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Research on the Training System of English Emergency Language Talents Based on Digital Education Technology

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Abstract: *With the continuous advancement of the initiative of a community with a shared future for mankind, all countries have made concerted efforts in the face of the COVID-19 epi. demic, showing the "combat effectiveness" of a strong language rescue team. Based on the sustainable development strategy, this paper studied the emergency language personnel training system for emergency English. It includes four levels: emergency language talent training goals, emergency language talent training mode, emergency language service curriculum construction, and emergency language service training. This article draws on the laws and methods of sustainable development, and builds an emergency English training platform in the talent training system based on digital education technology. When evaluating the talent training system, the overall score of some indicators was higher than 240, but some individual indicators were lower than 120. Therefore, it has become a top priority to carry out research on emergency foreign language talent training system.*

Keywords: *Emergency Language, English Education, Talent Development, Sustainable Development, Digital Education Technology*

1. Introduction

Talent is the cornerstone of national development. Amid a complex international landscape, China—now at its most promising stage of modern development—faces heightened challenges and must rely on talent to fulfill its responsibilities as a major power, achieve national rejuvenation, and gain an edge in global competition. With the establishment of the Hainan Free Trade Port, the region is likely to become a hotspot for public emergencies, driving growing and increasingly diverse demands for emergency languages. Major disasters or crises could threaten the Port's safety, stability, and strategic implementation. Therefore, it is essential to develop emergency response measures, establish a normalized language emergency mechanism, build a robust emergency language service system, enhance service capabilities, and train and reserve specialized personnel. Based on digital education technology, this paper constructs and analyzes the emergency English talent training system under the background of sustainable development, which is expected to bring reference significance to future research.

Emergency language application has long been a global research focus. Tuncer H noted that the COVID-19 pandemic's impact on education led to the widespread adoption of Emergency Distance Education (EDE) [1]. Melling proposed practical methods for emergency English talent training based on insights from emergency learning contexts [2]. Bogolepova S.V. examined whether language students' abilities are effectively demonstrated in emergencies, through a study at a Russian university assessing teachers' self-evaluated competencies and students' experiences with online language learning [3]. Hazaea A.N. highlighted Emergency Remote Teaching (ERT) as a key research area during the pandemic and introduced Emergency Remote Emergency Language Teaching (ERELT) by integrating ERT with Emergency Language Teaching (ELT) in Arab League countries [4]. Dpt E emphasized the critical role of emergency language in crises like pandemics but pointed out the absence of an established talent training model [5].

Building an emergency language talent training system aligned with sustainable development is a novel approach. Existing studies offer valuable insights: Chca B proposed an evaluation model using the analytic hierarchy process [6]; Sterling N.W. examined the critical role of emergency language in

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crises [7]; Darwanto B.A. highlighted the need for rapid adaptations in language education during the pandemic [8]; Ironsi C.S. explored pre-service and in-service teachers' perceptions through quantitative methods [9]; and Levonian R.M. compared error correction patterns across language corpora [10]. However, constrained by traditional frameworks, these studies lack deep integration and synergistic advantages.

This paper contributes three key innovations: (1) a comprehensive training plan that integrates course modules and digital resource development; (2) a practical platform enabling collaborative course design through school administration, school–enterprise cooperation, industry–education integration, and joint education; and (3) a three-dimensional evaluation system involving English experts, teachers, and students, enabling in-depth analysis of the training model.

2. Construction of Emergency English Emergency Language Talent Training System Based on Digital Education Technology

2.1 Training Objectives for Emergency Language Talents

Emergency language talent training should focus on enhancing foreign language teaching quality and cultivating well-rounded individuals. It aims to strengthen the emergency language service system by developing talents who possess emergency language awareness, knowledge, and service capabilities, along with sound physical and mental health and strong cross-cultural competence. The training goals must align with China's emergency language service needs and support the development of its emergency public service system through think tank functions.

Universities and research institutions primarily cultivate scholars with strong research capabilities, though their numbers are relatively small. Emergency language part-time personnel serve as a reserve and supplementary force: while their professional depth is limited, they offer broader coverage by integrating dispersed language services, thereby enriching the overall talent pool.

