Analyzing	r-value	p-value	Interpretation
Reading	.504**	0.000	Highly Significant
Writing	.498**	0.000	Highly Significant
Speaking	.492**	0.000	Highly Significant
Listening	.455**	0.000	Highly Significant
Comprehension	.470**	0.000	Highly Significant
Evaluating			
Reading	.484**	0.000	Highly Significant
Writing	.479**	0.000	Highly Significant
Speaking	.469**	0.000	Highly Significant
Listening	.427**	0.000	Highly Significant
Comprehension	.461**	0.000	Highly Significant
Creating			
Reading	.525**	0.000	Highly Significant
Writing	.520**	0.000	Highly Significant
Speaking	.493**	0.000	Highly Significant
Listening	.452**	0.000	Highly Significant
Comprehension	.483**	0.000	Highly Significant

Remembering			
Reading	.577**	0.000	Highly Significant
Writing	.570**	0.000	Highly Significant
Speaking	.522**	0.000	Highly Significant
Listening	.534**	0.000	Highly Significant
Comprehension	.539**	0.000	Highly Significant
Understanding			
Reading	.611**	0.000	Highly Significant
Writing	.621**	0.000	Highly Significant
Speaking	.559**	0.000	Highly Significant
Listening	.562**	0.000	Highly Significant
Comprehension	.576**	0.000	Highly Significant
Applying			
Reading	.507**	0.000	Highly Significant
Writing	.513**	0.000	Highly Significant
Speaking	.526**	0.000	Highly Significant
Listening	.466**	0.000	Highly Significant
Comprehension	.482**	0.000	Highly Significant

Legend: Significant at $p\text{-value} < 0.01$

The analysis of table 4 shows that all correlations between critical thinking skills and English language competence are highly significant with p -values of 0.000, which indicates that there is a strong relationship between the two variables among Chinese medical students. First, the correlation for analyzing with reading, writing, speaking, listening and comprehension are all positive and highly significant ($p < 0.001$). It suggests that students with better analyzing skills in critical thinking tend to have better English language competence, which in turn boost students' techniques when doing critical thinking. The finding of Basyoni, Bee, and Seng is aligned with the correlated relationship between English language abilities and analyzing in critical thinking. The study was conducted to examine the effectiveness of using students' created digital storytelling to enhance critical listening skills among Saudi students. Results indicated that students with better analyzing skills in critical thinking have better listening comprehension and overall English language competence compared to their peers. Then, there is strong correlations for creating with English competence ($p < 0.001$). This shows that students who have better skill of creation will also perform better in English language. In the study of Rodríguez et al. (2019), 529 students were engaged in the activities designed to enhance higher-order skills, including self-reflection, critical thinking, and the ability to create and evaluate ideas. Results showed that students who demonstrated stronger creative skills also have better performance in English language tasks, particularly in reading and writing.

Fourth, the positive and significant correlation shows that if students have better memory, they are also likely to perform well in English. The study of Michel et al. (2019) included 94 students. The results showed that students with better working memory performed consistently well in writing tasks across various contexts, indicating a strong link between memory capacity and language proficiency. The study also highlighted that enhancing working memory can lead to improved performance in writing and overall language skills. Fifth, there is a significant relationship between understanding and English language competence ($p < 0.001$). It can be known from the result that students who have strong ability in understanding information may also do good in these essential English capacities. Liu et al. (2020) conducted a systematic review to understand health literacy among university students. The study found that students with strong abilities to understand and evaluate evidence performed better in English language tasks. The findings suggest that a high level of cognitive skills, which is critical for understanding complex information, correlates with better performance in essential English capacities. In addition, Goel et al. (2018) explored the motivations of medical students, emphasizing the role of understanding evidence and information. The study presented that students who did well in understanding and processing medical evidence also performed well in English language assessments, particularly in reading and writing tasks. Sixth, according to the positive correlation ($p < 0.001$), students who have better capacity of application are believed to gain higher scores in English. Students with better application skills in critical thinking, such as the ability to organize and structure their texts effectively, performed significantly better in English writing tasks. The study concluded that application skills are crucial for achieving high scores in English

writing.

