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Enhancing College Students' English to Improve Cybersecurity Awareness: a Study of Language and Fraud Detection Skills

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Abstract:

This study was applied in enhancing college students' awareness of cybersecurity, especially in fraud detection skills, by improving their English language proficiency. The study first analyzes the current English level of college students and their motivation for foreign language learning through questionnaires and English proficiency tests, and finds that most of the students have insufficient English application skills and a single motivation for learning. In response to these problems, a series of enhancement programs are proposed, including classroom teaching reform, campus English atmosphere creation, and the integration of English learning resources. Meanwhile, in combination with cybersecurity education, teaching modules covering common cyber fraud case analysis and cybersecurity curriculum were designed, and training in data mining, machine learning algorithms and visualization and analysis tools were introduced to systematically cultivate students' fraud detection skills. Through comparative experiments and effect evaluation, the results show that students' English listening, speaking, reading and writing skills are significantly improved, especially in speaking and writing; in terms of fraud detection skills, students' recognition accuracy and analysis efficiency are also significantly improved. The conclusion of the study shows that the organic combination of language proficiency and cybersecurity skills can effectively improve the comprehensive quality of college students and provide strong support for building a safe network environment.

Keywords: *English proficiency, network security awareness, fraud detection skills*

I INTRODUCTION

With the rapid development of information technology, the Internet has been deeply integrated into people's daily life, however, the problem of network security is also becoming more and more prominent, especially network fraud poses a serious threat to the privacy and property security of users. College students, as the main user group of the Internet, have frequent and diversified network behaviors, and it is particularly important to enhance their awareness of network security. Research shows that many online fraudulent means rely on complex language skills and cross-cultural communication, which puts a high demand on English proficiency. A high level of English proficiency can not only help college students identify and understand English fraud information more effectively, but also enhance their communication and protection abilities in the context of globalization [1]. Currently, university English teaching mostly focuses on test-taking education, and the cultivation of practical application ability is insufficient, resulting in the lack of sufficient coping strategies when students face real network security threats. With the continuous evolution of network fraud means, the traditional prevention methods have been difficult to meet the increasingly complex security needs. Exploring the enhancement of

network security awareness through improving English language proficiency has important theoretical significance and practical value. In this study, we systematically analyze the current situation of college students' English proficiency and their motivation for foreign language learning, and then propose practical language proficiency enhancement programs. Combined with network security education, it focuses on cultivating students' fraud detection skills, and strives to comprehensively enhance college students' network security protection ability under the dual enhancement of language and technology.

II. ANALYSIS OF THE CURRENT SITUATION OF COLLEGE STUDENTS' LANGUAGE PROFICIENCY

A. Research on the Current Situation of College Students' English Proficiency

In recent years, the English proficiency of college students has shown a certain polarization trend. According to the questionnaire survey and test data of 1,000 college students in a university in 2024, 42% of the students' English proficiency is concentrated around the CET-4 passing line, in which the listening and reading skills are strong, but the writing and speaking skills are generally weak [2]. Another 28% of students have CET-6 or above, but these students are mainly concentrated in English majors and some science and technology majors. Data analysis shows that the average correct rate of listening comprehension is 67%, while the average score of writing is only 53%. As for oral expression ability, the fluency rating of dialogues facing life-like scenes is 5.4/10 on average, showing a strong test-taking tendency. In addition, reading efficiency is negatively correlated with text difficulty. When analyzing scientific and technological English literature, the average number of words per minute read by senior students is less than 80 words, which is far below the international standard of 120 words. Combined with the questionnaire, it is found that more than 60% of students believe that English learning lacks a clear goal, which is further exacerbated by the lack of learning resources and language environment. The existence of these problems suggests that current university English teaching should be improved in terms of practical application and resource optimization.