2.2 Training Mode of Emergency Language Talents

This article explores the talent training model for emergency language services. First, reserve talent development should begin in primary and secondary schools. In addition to English, students should be encouraged to learn a second (or even third or fourth) foreign language at this stage, enabling them to achieve higher proficiency before entering advanced training—thus allowing more focus on emergency response skills later. Second, college students' resilience, sense of family and national identity, and social responsibility must be strengthened to foster a strong service ethos and sound professional ethics from an early stage. Successful reserve talent cultivation in middle and high school lays the foundation for China's future senior applied talents and supports the sustainable development of higher education. Foreign language education is structured into two tiers—undergraduate and postgraduate—as illustrated in Figure 1:

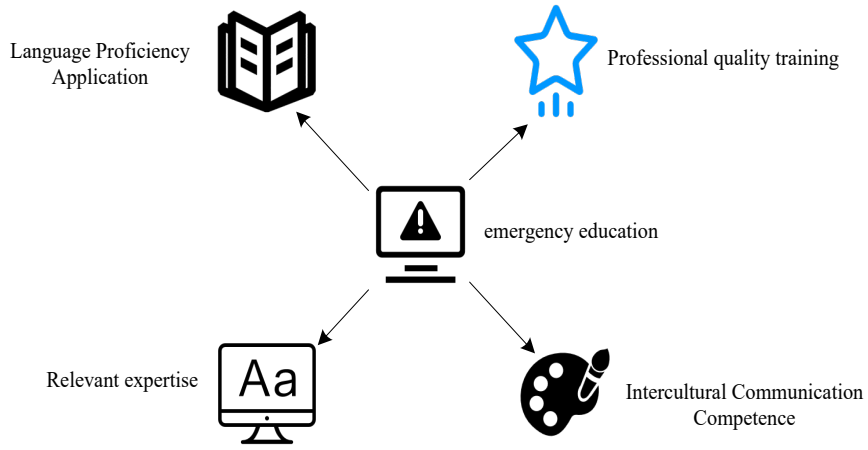

Figure 1 Model diagram of emergency language talent training

Undergraduate education focuses on cultivating applied talents with strong language application skills, intercultural communication competence, relevant professional knowledge, and professional

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qualities. It should also emphasize research in emergency monitoring, forecasting, disaster rescue, information release, public opinion monitoring, and simulation exercises. Professional quality, particularly political steadfastness, teamwork, and resilience in crises—is crucial to effective emergency language services. Postgraduate education aims to develop high-level language conversion skills, strong research capabilities, and creative thinking. It should prioritize theoretical literacy, critical thinking, and the integration of theory with practice, while balancing general knowledge with deepened language–culture exchange and transformation. The postgraduate training model is shown in Figure 2.

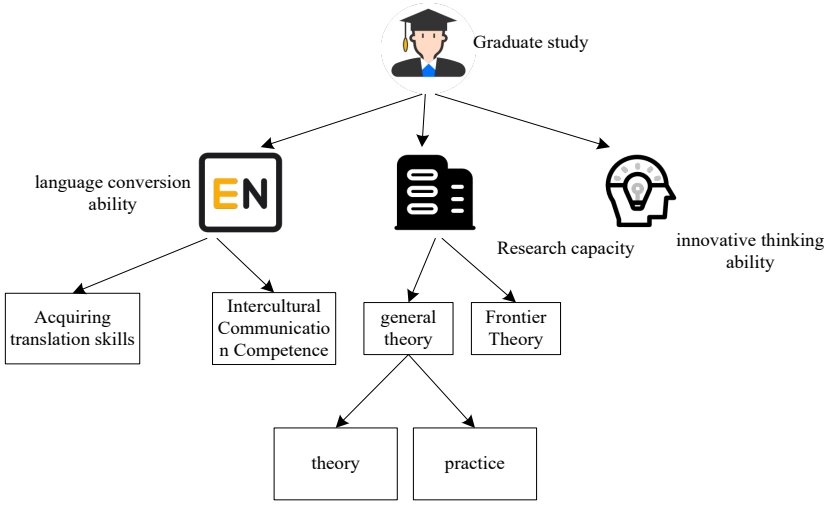

Figure 2 The postgraduate training model of emergency language love

2.3 Design of emergency English teaching platform based on digital education technology

(1) Analysis of platform functional requirements

This system serves students, teachers, and administrators. Students can browse content, post and reply to messages, and communicate online via web pages; after registration, they gain access to the guestbook, forum, and course materials according to their permissions. Teachers and administrators receive course information, messages, and responses. Administrators can log in with a username and password to manage users, forums, news, and organize courses and study activities through the backend.

