



# A Survey of Students' Satisfaction with ESP Courses within EMI Contexts at a Chinese University

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**Abstract.** Since EMI implementation in China's tertiary education system two decades ago, a debate has emerged regarding the balance between subject content learning and English language proficiency. ESP programs aim to enhance students' academic and professional communication skills in specific fields. Integrating ESP into EMI is crucial for addressing the challenges of balancing subject content and language learning. ESP courses can prepare students for future professional careers and academic development, thus supporting the linguistic dimensions within EMI settings. This paper explores students' satisfaction regarding content, teaching effectiveness, and assessment in ESP courses within EMI contexts. A mixed-method approach was used, incorporating quantitative data from a questionnaire completed by 355 students and qualitative data from interviews with 15 students and six instructors. Research findings indicate that students hold a positive attitude towards satisfaction with content, teaching effectiveness, and assessment in ESP courses within EMI contexts. The findings suggest that improving teaching proficiency can enhance ESP learning in EMI contexts. This survey provides valuable insights into the effective implementation of ESP courses in EMI settings and suggests directions for further research.

**Keywords:** ESP; EMI; satisfaction of content, teaching effectiveness and assessment

## 1 Introduction

English-medium instruction (EMI) has become a prominent phenomenon in universities due to internationalization [1]. EMI refers to using English to teach academic subjects in regions or countries where English is not the first language of the majority [2]. An important aspect of EMI-related studies is the integration of language and content in EMI teaching, as language plays a vital role in conveying ideas and aiding problem-solving in specific disciplines. Several terms are commonly used to describe practices involving using a language other than the students' native language for teaching academic content. These terms include Content-Based Instruction, Content and Language Integrated Learning, immersion, bilingual education, and EMI [1]. Each of these terms

has distinct characteristics. EMI is particularly noteworthy for its focus on teaching academic content primarily in English without the same degree of explicit language instruction found in CLIL or CBI. While CLIL and CBI often integrate language teaching with content instruction to enhance students' overall English proficiency, EMI emphasizes delivering academic subjects through English, with less focus on separate language instruction. Since the 1960s, ESP has evolved into a distinct discipline, defined by its learner-centered approach, which prioritizes addressing the specific linguistic needs of its learners [3]. Many countries highly valued ESP, which is crucial for economic development and offers new career opportunities [4]. ESP is more targeted, equipping students with the specific language skills they need for particular fields. This tailored approach helps students develop a vocabulary and a set of language functions relevant to their specific areas of study or professional practice. Figure 1 depicts the continuum of content and language learning objectives.



**Fig. 1.** EMI Continuum (Adapted from [5])

The integration in EMI and the targeted approach of ESP play significant roles in students' academic and professional success in many parts of the world. EMI's primary goal is to teach academic or professional content through English without directly focusing on language instruction, which means that students' English proficiency is a tool for completing academic content rather than the focus of teaching. ESP leans more towards language teaching, primarily focusing on English needs in specific fields, such as Business English, Academic English, Petroleum English, Materials English, Metallurgical English, and Medical English. ESP courses can help students develop language and intercultural skills in specific areas, while EMI courses can promote cross-cultural communication and understanding through English as a medium. Although previous studies have documented the importance, methods, and dimensions of ESP programs within EMI [6], few studies have been conducted to reassess students' satisfaction levels from both students' and instructors' perspectives, particularly in a local university in a third-tier city in China. Specifically, the following research questions are formulated:

- 1) What are students' satisfaction levels of content, teaching effectiveness, and assessment in the ESP courses within EMI contexts?
- 2) What are the differences between students' satisfaction levels of content, teaching effectiveness, and assessment by gender, academic year, CET 4, and self-proficiency?
- 3) What are the correlations between students' satisfaction levels of content, teaching effectiveness, and assessment and overall satisfaction in the ESP courses within EMI contexts?