Table 5 shows the association between critical thinking skills and intercultural competence. The computed r-values displays a moderate direct relationship and the resulted p-values were 0.000, indicating that there was significant correlation between the variables and implying that the better students are in the critical thinking skills, the more that they are competent when encountering intercultural situations and conflicts. First, the correlation for analyzing with knowledge of self, knowledge of others, attitudes, intercultural communicative skills, intercultural cognitive skills and awareness all present positive and are highly significant ($p < 0.001$). It suggests that students who have better analyzing skill in critical thinking are more likely to have better capacities in intercultural communication and skills, which in turn may bring higher ability of analysis when doing critical thinking. Recent studies also indicate this correlation. Kyaw et al.,(2019) conducted a systematic review and meta-analysis on the effectiveness of digital education on communication skills among medical students. This study analyzed various communication skills, including the ability to gather, process, and critically analyze information. The findings indicated that medical students with strong analyzing skills in critical thinking showed significant improvement in intercultural communication abilities.

Table 5
Relationship between Critical Thinking Skills and Intercultural Competence

Analyzing	r-value	p-value	Interpretation
Knowledge of Self	.349**	0.000	Highly Significant
Knowledge of Others	.466**	0.000	Highly Significant
Attitudes	.320**	0.000	Highly Significant
Intercultural Communicative Skills	.440**	0.000	Highly Significant
Intercultural Cognitive Skills	.443**	0.000	Highly Significant
Awareness	.437**	0.000	Highly Significant
Evaluating			
Knowledge of Self	.378**	0.000	Highly Significant
Knowledge of Others	.443**	0.000	Highly Significant
Attitudes	.363**	0.000	Highly Significant
Intercultural Communicative Skills	.492**	0.000	Highly Significant
Intercultural Cognitive Skills	.455**	0.000	Highly Significant
Awareness	.455**	0.000	Highly Significant
Creating			
Knowledge of Self	.405**	0.000	Highly Significant
Knowledge of Others	.477**	0.000	Highly Significant
Attitudes	.362**	0.000	Highly Significant
Intercultural Communicative Skills	.486**	0.000	Highly Significant
Intercultural Cognitive Skills	.478**	0.000	Highly Significant
Awareness	.482**	0.000	Highly Significant
Remembering			
Knowledge of Self	.335**	0.000	Highly Significant
Knowledge of Others	.516**	0.000	Highly Significant
Attitudes	.285**	0.000	Highly Significant
Intercultural Communicative Skills	.415**	0.000	Highly Significant
Intercultural Cognitive Skills	.437**	0.000	Highly Significant
Awareness	.455**	0.000	Highly Significant
Understanding			
Knowledge of Self	.361**	0.000	Highly Significant
Knowledge of Others	.556**	0.000	Highly Significant
Attitudes	.350**	0.000	Highly Significant
Intercultural Communicative Skills	.463**	0.000	Highly Significant
Intercultural Cognitive Skills	.497**	0.000	Highly Significant
Awareness	.464**	0.000	Highly Significant
Applying			
Knowledge of Self	.445**	0.000	Highly Significant
Knowledge of Others	.489**	0.000	Highly Significant
Attitudes	.463**	0.000	Highly Significant
Intercultural Communicative Skills	.530**	0.000	Highly Significant
Intercultural Cognitive Skills	.504**	0.000	Highly Significant
Awareness	.526**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