(2) System architecture

The system's human-computer interaction design leverages widely used WYSIWYG (What You See Is What You Get), object-oriented development tools—specifically Dreamweaver, given its web-based nature. The English emergency education platform for higher vocational colleges adopts a multi-tier B/S architecture: the user interface runs entirely in a web browser, with some transaction logic handled on the front end and the core logic executed on the server, as illustrated in Figure 3.

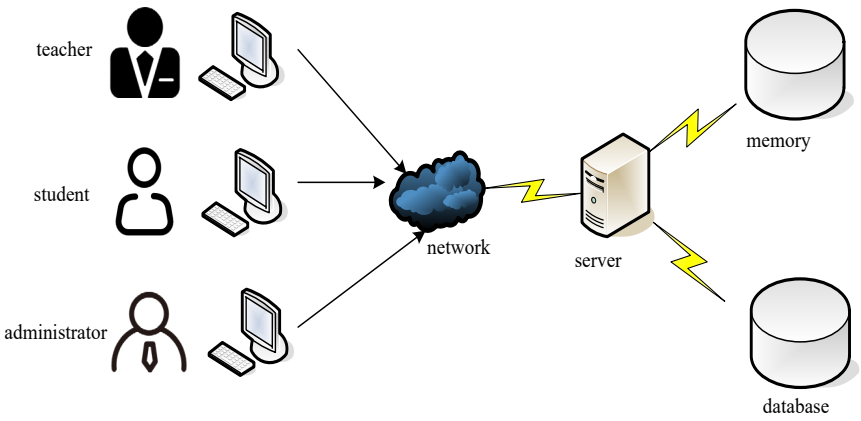

Figure 3 System Architecture

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(3) Design of each module of the system

Most of the front interface of the teaching platform is generally the structure on the left, the upper part is some main functions, the left is a tree hierarchy, and the right is a client area. It is a window for the current operation. Its functional module diagram is shown in Figure 4:

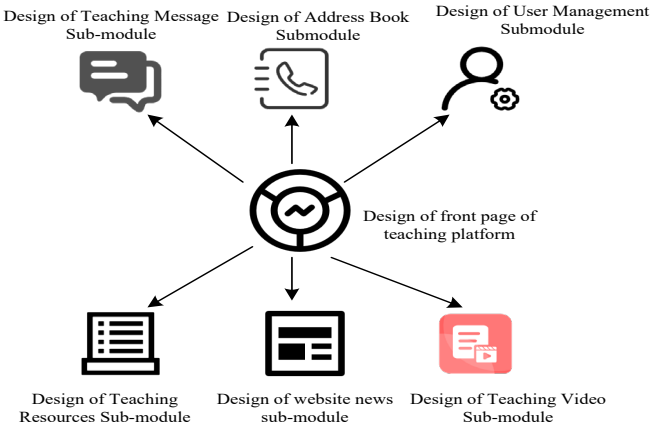

Figure 4 System function block diagram

As shown in Figure 4, the lower right corner of the website displays news headlines, a site introduction, and friend links. After logging in, users can modify their password, contact support, or log out; a "Modify User Info" button appears when changing the password. If authenticated as an administrator, a "Go to Backend" button is displayed. Clicking a news headline in the center of the page shows its details—such as content, source, upload time, and click count—on the left side.

(4) Detailed design of the database

When designing the database, considerations include security requirements, user authorization, performance optimization using Microsoft SQL Server 2005 features, and the impact of database scale and hardware configuration on performance.

For programming convenience and precision, all database elements—database name, tables, and fields—are defined in English. The system's database, named Web_Education, is tailored to the teaching website's actual needs and stores data on users, learning materials, news, messages, and forum posts. Tables 1–3 present selected tables from this database.