B. Analysis of Foreign Language Learning Motivation of College Students

On the basis of the research on college students' English proficiency, further analysis of foreign language learning motivation can reveal its influencing factors and potential problems. Through the questionnaire survey of the same group, it is found that about 37% of the students take passing the exam as their main motivation for learning, focusing on the goals of CET-4, CET-6 and English for graduate school; another 29% of the students learn English due to the demand for career development, especially more significant in the economic management and engineering majors; at the same time, about 18% of the students learn due to the drive of interest, and they tend to participate in the English corner, foreign language movie watching and other extracurricular activities. While 16% of the students indicated that they lacked clear interest and goals in English learning. The survey shows that there is a significant positive correlation between motivation and learning effectiveness (Pearson correlation coefficient of 0.72, $p<0.01$), in which students who study due to vocational needs scored the highest average score of 78.5 in the general ability test, while those who study only for the needs of the exam scored the lowest average score of 62.3. In addition, the type of motivation affects the persistence of learning: the data show that interest-driven students spend an average of 6.8 hours per week on independent study, which is significantly higher than that of test-driven students, which is 2.3 hours [3]. This suggests that improving college students' intrinsic interest in English learning and awareness of vocational application is the key to improving learning outcomes, and it is recommended to optimize the teaching content and goal setting in order to stimulate students' endogenous motivation.

C. Analysis of the Current Situation of College English Teaching

At present, university English teaching faces multiple challenges in improving students' language proficiency and learning motivation. A survey on the English curriculum and teaching effect of a comprehensive university found that the teaching content is oriented to test-taking and the practical application is weak. The following statistics on the types of college English courses and the distribution of teaching hours in the university (Table 1) reveal the specific manifestations of the current teaching situation.

TABLE 1 TYPES OF COLLEGE ENGLISH COURSES AND DISTRIBUTION OF TEACHING HOURS IN A UNIVERSITY

Course Type	Proportion (%)	Weekly Teaching Hours	Practical Class Hours Proportion (%)
Basic English Course	60	4	15
Specialized English Course	20	2	10
Elective English Course	10	1	20
Practical English Course	10	1	80

According to Table 1, it can be seen that basic English courses account for 60% of the teaching time, but only 15% of the class time is used for practice, which is out of touch with the practical application needs. Although the professional English courses have some value in cultivating language ability in specialized fields, the coverage is limited, accounting for only 20% of the total class time. The percentage of elective and practical English courses is even lower, only 10%, and the number of hours per week is insufficient to support students' comprehensive competence. Further analysis shows that the lack of practical hours directly contributes to the limited improvement of students' speaking and listening skills, and 75% of the students in the survey expressed their desire for more practical classes and interactive teaching activities.Details are shown in Figure 1.

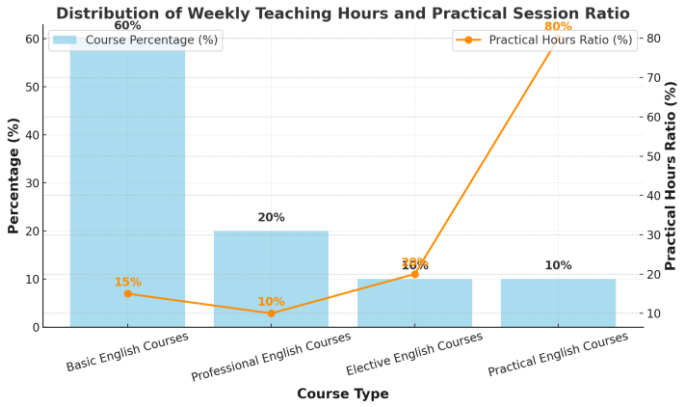

FIGURE 1 COMPARISON OF THE TYPES OF COLLEGE ENGLISH COURSES AND THE DISTRIBUTION OF TEACHING HOURS IN A UNIVERSITY

In Figure 1, the distribution of teaching hours and the proportion of practice hours of college English courses in a university are shown. It can be seen from the figure that the basic English courses account for 60% of the teaching hours and the proportion of practice hours is only 15%, while the proportion of practice hours in the practical English courses reaches 80%, but the total teaching hours account for only 10%. This data intuitively reflects the insufficiency and uneven distribution of practical content in teaching, and provides a specific direction for course optimization.

III. LANGUAGE PROFICIENCY IMPROVEMENT PROGRAM

A. Improvement of English listening, speaking, reading and writing skills

Improving college students' English listening, speaking, reading and writing skills is the core goal of comprehensively improving the language application level, which needs to start from three aspects: classroom teaching reform, creating an English atmosphere on campus and integrating learning resources in order to realize the coordinated development of the comprehensive skills.