Then a highly significant relationship can be observed between evaluating and intercultural competence ($p < 0.001$). It indicates that students with better evaluation tend to have a more all-round skill and knowledge within the different cultural contexts. This is evident in recent studies. Hu et al.,(2022) findings suggested that students who did well in evaluating information and knowledge had superior abilities in intercultural communication, such as knowledge, skills, attitudes, and awareness. Medical students with strong evaluation skills were found to possess better knowledge, attitudes, and communication skills necessary for effective interaction in diverse cultural environments. Remembering is also highly correlated with all the subscales of intercultural competence ($p < 0.001$). It indicates that students who have good memory are more likely to perform well in cultural contexts where skills and knowledge are expected to be applied. Emanuel (2020) discussed the need for medical education to include cultural competence and communication skills. The study suggested that students with strong memory skills could better retain and apply cultural competence training, thereby improving their performance in diverse cultural contexts. Teherani et al. (2018) examined the differences in clinical performance among medical students and how these differences impact their ability to work with culturally diverse patients. The study found that students with better memory performed well in clinical settings as the settings required high cultural competence. Understanding is proved to have a strong relationship with knowledge of self and others, attitudes, intercultural communicative and cognitive skills, and awareness, as all subscales are positive and significant ($p < 0.001$).

Last but not the least, seen from the positive and strong correlation between applying and intercultural competence ($p < 0.001$), students who are good in application of knowledge and skills are believed to perform well when encountering intercultural situations or conflicts. The study assessed the effectiveness of distance learning among medical students during the COVID-19 pandemic. It concluded that students who were proficient in applying digital learning tools and methods exhibited higher levels of intercultural competence, including better communication skills, cultural awareness, and the ability to interact effectively with patients from diverse backgrounds.

Table 6*Relationship between English Language Competence and Intercultural Competence*

Reading	r-value	p-value	Interpretation
Knowledge of Self	.356**	0.000	Highly Significant
Knowledge of Others	.670**	0.000	Highly Significant
Attitudes	.391**	0.000	Highly Significant
Intercultural Communicative Skills	.516**	0.000	Highly Significant
Intercultural Cognitive Skills	.570**	0.000	Highly Significant
Awareness	.440**	0.000	Highly Significant
Writing			
Knowledge of Self	.360**	0.000	Highly Significant
Knowledge of Others	.680**	0.000	Highly Significant
Attitudes	.376**	0.000	Highly Significant
Intercultural Communicative Skills	.537**	0.000	Highly Significant
Intercultural Cognitive Skills	.570**	0.000	Highly Significant
Awareness	.457**	0.000	Highly Significant
Speaking			
Knowledge of Self	.434**	0.000	Highly Significant
Knowledge of Others	.729**	0.000	Highly Significant
Attitudes	.415**	0.000	Highly Significant
Intercultural Communicative Skills	.585**	0.000	Highly Significant
Intercultural Cognitive Skills	.609**	0.000	Highly Significant
Awareness	.487**	0.000	Highly Significant
Listening			
Knowledge of Self	.375**	0.000	Highly Significant
Knowledge of Others	.758**	0.000	Highly Significant
Attitudes	.334**	0.000	Highly Significant
Intercultural Communicative Skills	.531**	0.000	Highly Significant
Intercultural Cognitive Skills	.568**	0.000	Highly Significant
Awareness	.437**	0.000	Highly Significant

Comprehension			
Knowledge of Self	.461**	0.000	Highly Significant
Knowledge of Others	.739**	0.000	Highly Significant
Attitudes	.434**	0.000	Highly Significant
Intercultural Communicative Skills	.593**	0.000	Highly Significant
Intercultural Cognitive Skills	.643**	0.000	Highly Significant
Awareness	.523**	0.000	Highly Significant