Table 1 t_leaveback

Data item name	Type of data	Length	Whether to allow empty	Meaning
Id	Int	4 bytes	N	reply number
Tid	Int	4 bytes	N	topic number
uName	VarChar	2 bytes	N	username
mTitle	Text	1000 bytes	N	main content
backContent	Text	1000 bytes	Y	reply content
uType	VarChar	10 bytes	N	user type
backTime	DateTime	8 bytes	N	Response Time

Table 2 t_user

data item name	type of data	length	Whether to allow empty	meaning
uName	VarChar	20 bytes	Y	username
Realname	VarChar	20 bytes	N	actual name
uPassword	VarChar	16 bytes	N	password
uEmail	VarChar	40 bytes	N	E-mail
uSex	Char	2 bytes	N	gender
uB irthday	DateTime	8 bytes	Y	date of birth
uQQ	VarChar	20 bytes	Y	QQ number
uMainpage	VarChar	40 bytes	Y	Homepage
uType	VarChar	10 bytes	N	user type
uRegitesttime	DateTime	8 bytes	N	Registration time

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Table 3 t _material

data item name	type of data	length	Whether to allow empty	meaning
Id	Int	4 bytes	N	Data number
className	VarChar	50 bytes	Y	data type name
materialName	VarChar	50 bytes	N	Data name
mContent	Text	1000 bytes	Y	data content
fileExtension	VarChar	10 bytes	N	extension name
hits	Int	4 bytes	N	clicks
class	Int	4 bytes	N	data type number
dealTime	DateTime	8 bytes	N	Upload time

2.4 Comprehensive Fuzzy Emergency English Teaching Evaluation Model

Screening by experts, students, and teachers revealed a lack of standardized quantitative indicators for emergency English classroom assessment at a certain No. 5 Middle School. Although various methods—such as mathematical statistics, genetic algorithms, and artificial intelligence—are used, some are too coarse, while others, though accurate, involve overly complex calculations that are impractical for real-world application. To address this, this paper adopts the fuzzy comprehensive evaluation method, tailored to the actual teaching context.

In the first-level fuzzy comprehensive evaluation, the weight of each indicator is determined by the fuzzy relation matrix, with the final score corresponding to the maximum value. In the second-level model, weights of sub-indicators are first calculated, then used to construct the relation matrix ; the final evaluation value is obtained by normalizing the comprehensive scores of all indicators.

(1) Weight calculation

In the evaluation of English, the three positions of trained professionals, students and teachers are used for appraisal, and a weight calculation model of expert pointers is proposed for the reference of educators and students. Here, specialists are made out of n first-level markers, to be specific: $U_1,U_2,...,U_n$, and the heaviness of each class assessment file is: $C_1,C_2,...,C_n$. For every first-level pointer, there are different second-level markers. In the crisis English showing evaluation, under n first-level markers, the quantity of second-level pointers is 1. Assuming there are n first-level markers, the amount of the loads of every first-level pointer is 1, and the equivalent is valid for understudies and educators. In all markers, the extent of educators and understudies is 1, in this manner, it adjusts to Formula (1):

$$C_1 + C_2 + ... + C_n = 1 \tag{1}$$

$$C_i = C_{i1} + C_{i2} + ... + C_{ik} \tag{2}$$

Namely

$$C_n = C_{n1} + C_{n2} + ... + C_{nk} \tag{3}$$

Under this reason, this paper gives bits of knowledge into the presentation assessment of emergency English, and acquires F. The outright scores of the master, understudy, and instructor overviews ought to be resolved first prior to computing the assistant marker loads for specialists, understudies, and educators. Up until this point, the score F of the optional marker is known. The score F of the first-level marker is the quantity of relative quantities of second-level pointers in the first-level marker, and F suggests the negligible portion of the general number of first-level pointers. Consequently, with n essential pointers for tolerating specialists, understudies, and instructors, under each primary marker, the number of secondary markers is: $k_1,k_2,...,k_n$, then the score of the i-th first-level indicator satisfies the following Formula (4):

$$F_i = F_{i1} + F_{i2} + ... + F_{iki} \tag{4}$$

The total score F of the secondary indicators of experts, students and teachers satisfies the following Formulas (5) and (6) respectively:

$$F = F_1 + F_2 + ... + F_n \tag{5}$$

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$$C_{ij} = \frac{F_{ij}}{F} \tag{6}$$