## 2 Theoretical Background

Research on ESP within EMI contexts has gained momentum due to the growing global trend of EMI programs, covering a wide range of topics such as student language challenges, lack of academic and language support courses, inadequate interdisciplinary collaboration with teachers, and teacher training [7]. Galloway and Ruegg (2022) emphasized that EMI instructors should be able to give clear explanations, simplify complex concepts, and be attentive to students' needs besides subject knowledge [8]. They also revealed that subject-specific students were positive about language support programs. Costa and Mastellotto (2022) emphasized language for specific purposes' potential to prepare students for EMI communication, enhanced academic skills, developed transferable skills, and promoted intercultural communication [9]. Alhasani (2023) conducted a study in Albania and found that language and content goals should be regarded as equally important in English teaching methods for disciplinary lecturers. He also proposed the standardization of English teaching needs assessment [10]. Yuan (2023) argued that language specialists can become EMI teacher educators and enhance EMI teaching and teacher development by integrating content and language in specific disciplines through collaboration [11]. Pham (2023) stated that language and content teachers in a Vietnam university primarily supported students in writing and reading. However, they focused on teaching generic skills or assisting with content comprehension, rather than addressing the subject-specific academic language students needed [12]. Airey (2016) looked at the relationship between EMI and disciplinary learning, which suggested that while EMI can enhance students' language skills, it can also hinder their understanding of disciplinary content if not adequately supported by ESP courses tailored to the specific needs of the discipline [13]. Chung and Lo (2023) sought to evaluate how an engineering EMI course influenced university students' English proficiency and content learning by providing Chinese-medium instruction (CMI) and EMI sections [6]. Their parallel instruction model aimed to create smaller EMI classes with students who had higher English proficiency, aiming to achieve content learning outcomes similar to those of the CMI sections.

More studies are conducted to explore better integration from various perspectives. Mancho-Bares and Arnó-Macià (2017) investigated the integration of ESP in EMI training, mainly how EMI instructors handle disciplinary-specific language and genres in their teaching [14]. The EMI lecturers did not use genre-based instruction but instead relied on the pedagogy of osmosis [15], where academic literacy is developed through long-term exposure rather than focused teaching. Arnó-Macià and Mancho-Barés (2015) stressed the need for collaboration with ESP teachers in language development by integrating language into content courses and content into ESP courses [16]. Aguilar-Pérez (2018) introduced the integration of intercultural competence in ESP and EMI, moving from theory to practice, promoting ESP courses before EMI in the curriculum, and fostering ESP and EMI collaboration [17].

Studies also seek to identify factors that influence integration. For example, Cui, Wang, and Gardiner (2024) explored how translanguaging practices, particularly the use of students' first language and ESP courses, supporting EMI in a transnational education program in China [18]. Muttaqin and Chuang (2023) conducted a survey at an

Indonesian university and found that English proficiency partially mediated the relationship between ESP and the academic achievement of EMI students. Both ESP and English proficiency were essential for improving EMI students' understanding of disciplinary knowledge [19]. The ESP courses within EMI contexts also face challenges to a great extent. Belhiah and Elhami (2015) examined the challenges and benefits of EMI in the Gulf region identified a range of challenges, and advocated for the integration of ESP courses to prepare students for EMI better [20]. As for the satisfaction with EMI or ESP or the integration, Galloway, Sahan, and McKinley (2024) explored the benefits of ESP in EMI contexts [7].

Previous studies have focused on well-developed regions and top-tier institutions, with limited research on the effectiveness of implementation in less developed areas. Therefore, it is clear that ESP research within EMI contexts should expand to include a wider range of regions and institutions with fewer resources, in order to provide a more comprehensive understanding of ESP in EMI contexts across China.

### 3 Methodology

The study used a mixed-methods design, collecting quantitative data through a questionnaire and qualitative data from semi-structured interviews. The researchers recruited a group of ESP students with EMI experience through random sampling at a local university. Fifteen students and six instructors with ESP teaching experience in EMI contexts were selected for interviews. A total of 355 students completed the questionnaire, with seven responses deemed invalid, leaving 348 valid responses (98.0%). Of these, 15 students were selected for interviews. Table 1 below presents the participants' demographic information.