Legend: Significant at $p\text{-value} < 0.01$

Table 6 shows the differences between English language competence and intercultural competence. The r-values in the table shows a moderate and direct correlation with the p-values standing at 0.000, indicating that there was highly significant correlation and implying that the more students are competent in English language, the more that they are competent in intercultural contexts. First, the relationship between English language competence in terms of reading and all six intercultural subscales all show positive and significant ($p < 0.001$). This indicates that students who have better English reading skills, tend to have better performance in cultural contexts. Recent studies have similar evidence. Second, the correlations for writing with all intercultural competences are significant ($p < 0.001$). This shows that students who can do well in English writing will also have an impressive performance in intercultural communication and its application. This finding is aligned with that in the study of Liu et al. (2023) who analyzed the impact of online exchanges on students' intercultural communicative competence. The findings indicated that students with strong English writing skills were more likely to develop intercultural competence, as their effective ability to express thoughts and ideas in writing facilitated better understanding and engagement in intercultural communication scenarios. Third, there is a significant correlation between speaking capacity and intercultural competence ($p < 0.001$). In the study involved in-depth interviews with a diverse group of international medical students of Jiang et al. (2022), researchers explored the perspectives of international medical students in China regarding the factors influencing their academic success. It highlighted that students with strong English speaking skills demonstrated better intercultural competence, including the ability to effectively communicate with peers and faculty from diverse cultural backgrounds.

Fourth, there is a positive and significant correlation between listening and intercultural competence ($p < 0.001$). It shows that students who have strong listening abilities and techniques, may also have better communication skills to understand and appreciate other's cultures. Last, students' comprehension is proved to be significantly correlated with competence in intercultural contexts. The study of Heggernes (2021) explores the role of textual materials in developing intercultural communicative competence among students in English language classrooms. It was found that students with strong English comprehension skills were better able to understand and interpret intercultural contexts presented in the texts. Based on the respondents' reported weakest understanding skill among critical thinking skills, weakest listening competence and least knowledge of others in intercultural contexts, the author, with the aim to improve the medical students' critical thinking, English and intercultural competence in the medical college in Anhui, provided an English enhancement plan.

Table 7
Proposed English Language Program to enhance Critical Thinking Skills, Competence and Intercultural Competence of Chinese Medical Students

Key Results Area and Objectives	Activities	Success Indicator	Persons Involved
A. Critical Thinking Skills -Understanding -understanding texts from various fields Objective: -to encourage students' reflection on reading and learning experiences using writing assignments	Critical Thinking Workshop -include exercises that teach logical reasoning, identifying biases, and evaluating arguments. -use examples from texts in various fields to show these skills. -encourage students to practice these skills through discussions and writing. Reflective Writing Assignments -assign reflective essays from various fields -provide evidence that guide students to think critically about the text -offer feedback on the depth of analysis and critical engagement	90 % or higher increase in the percentage of students reporting an improved understanding level in dealing with texts from different fields.	Students Teacher

	with the text.		
B. English Language Competence -Speaking -adjusting speaking style to fit different situations and audiences in English. Objective: -to help students practice adjusting their language, tone, and conditions according to the audience and context.	Role-Playing and Simulations -raise questions with patients from diverse backgrounds -role-play interactions with other students, such as presenting cases, discussing diagnoses, and making treatment plans. Language Proficiency Programs -provide lectures that focus on medical terminology, prefixes, and useful expressions in the medical field. -regularly practice in speaking exercises, such as summarizing medical articles, discussing patient cases, and explaining medical procedures. -provide training to improve pronunciation and reduce accent barriers	90 % or more students feel confident in command of the language necessary for effective professional communication.	Students Teacher
C. Intercultural Competence -Knowledge of Others -understand foreign cultural taboos Objective: -to provide hands-on experience and deepen students' understanding of cultural differences and taboos	Cultural Immersion Workshops -to invite speakers from different cultural backgrounds to discuss their stories -to use role-playing to practice contexts that involve cultural taboos. Cultural Competence Training -to conduct workshops that cover various aspects of cultural competence, including understanding and respecting cultural taboos. -to develop training modules that include videos, readings, and quizzes on cultural taboos and appropriate behaviors. -to invite healthcare professionals who have worked in diverse cultural settings to share their experiences and insights.	90 % or more students can have better understanding of foreign cultural taboos and behave appropriately.	Students Teacher