Therefore, according to Formula 6, the first-level index weights $C_i(i = 1,2,...,n)$ of experts, students, and teachers are calculated respectively, furthermore, the heaviness of specialists is determined.

$$F = F_{11} + F_{12} + F_{21} + F_{22} + F_{31} + F_{32} + F_{41} + F_{42} + F_{43} + F_{44} \tag{7}$$

$$\begin{cases} C = \frac{F_{11}}{F} \\ C_{12} = \frac{F_{12}}{F} \end{cases} \tag{8}$$

$$\begin{cases} C_{21} = \frac{F_{21}}{F} \\ C_{22} = \frac{F_{22}}{F} \end{cases} \tag{9}$$

$$\begin{cases} C = \frac{F_{31}}{F} \\ C_{32} = \frac{F_{32}}{F} \end{cases} \tag{10}$$

$$\begin{cases} C_{41} = \frac{F_{41}}{F} \\ C_{42} = \frac{F_{42}}{F} \\ C_{43} = \frac{F_{43}}{F} \\ C_{44} = \frac{F_{44}}{F} \end{cases} \tag{11}$$

$$\begin{cases} C_1 = C_{11} + C_{12} \\ C_2 = C_{21} + C_{22} \\ Cl = C_{31} + C_{32} \\ Cl = C_{41} + C_{42} + C_{43} + C_{44} \end{cases} \tag{12}$$

As per the weight computation strategy for the above specialists in the assessment of crisis English homeroom educating, first, the complete score F surveyed constantly level specialists is determined. Then, the heaviness of the second-level master assessment is gotten, lastly the heaviness of the top of the line master assessment is acquired. Simultaneously, understudies and educators can likewise acquire the loads of the first-level pointers and the second-level markers separately as per this estimation technique.

(2) Calculation of membership degree matrix

Relationship lattice is gotten through vector assessment of crisis English homeroom. Initially, a participation framework is laid out, accepting specialists for instance, and utilizing the i-th assessment file U, the fluffy vector R connected with the survey set V is gotten. Each column in the master lattice is the aftereffect of assessing every pointer. The lattice likewise incorporates the assessment result set V and the assessment record set U, all data of which is displayed in Formula (13) and Formula(14):

$$r_{ijz} = \frac{N_{ijz}}{m} \tag{13}$$

$$Ri = \begin{bmatrix} r_{i11} & r_{i12} & \cdots & r_{i1p} \\ r_{i21} & r_{i22} & \cdots & r_{i3p} \\ \cdots & \cdots & \cdots & \cdots \\ r_{iq1} & r_{iq2} & \cdots & r_{iqp} \end{bmatrix} \tag{14}$$

$$B_i = C_i \circ R_i = (b_{i1}, b_{i2}, ..., b_{ip}) \tag{15}$$

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$$R=\begin{bmatrix} B_1 \\ B_2 \\ B_3 \\ \cdots \\ B_n \end{bmatrix} \tag{16}$$

(3) Comprehensive evaluation results

Through the above calculation, the relationship between the main-level file loading amount and the main-level record fluffy grid R is obtained. The road intermediate variable B can be obtained. Essentially, the transition variables B for students and educators can also be obtained, as shown in Formula (17).

$$B = C \circ R = (b_1, b_2, ..., b_P) \tag{17}$$

$$b_k = \frac{b_k}{\sum_{k=1}^{P} b_k} \tag{18}$$

According to Formula (18), the evaluation value can be calculated, that is, the w value, and the evaluation level of emergency English classroom teaching can be obtained, as shown in Formula (19).

$$w = b_k * v^T \tag{19}$$

Hence, the assessment level w of the showing impact assessment in the crisis English homeroom is gotten. Based on assessing the impact of English educating, this paper takes on the three-level assessment model of specialists, understudies and instructors. This paper takes specialists, understudies and instructors as the exploration protests, and computes the auxiliary signs of specialists, understudies and educators. Because of the distinction of these pointers, the relating optional markers would likewise have specific contrasts.