**Table 1.** Questionnaire Participant Demographics

Factor	Category	N	Percent (%)
Gender	M	146	42.0
	F	202	58.0
Academic year	1	92	26.4
	2	98	28.2
	3	89	25.6
	4	69	19.8
CET 4	Yes	155	44.5
	No	193	55.5
Self-evaluation	Beginner	55	15.8
	Intermediate	204	58.6
	Advanced	89	25.6

Each interview lasted between 20 and 30 minutes. The research first transcribed the interviews in Chinese and then translated them into English. Table 2 below shows the information of the interviewed students, and Table 3 presents the information of the

interviewed instructors. For anonymity, the students are referred to as PS1-PS15, and the instructors as PI1-PI6.

**Table 2.** Description of Interviewees (Students)

Code.	Gender	Major	Academic year	ESP learned
PS1	F	Business Administration	2	4
PS2	F	Food Science & Engineering	2	4
PS3	M	Animal Science & Engineering	1	2
PS4	F	International trade	3	8
PS5	M	Business Administration	3	8
PS6	M	Animal Science & Engineering	2	6
PS7	M	Food Science & Engineering	2	4
PS8	F	Environmental Science Engineering	2	4
PS9	M	Animal Science & Engineering	2	6
PS10	M	Animal Science & Engineering	3	8
PS11	F	Accounting	3	8
PS12	F	Business Administration	4	10
PS13	F	Materials Science & Engineering	1	2
PS14	F	Computer Science & Engineering	3	8
PS15	M	Environmental Science & Engineering	4	11

Instructors also participated in the survey. The researchers selected instructors with extensive ESP teaching experience in EMI contexts for interviews. Table 3 below illustrates the information of the instructors who participated in the interviews.

**Table 3.** Description of Interviewees (Instructors)

Code.	Gender	Major	Years	Degree	Position	Dept.	ESP taught
P11	F	Information Engineering	6	Ph.D.	Instructor	Computer Science	2
P12	F	International Economic & Trade	3	MBA	Instructor	Business	12
P13	F	International Economic & Trade	2	MBA	Assistant Instructor	Business	3
P14	M	Genetics	10	M.S.	Instructor	Animal Science	2
P15	F	Finance	9	Ph.D.	Professor	Business	4
P16	F	Business Administration	7	Ph.D.	Professor	Business	2

The data collected from the questionnaire were analyzed using SPSS 26.0. PCA was used to identify the factors, and the maximum possible variance was inferred using orthogonal rotations. Three factors were finally identified, which accounted for 66.1% of the total variance. A reliability test indicated that the questionnaire was highly reliable, as shown in Table 4 below, indicating that the questionnaire had high internal consistency. Bartlett's test was significant ( $p < .001$ ), and Kaiser-Meyer-Olkin measure of sampling adequacy was high ( $KMO = .923$ ), indicating it was acceptable to proceed with the factor analysis.

**Table 4.** Reliability for Questionnaire (N=348)

Factor	Item	$\alpha$	M (SD)
Content satisfaction	6	.914	3.80 (.91)
Teaching effectiveness satisfaction	7	.896	3.75 (.85)
Assessment satisfaction	6	.893	3.68 (.84)

The qualitative data was to conceptualize, categorize, and summarize from the bottom-up to complete the coding classification of students' and instructors' perceptions toward ESP courses within EMI contexts. The researchers began coding with qualitative data analysis software NVivo12 plus, which used deductive coding. For reliability, the researchers coded the data three times and then compared the coded results, analyzing the results to reach a consensus and attain the accuracy of the findings. In what follows, the researchers first present the quantitative study' results by describing the factors and then report more similarities and differences regarding their perception. We then triangulate the quantitative analysis with the qualitative interview data to explore students' concerns about ESP courses within EMI contexts.

## 4 Findings and Discussions

### 4.1 Students' Satisfaction towards the ESP Course within EMI Context

Table 5 below presents the descriptive analysis results for Factor One, which include the means, standard deviations, 95% confidence interval, and normality of the data sets about students' content satisfaction. The means of these items are higher than the neutral (3), representing students' relatively overall positive perceptions. Obviously, there is no overlap between Item 2, Item 3 and Item 1, Item 5, and Item 6, which demonstrate that satisfaction with vocabulary and grammar is higher than that of the other three items.