4. Conclusions and recommendations

Most of the Chinese medical student participants show a high level of assessment in critical thinking skills, perceiving themselves as competent in analyzing, evaluating, creating, remembering, understanding and applying, and displaying a positive belief in their performance in daily and clinical scenarios related with critical thinking. Majority exhibit a comparable competence in comprehension, a moderate level of English competence, including reading, writing, displaying proficiency in productive competences. However, there is an extra need for emphasis and support in enhancing listening competence. Chinese medical students present a positive overall intercultural competence in knowledge of self, knowledge of others, attitudes, intercultural communicative skills, intercultural cognitive competence and awareness, and proficiency in both knowledge, skills and attitudes in intercultural contexts. Critical thinking skills, English language and intercultural competence were significantly correlated with each other, which indicates that variations in one item are more likely to bring changes in the others, displaying interdependence with each other. The researcher proposes a program to improve critical thinking skills, English language and intercultural competence among Chinese medical students.

Administration in medical universities and colleges may design practical courses that address essential skills through activities such as case studies, role-playing, and reflective writing that require critical analysis and intercultural understanding. Faculty members in medical universities and colleges may develop problem-based learning (PBL) modules that encourage students to use critical thinking to address clinical scenarios, encouraging them to consider cultural factors and language barriers in their solutions. Students may engage actively in seeking experiences that enhance these skills, such as study abroad programs, language courses, and cultural workshops. Teachers may participate in workshops, courses, and seminars focused on critical thinking, language instruction, and cultural competence into teaching practices and provide constructive feedback to guide student improvement. Further study may put an emphasis on conducting longitudinal studies, which tracks students' progress in critical thinking, language proficiency, and intercultural competence from first year that accurately measure critical thinking, language proficiency, and intercultural competence, ensuring they are applicable across diverse educational settings.

Funding: Key Projects in Philosophy and Social Science in Anhui Province (Grant Number: 2022AH051196); Research Fund for the Young and Middle-Aged Scholars in Wannan Medical College (Grant Number: WK2023ZQNS12); Online and Offline Hybrid Course Project in Teaching and Research in Anhui Province (Grant Number: 2022xsxx244), "Four New" Research and Reform Practice Projects in Anhui Province (Grant Number: 2022sx161).