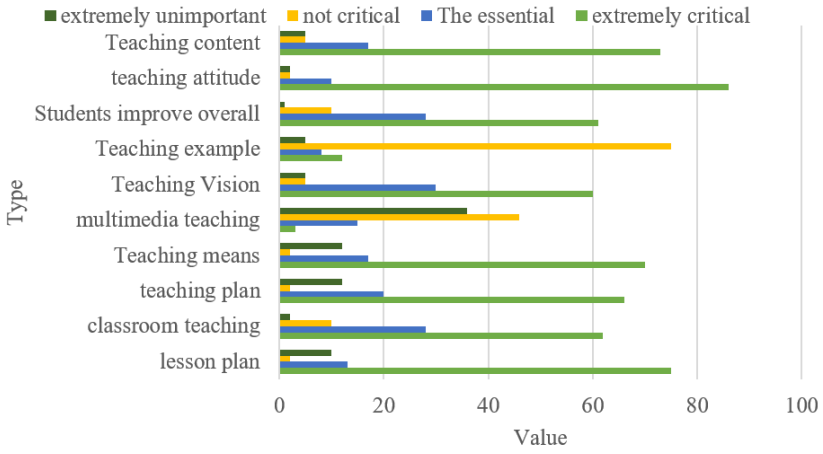

Figure 5 Statistical chart of key research on expert evaluation indicators

3. Fuzzy Evaluation in Emergency Language Classroom

3.1 Questionnaire

Based on the questionnaire, evaluation indicators were extracted from the emergency English classroom and comprehensively assessed.

This study employed a screening strategy in which 100 expert educators—including teachers from No. 5 and No. 6 Central Schools, English teaching and research leaders, and members of English instructional teams—evaluated pre-set indicators. These experts possess extensive teaching experience and diverse perspectives. The survey was conducted via email after class, yielding 110 responses: 7 invalid, 3 abstentions, and 100 valid. The valid responses were used for statistical analysis to derive the key evaluation metrics, as shown in Figure 5.

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According to the key survey statistics of expert evaluation in Figure 5, the total score of each indicator is calculated, and the detailed score of each indicator is shown in Figure 6.

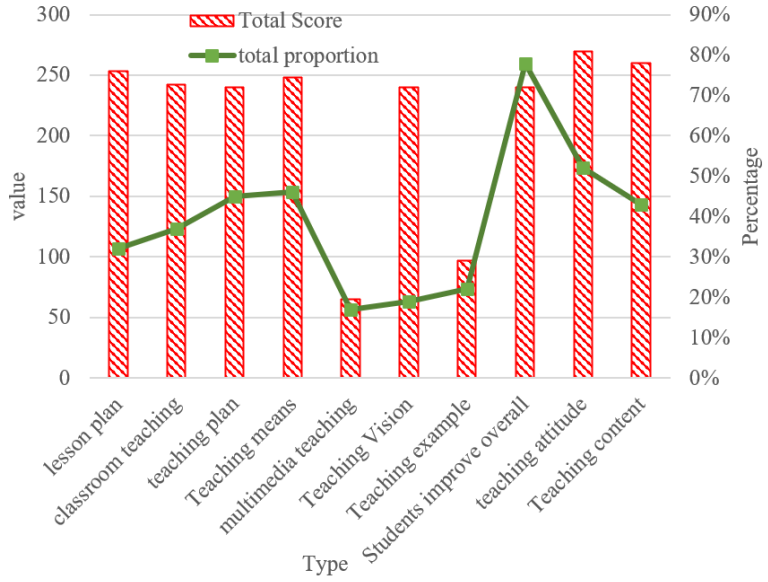

Figure 6 Statistical chart of expert evaluation index scores

As shown in Figure 6, the X-axis represents evaluation indicators and the Y-axis their total scores. Indicators scoring above 240—such as display plans, logically structured head teacher instruction, adaptive adjustments, display character, prepared teaching mindset, and strict classroom discipline—were selected as maintenance pointers. These help instructors identify student issues and apply perspective-broadening strategies in crisis English teaching, while also ensuring clear delivery of crisis-related content through English instruction in training, reading, writing, attention to detail, and self-study.