**Table 5.** Results for Content Satisfaction of ESP within EMI Contexts

Factor	M (95% CI)	SD	Skewness	Kurtosis
Item 1 (content comprehensible & uncomplicated)	3.69 (3.57~3.81)	1.10	-.165	-1.329
Item 2 (vocabulary)	3.96 (3.85~4.08)	1.08	-.652	-0.896
Item 3 (grammar)	3.95 (3.84~4.06)	1.07	-.522	-1.069

Item 4 (coursebook & additional materials)	3.77 (3.66~3.89)	1.11	-.298	-1.283
Item 5 (content & activities interesting)	3.69 (3.57~3.81)	1.11	-.157	-1.359
Item 6 (content & activities organized and clear)	3.71 (3.60~3.82)	1.07	-.162	-1.252

Vocabulary helps students to communicate effectively in real work situations and correct grammar rules help students express their opinions, and ideas clearly and accurately. In ESP courses within EMI contexts, students need more professional vocabulary required by the field, even though they have a basic knowledge of the target language structures. As a result, they face challenges related to vocabulary. Grammar is the structural foundation of a language, helping students understand the composition and meaning of sentences, which enables students to interpret better and analyze texts. The lowest three items also reflect the difficulty of learning content. The terminology in ESP courses can significantly increase the difficulty of the content for students. The specialized vocabulary and concepts often require students to dedicate considerable time and energy to grasp the specific meanings of their fields of study. This added complexity results in challenges in comprehension and retention, ultimately affecting their overall learning experience. PS3 (Animal Science and Engineering), expressed his perception.

There are many specific professional vocabulary and terminology in the field of animal science and engineering, which may be challenging for me to understand and remember. More time and effort are needed to familiarize and master these vocabulary and terminology. (Interview with PS3, 7/December/2023)

Instructors affirmed his saying. The term is also a big challenge for instructors. PI4 confirmed that “terms can be difficult for beginners to understand, especially when taught in English. This may require instructors to spend more time and effort explaining and ensuring that students can fully understand and master the material.” Instructors thus apply different methods to solve the content problem, including providing more exciting material, improving teaching proficiency, and personalized assistance. PI1 shared his method to solve the problem.

It is necessary to develop a reasonable study plan, create an English environment, use English learning software, participate in English courses and activities, find study partners, and arrange time reasonably. (Interview with PI1, 12/December/2023)

Effectively transferring and explaining specialized vocabulary and terminology requires deep expertise and pedagogical strategies that enhance understanding. Instructors may struggle to balance content delivery with ensuring its accessibility to students, especially in EMI contexts [21].

Table 6 shows a similar trend regarding teaching effectiveness satisfaction ( $M_s > 3.57$ ). According to 95% confidence intervals and means, it can be concluded that satisfaction with instructor professionalism and creating a conducive atmosphere is higher than that of using activities effectively, being flexible to students’ questions, and having creative thinking.

**Table 6.** Results for Teaching Effectiveness Satisfaction of ESP within EMI Contexts

Factor	M (95% CI)	SD	Skewness	Kurtosis
Item 7 (instructor professionalism)	3.99 ( 3.87~4.11)	1.10	-.655	-0.975
Item 8 (blended techniques)	3.86 (3.74~3.98)	1.12	-.423	-1.240
Item 9 (use activities effectively)	3.57 (3.46~3.69)	1.10	.006	-1.327
Item 10 (conducive atmosphere)	3.96 (3.85~4.06)	1.00	-.593	-0.742
Item 11 (flexible to questions)	3.64 (3.52~3.75)	1.10	-.065	-1.340
Item 12 (creative thinking)	3.57 (3.45~3.68)	1.10	.021	-1.334
Item 13 (chances for sharing ideas)	3.64 (3.52~3.75)	1.10	-.112	-1.318

Table 6 shows that the highest is instructor professionalism and the lowest is creative thinking. In the interview, students explained instructors' professionalism. PS1 asserted that, "I am quite satisfied with the instructor. English and professional proficiency are relatively high, and spoken language is standard, allowing me to understand and comprehend the content well." Interestingly, ESP instructors within EMI contexts are questioned for professionalism. ESP instructors use instructional techniques, discussions and activities to improve the course's effectiveness. It is common sense for students to think that content, discussions, and activities are meaningful in cultivating their learning of English [22]. Huang, Lin, and Tsou (2024) claim that EMI teaching should rely on English language ability and use more languages and teaching tools flexibly for better teaching. Teaching is the use of symbolic resources to facilitate effective communication [23]. Using teaching materials, techniques, and languages help instructors improve their professionalism.