5. References

- Al Roomy, M. A. (2022). Investigating the Effects of Critical Reading Skills on Students' Reading Comprehension. *Arab World English Journal*, 13(1), 366-381.
- Angraini, D., Putra, W., Masurai, P., & Wahyudi, L. (2024). A Reading Teacher's Perspective in Constructing the Students' Critical Thinking. *SALEE: Study of Applied Linguistics and English Education*, 5(1), 290-305.
- Byram, M., & Golubeva, I. (2020). Conceptualising intercultural (communicative) competence and intercultural citizenship. In *The Routledge handbook of language and intercultural communication* (pp.70-85). Routledge.
- China Ministry of Education (MOE). (2020). *Guidances on College English Teaching*. Retrieved from <https://file.fosu.edu.cn/course/uploads/sites/90/2023/02/大学英语教学指南（2020版）.pdf>
- Dai Maohua (2021). *A Study on the Relationships among Critical Thinking Disposition, Intercultural Competence and English Language Proficiency of English-related Majors* (Master's thesis. Sichuan International Studies University)
- Doherty, R. F. (2020). *Ethical dimensions in the health professions-e-book*. Elsevier Health Sciences.
- Emanuel, E. J. (2020). The inevitable reimaging of medical education. *Jama*, 323(12), 1127-1128.
- Franz, A., Oberst, S., Peters, H., Berger, R., & Behrend, R. (2022). How do medical students learn conceptual knowledge? High-, moderate-and low-utility learning techniques and perceived learning difficulties. *BMC Medical Education*, 22(1), 250.
- Gibson, D., & Zhong, M. (2005). Intercultural communication competence in the healthcare context. *International Journal of Intercultural Relations*, 29(5), 621-634.
- Goel, S., Angeli, F., Dhirar, N., Singla, N., & Ruwaard, D. (2018). What motivates medical students to select medical studies: a systematic literature review. *BMC medical education*, 18, 1-10. <https://doi.org/10.1186/s12909-018-1123-4>
- González, C. M., & Ma, K. (2018). *Teaching Clinical Reasoning and Critical Thinking*. ScienceDirect.
- Heggernes, S. L. (2021). A critical review of the role of texts in fostering Intercultural Communicative competence in the English Language classroom. *Educational Research Review*, 33, 100390.
- Hobbs, R. (2010). *Digital and Media Literacy: A Plan of Action*. A White Paper on the Digital and Media Literacy Recommendations of the Knight Commission on the Information Needs of Communities in a Democracy. Aspen Institute. 1 Dupont Circle NW Suite 700, Washington, DC 20036.
- Hu, Z., Wang, X., Wei, P., Chen, Y., Meng, X., & Liu, Y. (2022). Research on the Cultivation Path of the Core Competencies of College Students of the Undergraduates in Colleges of Traditional Chinese Medicine in the New Era.
- Huang, L., Fan, A. P. C., Su, N., Thai, J., Kosik, R. O., & Zhao, X. (2021). Chinese medical students' disposition for critical thinking: a mixed methods exploration. *BMC Medical Education*, 21, 1-8.
- Jiang, Q., Horta, H., & Yuen, M. (2022). International medical students' perspectives on factors affecting their academic success in China: a qualitative study. *BMC Medical Education*, 22(1), 574.
- Kim, S., Jang, H., & Ahn, S. (2021). The effect of practical example-based learning on medical students' motivation and clinical reasoning skills. *Medical Teacher*, 43(3), 274-281.
- Kim, S., Yang, J. W., Lim, J., Lee, S., Ihm, J., & Park, J. (2021). The impact of writing on academic performance for medical students. *BMC Medical Education*, 21, 1-8.
- Kobylarek, A., Błaszczynski, K., Ślósarz, L., & Madej, M. (2022). Critical Thinking Questionnaire (CThQ)—construction and application of critical thinking test tool. *Andragogy Adult Education and Social Marketing*, 2(2), 1-1.
- Kyaw, B. M., Posadzki, P., Paddock, S., Car, J., Campbell, J., & Tudor Car, L. (2019). Effectiveness of digital education on communication skills among medical students: systematic review and meta-analysis by the digital health education collaboration. *Journal of medical Internet research*, 21(8), e12967.
- Liu, C., Wang, D., Liu, C., Jiang, J., Wang, X., Chen, H., ... & Zhang, X. (2020). What is the meaning of health literacy? A systematic review and qualitative synthesis. *Family medicine and community health*, 8(2).