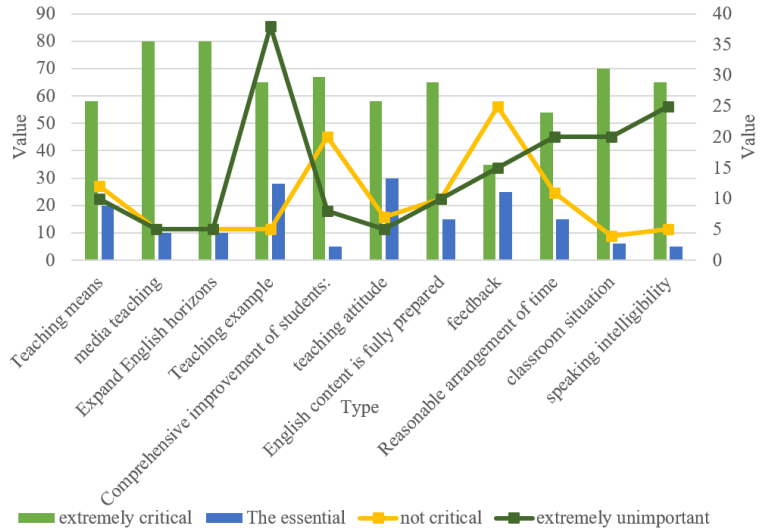

Figure 7 Statistical chart of key research on student evaluation indicators

3.2 Indicator Screening

The student indicators in emergency English teaching are analyzed, and corresponding evaluation indicators are obtained.

This paper adopts the method of "student tutoring" to screen the set indicators. The jury is based on students of different grades from the Fifth Middle School, with a total of 100 students. After class, this paper conducts questionnaires by email and face-to-face, and is based on questionnaires provided by students and 100 official answer sheets. This paper analyzes the data and obtains the key research data of the student evaluation index, as shown in Figure 7.

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As per the overview measurements of the understudy assessment file score diagram in Figure 7, the complete score of each record is determined, and the particular score of each list is displayed in Figure 8.

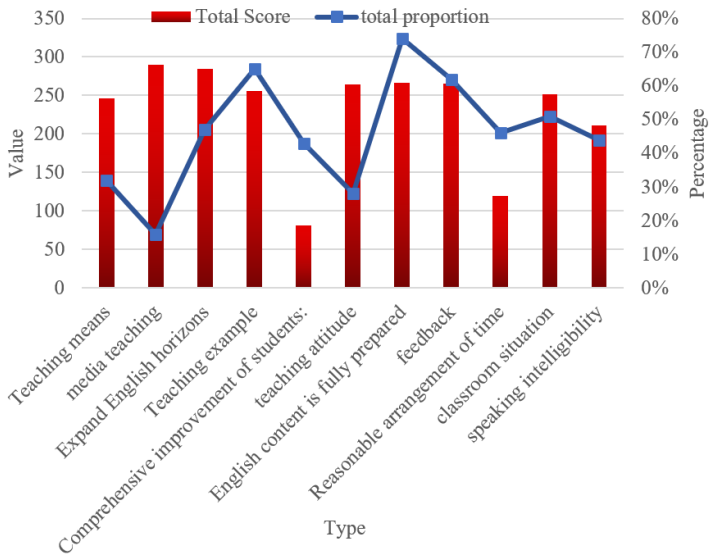

Figure 8 Statistics of student evaluation index scores

As shown in Figure 8, the X-axis represents index items and the Y-axis their total scores. Most indicators scored above 240, while some fell below 120. Indicators exceeding 240 were retained as reserved indicators, including: teaching methods, multimedia instruction, broadening emergency English teaching horizons, detailed and in-depth teaching, ample teaching examples, and thorough emergency English lesson preparation.

3.3 Comprehensive Results

Since the evaluation system model formula is:

$$Q = P_1 Q_1 + P_2 Q_2 \tag{20}$$

According to the above calculation formula, the teaching effectiveness score in emergency English teaching can be obtained. Therefore, the overall evaluation level of this teaching effect is between important and important. During the experiment, 10 teachers and 15 students can be selected for evaluation in three levels: good, not bad, and poor. Among them, the good score is 3, the good score is 2, and the poor score is 1, as shown in Table 4.