Instructors, especially young instructors, hope to be given more chances to improve their professional and language proficiency, and teaching proficiency, such as PI3, PI5, and PI6, showed that they hope to be given more chances to continue studying. In the interview with instructors, few instructors were given to opportunities to participate in English and subject-based training in foreign countries. Universities, research institutions, and language training institutions often trained them. Participating in English and subject-specific training exposes instructors to a broader range of teaching concepts and methods, helping them understand the latest trends and research developments in their subject areas. This further supports the need for ESP courses to be designed in collaboration with content specialists and English language experts [16].

Table 7 presents the descriptive statistics of the assessment satisfaction items, including means, standard deviations, 95% confidence intervals, and the normality test results.

**Table 7.** Results for Assessment Satisfaction of ESP within EMI Contexts

Factor	M (95% CI)	SD	Skewness	Kurtosis
Item 14 (process-oriented approach)	3.61 (3.49~3.72)	1.09	-.053	-1.311
Item 15 (review & provide feedback)	3.62 (3.51~3.74)	1.09	-.060	-1.326
Item 16 (assignment completion)	4.00 (3.91~4.09)	0.84	-.237	-1.038
Item 17 (class participation)	3.63 (3.52~3.74)	1.06	-.041	-1.245
Item 18 (group discussion)	3.59 (3.48~3.70)	1.04	.018	-1.186
Item 19 (final exam assesses English)	3.61 (3.49~3.72)	1.10	-.008	-1.335



Students generally show higher satisfaction with completing assignments in Factor “assessment satisfaction,” as indicated by mean satisfaction scores and a 96% confidence interval. However, some aspects still need to be improved in assessment satisfaction. The process-oriented approach emphasizes focusing on the student’s thoughts, decisions, and actions, not just the scores on final exams. This approach helps to assess students’ learning process and ability development. Kadmiry (2021) states that the process-oriented approach effectively reduces EFL writing anxiety and improves the outcomes [24]. Effective participation and group discussion belong to a process-oriented approach, which is some room for improvement. Based on the interview data, class size, individual characteristics, and poor English proficiency affect performance. In our daily course, the formative assessment is proposed to evaluate students’ improvement. However, the process-oriented approach does not produce the expected results.

The mean for assignment completion is higher than for checking assignments and providing feedback. This discrepancy is primarily due to the large class sizes explained by interview data. Instructors are limited to review assignments and offering detailed feedback thoroughly. As a result, while students may be diligent in completing their work, timely and constructive feedback can help their learning progress. Feedback on assignments can take various forms, such as pointing out errors, offering suggestions for improvement, and highlighting areas of strength. Assessing participation performance in educational settings is crucial for evaluating students’ engagement, contribution, and involvement in learning activities. Except for instructor feedback, peer assessment allows students to evaluate each other’s work based on predefined aspects, providing valuable feedback that can help improve the quality of assignments.

The final exam is always questioned. For example, PS2 acknowledged, “I think the final exam is an effective evaluation tool to assess students’ learning outcomes and levels. However, it also has some problems and shortcomings that must be continuously improved and perfected.” One recurring concern is that final exams focus more on assessing students’ writing and reading abilities while listening and speaking skills are often overlooked. To address this imbalance, instructors could consider incorporating more diverse assessment methods, such as oral presentations, listening comprehension tasks, or interactive discussions, as part of the final evaluation. These additions would provide a more comprehensive assessment of student’s language proficiency, ensuring that all aspects of their skills are adequately tested. Moreover, a combination of formative assessments throughout the semester alongside the final exam could offer a more well-rounded evaluation of student’s progress and abilities.

Assessment satisfaction is lower than in the other two factors. The effectiveness of formative assessment is hindered by factors such as class size, time and instructor constraints, and individual differences among students, resulting in low levels of participation. Additionally, incorporating peer assessment could enhance engagement and provide valuable feedback. A combination of formative and summative assessments could provide a more comprehensive evaluation of student learning. Diversifying assessment methods is needed to create a more inclusive and effective evaluation system.