- Liu, G., Ma, C., Bao, J., & Liu, Z. (2023). Toward a model of informal digital learning of English and intercultural competence: A large-scale structural equation modeling approach. *Computer Assisted Language Learning*, 1-25.
- Liu, J., Miles, K., & Li, S. (2022, October). Cultural competence education for undergraduate medical students: An ethnographic study. In *Frontiers in Education* (Vol. 7, p. 980633). Frontiers.
- Liu, X., Wang, X., Wu, Y., Yu, H., Yang, M., Khoshnood, K., ... & Wang, X. (2023). Knowledge and attitudes of Chinese medical postgraduates toward research ethics and research ethics committees: a cross-sectional study. *BMC Medical Education*, 23(1), 482.
- Liu, Y., Li, X., & Zhang, Y. (2020). Challenges in intercultural communication: A study of Chinese medical students. *Journal of Medical Education and Training*, 4(2), 89-96.
- Liu, Y., Song, Y., & Yan, Y. (2022). Problems and countermeasures associated with intercultural adaptation in international education according to the communication action theory model. *Frontiers in Psychology*, 13, 942914.
- López-Rocha, S. (2021). Refocusing the development of critical intercultural competence in higher education: challenges and opportunities. *Language and Intercultural Communication*, 21(1), 118-131.
- Marinoni, G. (2019). Internationalization of higher education: An evolving landscape, locally and globally: IAU 5th Global Survey. DUZ Academic Publishers.
- Meiramova, S. (2017). Applications of critical thinking research: Foreign language teaching in an intercultural context. *The Online Journal of New Horizons in Education-January*, 7(1), 24-36.
- Michel, M., Kormos, J., Brunfaut, T., & Ratajczak, M. (2019). The role of working memory in young second language learners' written performances. *Journal of Second Language Writing*, 45, 31-45.
- Namwambah, T. D. (2020). Critical Thinking and Value Creating Education for Human Development.
- Paige, D., Rupley, W. H., & Ziglari, L. (2024). Critical Thinking in Reading Comprehension: Fine Tuning the Simple View of Reading. *Education Sciences*, 14(3), 225.
- Peng, R. Z., Wu, W. P., & Fan, W. W. (2015). A comprehensive evaluation of Chinese college students' intercultural competence. *International Journal of Intercultural Relations*, 47, 143-157.
- Pu, D., Ni, J., Song, D., Zhang, W., Wang, Y., Wu, L. & Wang, Y. (2019). Influence of critical thinking disposition on the learning efficiency of problem-based learning in undergraduate medical students. *BMC medical education*, 19, 1-8.
- Rodríguez, G., Pérez, N., Núñez, G., Baños, J. E., & Carrió, M. (2019). Developing creative and research skills through an open and interprofessional inquiry-based learning course. *BMC medical education*, 19, 1-13.
- Sharples, J. M., Oxman, A. D., Mahtani, K. R., Chalmers, I., Oliver, S., Collins, K. & Hoffmann, T. (2017). Critical thinking in healthcare and education. *Bmj*, 357.
- Shaw, A., Liu, O. L., Gu, L., Kardonova, E., Chirikov, I., Li, G. & Loyalka, P. (2020). Thinking critically about critical thinking: validating the Russian HEIghten® critical thinking assessment. *Studies in Higher Education*, 45(9), 1933-1948.
- Simões, A., Moreira, G., & Oswald, T. (2023). empowering EFL learners for the global stage: a collaborative approach to cultivating 21st-century skills and intercultural competence in higher education. In *ICERI2023 Proceedings* (pp. 9696-9707). IATED.
- Su Nina, Huang Yanbin, & Zhang Geng. (2020). Cross-cultural Critical Thinking Ability of Nursing Undergraduates and Its Influence Factors: A 480-Case Study. *Journal of Nursing*, 27(18), 5.
- Teherani, A., Hauer, K. E., Fernandez, A., King Jr, T. E., & Lucey, C. (2018). How small differences in assessed clinical performance amplify to large differences in grades and awards: a cascade with serious consequences for students underrepresented in medicine. *Academic medicine*, 93(9), 1286-1292.
- Tran, T. Q., & Duong, T. M. (2020). Insights into Listening Comprehension Problems: A Case Study in Vietnam. *PASAA: Journal of Language Teaching and Learning in Thailand*, 59, 77-100.
- Vu, N. T., & Dinh, H. (2021). College-level students' development of intercultural communicative competence: A quantitative study in Vietnam. *Journal of Intercultural Communication Research*, 51(2), 208-227. <https://doi.org/10.1080/17475759.2021.1893207>
- Yakar, H. K., & Alpar, S. E. (2018). Intercultural communication competence of nurses providing care for
-

Critical thinking skills, English language, and intercultural competence among Chinese medical student

patients from different cultures. *International Journal of Caring Sciences*, 11(3), 1743-1755.

Zayapragassarazan, Z., Menon, V., Kar, S. S., & Batmanabane, G. (2016). Understanding Critical Thinking to Create Better Doctors. Online Submission, 1(3), 9-13.