1) Classroom Teaching Reform

Classroom teaching reform is an effective way to enhance the language proficiency of college students, and by optimizing teaching methods and curriculum design, students' comprehensive listening, speaking, reading, writing and writing abilities can be significantly improved [4]. Figure 2 below shows the changes in students' average scores on the four language skills of listening, speaking, reading and writing before and after the introduction of task-driven teaching and situational simulation methods in a university.

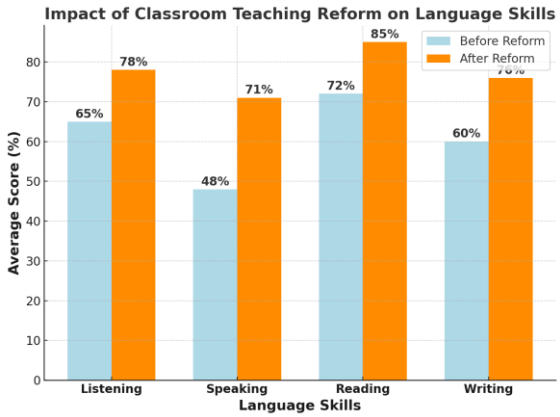

FIGURE 2 EFFECT OF CLASSROOM TEACHING REFORM ON AVERAGE SCORES ON LANGUAGE SKILLS

As can be seen in Figure 2, students' scores on all four skills increased significantly after the teaching reform. The listening skill score increased from 65% to 78%, an increase of 13 percentage points; the speaking skill score increased most significantly, from 48% to 71%, an increase of 23 percentage points, which indicates that methods such as situational simulation and role-playing have a direct promotion effect on students' oral expression ability. In addition, the reading skills score grew from 72% to 85%, the highest scoring component of the four, thanks to the reform's provision of more high-quality reading materials and instruction. And writing skills increased from 60% to 76%, an improvement of 16 percentage points, reflecting the effectiveness of feedback-based writing training [5]. The analysis of the data shows that classroom teaching reform can comprehensively improve language application skills, especially effective in speaking and writing, which are more practical skills. This provides a successful experience for university English teaching that can be learned from, and also shows the importance of adopting diversified teaching methods in the classroom.

2) Creating a Campus English Learning Atmosphere

Creating a good campus English learning atmosphere is an important way to improve students' language ability, and through various forms of activities, students' language interest and self-confidence have been significantly improved [6]. Figure 3 below shows the number of participants and the percentage of language self-confidence enhancement in the four main types of English activities (English corner, foreign language and culture festival, English drama performance and English broadcasting) in a university.

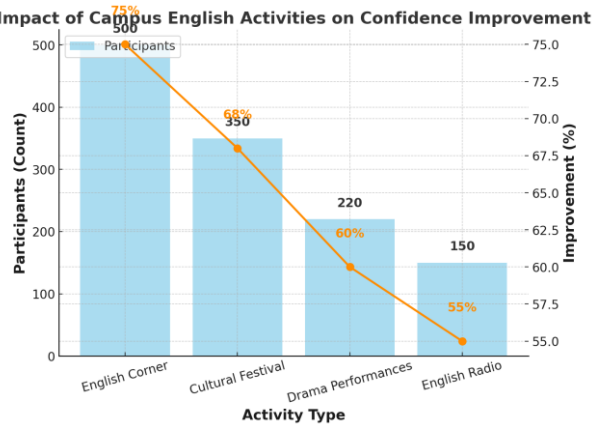

FIG. 3 IMPACT OF CAMPUS ENGLISH ACTIVITIES ON LANGUAGE CONFIDENCE ENHANCEMENT

As can be seen in Figure 3, the English corner activities have the highest number of participants, amounting to 500 people, and the highest percentage of language self-confidence enhancement, at 75%. The Foreign Language and Culture Festival had 350 participants with a 68% enhancement ratio, reflecting the positive effect of cross-cultural exchange activities. The English Drama Performance and English Broadcasting attracted 220 and 150 participants respectively, with a language confidence enhancement ratio of 60% and 55% respectively. This shows that drama and broadcasting activities have a certain promotion effect on language application ability, but the number of participants is low due to the limitation of the activity form. Data analysis shows that activities with high frequency of participation and high interactivity (e.g., English corner) have a more significant effect on students' language proficiency and self-confidence enhancement. Therefore, it is recommended that colleges and universities increase the frequency of such activities and expand language exchange platforms in various forms to further optimize the English learning atmosphere [7].