#### 4.2 Difference between Satisfaction with Content, Teaching Effectiveness, and Assessment

*T*-test and one-way ANOVA tests were conducted to investigate the difference between three factors in terms of gender, academic year, CET 4, and self-proficiency. Table 8 presents the *t*-tests between male and female data for the three factors. The means and SD are also reported, and *p*-values are over .05. It can be found that students demonstrate positive satisfaction. However, no significant differences were found between the male and female groups.

**Table 8.** Satisfaction Levels by Gender

Factor	Gender	N	Mean	SD	T	<i>p</i>
Content satisfaction	Male	146	3.73	.92	-1.189	.235
	Female	202	3.84	.91		
Teaching effectiveness satisfaction	Male	146	3.70	.85	-.875	.382
	Female	202	3.78	.85		
Assessment satisfaction	Male	146	3.59	.85	-1.708	.088
	Female	202	3.74	.82		

According to the differences between the satisfaction of the three factors, the means are over 3.5, showing positive. At the same time, gender can not be regarded as a predictor of satisfaction according to *p* values. This may reflect that in EMI contexts, students face the same language and academic challenges, and gender does not constitute a significant difference in this environment. ESP courses within EMI contexts are results-oriented, suggesting that more focus should be placed on curriculum content and teaching support than gender differences.

Furthermore, one-way ANOVA test results suggested no significant differences by academic year (see Table 9). Similarly, the academic year can not predict satisfaction. This may reflect the design characteristics of the ESP curriculum, focusing on the practicality, not the students' academic year.

**Table 9.** Satisfaction Levels by Academic Year

Factor	Year	N	Mean	SD	F	<i>p</i>
Content satisfaction	1	92	3.82	.84	1.437	.232
	2	98	3.89	.92		
	3	89	3.63	.94		
	4	69	3.84	.94		
Teaching effectiveness satisfaction	1	92	3.69	.91	.388	.762
	2	98	3.82	.84		
	3	89	3.73	.82		
	4	69	3.75	.86		
Assessment satisfaction	1	92	3.61	.77	1.314	.270
	2	98	3.82	.87		
	3	89	3.62	.90		
	4	69	3.63	.80		

A similar situation is found in terms of CET 4 and there is no significant difference in terms of CET 4 after the *t*-test is conducted (see Table 10). CET 4 also can not predict satisfaction. CET4 scores may be correlated with normal language proficiency, but in the ESP courses with EMI contexts, students' satisfaction depends more on the actual design and implementation of the course. Chinese universities could help students develop effective English communication skills that go beyond the limits of standardized language exams by adopting more student-centered methods in English classrooms [25].

**Table 10.** Satisfaction Levels by CET 4

Factor	CET 4	N	Mean	SD	T	<i>p</i>
Content satisfaction	yes	155	3.82	.92	.358	.721
	no	193	3.78	.91		
Teaching effectiveness satisfaction	yes	155	3.83	.85	1.699	.090
	no	193	3.68	.85		
Assessment satisfaction	yes	155	3.76	.85	1.622	.106
	no	193	3.61	.82		

However, there are significant differences in teaching effectiveness satisfaction by self-proficiency (see Table 11). Self-proficiency can predict teaching effectiveness satisfaction. When students have higher English proficiency, they may have greater expectations regarding what is taught and how it is taught, which makes it easier for them to have a positive learning experience, leading to higher satisfaction. Instructors should focus on enhancing students' perceived proficiency through motivation and support to improve satisfaction with teaching effectiveness.

**Table 11.** Satisfaction Levels by Self-proficiency

Factor	Year	N	Mean	SD	F	<i>p</i>
Content satisfaction	Beginner	55	3.71	.95	.568	.567
	Intermediate	204	3.84	.89		
	Advanced	89	3.75	.94		
Teaching effectiveness satisfaction	Beginner	55	3.51	.83	3.23	.040*
	Intermediate	204	3.75	.88		
	Advanced	89	3.88	.79		
Assessment satisfaction	Beginner	55	3.57	.81	.491	.612
	Intermediate	204	3.69	.85		
	Advanced	89	3.70	.84		

\**p* < .05

### 4.3 Correlation Analysis Between Overall Satisfaction and Satisfaction of Content, Teaching Effectiveness and Assessment Towards the ESP Courses in EMI Contexts

Regression analyses were employed to investigate the correlations. Each set of independent variables was introduced in separate procedures, and the progressive modification changes in the  $R^2$  statistic were observed.