Table 4 Student feedback form to teachers

trainees teacher		1	2	3	4	5	6	7	8	9	10
List combine tied	good (a)	6	3	8	8	7	7	4	7	6	7
	Not bad (b)	6	7	6	5	7	6	5	4	3	3
	poor (c)	3	5	1	2	1	2	6	4	6	5
Overall score S		33	28	37	36	36	35	28	33	30	32
average		2.2	1.87	2.47	2.4	2.4	2.33	1.87	2.2	2	1.85

As shown in Table 4, the survey of 10 teachers reveals that Teacher 10 received the lowest score, indicating a weaker teaching effect in their emergency English class, followed by Teachers 2 and 9. This approach converts qualitative feedback from experts, students, and teachers into quantitative data, enabling a more scientific evaluation of teaching effectiveness. Furthermore, through multiple case studies and repeated classroom observations at No. 5 and No. 6 Middle Schools—particularly at No. 5 Middle School—the study gains a deeper, more realistic understanding of emergency English assessment. The results are thus more scientific and reasonable, demonstrating that the fuzzy comprehensive evaluation method outperforms traditional scoring approaches in English teaching assessment.

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4. Conclusion

On the basis of digital education technology, this paper constructs an emergency language talent training system. The training philosophy is oriented toward societal needs—particularly emergency events—and aims to cultivate qualified emergency language service talents. The system must define the required knowledge, abilities, and competencies, and develop compound talents who can effectively use English and relevant professional knowledge to communicate and respond swiftly in crises. Alongside core English courses, professional electives tailored to sectors with emergency language demands should be offered. As China's emergency language service research started late and its talent development mechanism remains underdeveloped, urgent attention from all sectors is needed. This paper argues for expanding emergency language demand and service channels and activating both internal and external drivers. Only through strengthened training measures can the importance of emergency foreign language talents be elevated and their cultivation become more systematic and scientific.

Acknowledgements

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References

[1] Tuncer H, Karata T Z. Recommendations of ELT St udents for Four Language Skills Development: A Study on Emergency Distance Education During the COVID-19 Pandemic:[J]. SAGE Open, 2022, 12(1):49-76.

[2] Melling, Aidan. Horses aren't always for courses variety, culture and language: a think piece[J]. International Journal of Emergency Services, 2017, 6(3):231-237.

[3] Bogolepova S V. Emergency Transition: Have Tertiary Language Students' Needs Been Met?[J]. Professional Discourse & Communication, 2021, 3(1):49-61.

[4] Hazaea A N, Bin-Hady W R, Toujani M M. Emergency Remote English Language Teaching in the Arab League Countries: Challenges and Remedies[J]. CALL-EJ, 2021, 22(1):201-222.

[5] Dpt E, Jr R. Physical Therapy, Occupational Therapy, and Speech Language Pathology in the Emergency Department: Specialty Consult Services to Enhance the Care of Older Adults – Science Direct[J]. Emergency Medicine Clinics of North America, 2021, 39(2):419-427.

[6] Chca B, Jgh A, Slc C, YLL D, PHLAE, JHJ D. Early short-term prediction of emergency department length of stay using natural language processing for low-acuity outpatients[J]. The American Journal of Emergency Medicine, 2020, 38(11):2368-2373.

[7] Sterling N W, Patzer R E, M Di, Schrager JD. Prediction of emergency department patient disposition based on natural language processing of triage notes[J]. International journal of medical informatics, 2019, 129(Sep.):184-188.

[8] Darwanto B A, Rini S, Herusatoto H. Technology: Language teachers' digital and navigating skills in emergency education[J]. XLinguae, 2021, 14(1):141-158.

[9] Ironsi C S. Google Meet as a synchronous language learning tool for emergency online distant learning during the COVID-19 pandemic: perceptions of language instructors and preservice teachers[J]. Journal of Applied Research in Higher Education, 2022, 14(2):640-659.

[10] Levonian R M. What does 'emergency' mean?: Corrections in Romanian and Italian political interviews[J]. Language and Dialogue, 2017, 7(2):213-235.