**Table 12.** Linear Regression Results

Model	Predictors	B	$\beta$	T	$R^2$	Adjusted $R^2$	F	$p$
	(Constant)	.203		.931				
	Content satisfaction	.886	.745	18.034				
1	Teaching effectiveness	-.003	-.003	-.060	.558	.554	144.485	.000***
	Assessment satisfaction	.008	.006	.159				

Dependent variable: Overall satisfaction

The absolute values of standardized coefficients below 0.10 indicate a minor predictive effect, around .30 a medium effect, and exceeding .50 suggests a significant effect. Based on this classification, the regression in Table 12 above implies that students' content satisfaction is a significant, positive, and strong predictor of overall satisfaction, aligning well with the primary focus of ESP courses within EMI contexts. This indicates that when students find the course content relevant and engaging, their overall satisfaction increases markedly. In addition, the relatively weak correlation between teaching and assessment may reflect students' focus on content in ESP courses within EMI contexts. This finding suggests that the content should be prioritized when designing courses, more teaching materials, and improving teaching and assessment methods to enhance overall satisfaction.

## 5 Conclusions

In this study, we investigated students' satisfaction with content, teaching effectiveness, and assessment towards the ESP programs within EMI contexts. As for the first research question, students show positive views on the ESP courses within EMI contexts [8]. Regarding content satisfaction, students are more satisfied with the vocabulary and grammar. The specialized vocabulary, jargon, and technical terms create barriers. Therefore, creating well-organized and presentable content and activities is essential for engaging students and facilitating effective learning. Unlike previous studies, the results suggest that effective teaching should include clear learning objectives, interactive elements, a variety of activities, improved participation, and so on. Students generally demonstrate positive response to teaching effectiveness, especially regarding

professionalism. It is crucial to develop effective teaching methods, as this goes beyond merely acquiring language skills. Mastering diverse pedagogical approaches enables instructors to create more engaging and interactive learning environments [8], fostering deeper understanding and retention of the material among students. Enhancing collaboration ESP instructors with EMI instructors is essential for professional growth and improved student outcomes. This collaborative effort can lead to developing a more cohesive curriculum, where language proficiency and subject are taught [16]. Students show a relatively lower assessment satisfaction. The effectiveness of formative assessment is limited by factors such as large class sizes, time constraints on instructors, and students' various needs, which can lead to low participation levels. Furthermore, integrating peer assessment can boost student engagement and offer valuable feedback. Utilizing formative and summative assessments can lead to a more thorough evaluation of student learning.

As for the second research question, there was no significant difference by gender, academic year, and CET 4. ESP courses within EMI contexts, which is results-oriented, suggest that more focus on curriculum content and teaching support than on gender, academic year, and CET 4. Self-proficiency can predict satisfaction with teaching effectiveness, which further confirms that ESP and English proficiency are crucial in enhancing EMI students' understanding of disciplinary knowledge [19]. Instructors can pay attention to students' self-proficiency in the teaching process and enhance it through motivation and support to improve their satisfaction with teaching effectiveness. As for the third research question, students' content satisfaction shows positive towards overall satisfaction, which aligns closely with the core objectives of ESP courses in EMI contexts. This suggests that students' overall satisfaction with the course significantly increases when they perceive the content as relevant and engaging. Additionally, the weak correlation between teaching effectiveness and assessment may indicate that students prioritize content in ESP courses. The finding highlights the need to prioritize content in course design and improve teaching and assessment methods.

The study provides a foundation for understanding the critical role of ESP courses in EMI contexts and sheds some light on the methods of ESP curriculum design in EMI contexts. Given the limited participation, research time, and the industrial university of this study, longitudinal studies and comparative studies across different regions and educational contexts to identify best practices in integrating ESP within EMI programs are called for to look into the resource allocation. We also call for more research to look into whether it is essential to implement ESP courses in EMI contexts across all universities in China.

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