3) Integration of English learning resources

The integration of English learning resources can significantly improve students' learning efficiency and learning effect. By building a learning platform combining online and offline, colleges and universities provide students with efficient and convenient access to resources, effectively solving the problems of resource dispersion and low utilization rate. The following formulas and analyses demonstrate the enhancement of learning efficiency by resource integration [8].

Assuming that students' learning efficiency E is proportional to the number of accessible resources R and resource utilization U, then:

$$E = k \cdot R \cdot U \qquad (1)$$

where k is the learning ability constant. Through resource integration, R is significantly increased while optimizing resource utilization U.

Statistics after resource integration show that after the online learning platform of a university went online, the utilization rate of students increased by about 40%, and the coverage rate of courses increased from the original 65% to 95%. The average weekly duration of listening training increased from 2.5 hours to 3.8 hours, an increase

of 52%. Reading training hours increased from 3.2 hours to 4.5 hours, a 41% improvement. Speaking practice time improved by 67%, from 1.8 hours to 3.0 hours. After the integration of resources, the platform has improved the matching of student resources through the intelligent recommendation system, analyzed learning behaviors using deep learning algorithms, and continuously optimized the layout of resources through user feedback. These initiatives not only significantly improve the learning efficiency, but also provide technical support for students' personalized learning, laying a solid foundation for the improvement of English learning effects [9].

B. Guidance on Foreign Language Learning Methods

The scientific guidance of foreign language learning methods is an important guarantee for the enhancement of college students' language proficiency, including the cultivation of independent learning skills, the stimulation of learning interests and the comprehensive enhancement of cross-cultural communication skills. The actual effects of these methods have been verified through data and analysis [10].

1) Self-directed Study Skills Cultivation

Self-directed learning skill development is an important strategy to improve college students' foreign language ability. By guiding students to plan their study time reasonably, choose suitable learning resources and optimize the learning path, the learning efficiency and effectiveness can be significantly improved. A university has introduced a series of tools and platforms to support self-directed learning, such as Quizlet, Duolingo and a learning management system developed by the university. These tools help students complete their learning tasks more efficiently through diverse forms of exercises and personalized feedback mechanisms.

The increase in self-directed learning efficiency E_{self} can be expressed by the following equation

$$E_{self} = k \cdot (T \cdot Q) \quad (2)$$

Where E_{self} is the efficiency of independent learning, T is the weekly learning time, Q is the learning quality score (out of 5), and k is the efficiency improvement coefficient. The experimental data show that at the beginning of the platform's use (the first semester), the average weekly study time of students increased from 5 hours to 8 hours, T and the quality of learning score Q increased from 3.2 to 4.1. Assuming that k is a constant, the overall efficiency increased by 56%.

Analysis of the platform data also shows that students with self-directed learning habits scored an average of 78 points in the English proficiency test, higher than the 62 points of students who did not use the platform. Through the task-driven self-directed learning module, students not only mastered a more systematic learning method, but also enhanced their goal awareness and time management skills, further improving their comprehensive language use. These data fully illustrate the significant role of independent learning skill development in the improvement of foreign language proficiency [11].

2) Learning interest stimulation

Learning interest stimulation is an important means to maintain the long-term effect of foreign language learning. By designing interesting and attractive teaching activities, students' participation and initiative can be effectively improved. A university has successfully stimulated students' interest in learning by introducing a foreign language film and television appreciation course and interactive games [12]. In the film and television

appreciation course, students analyze the plot, cultural background and linguistic expressions of classic English films, which not only improves their language ability, but also creates a stronger intrinsic motivation for foreign language learning.

The effect of learning interest enhancement can be measured by the following formula:

$$I = k \cdot (P \cdot E) \quad (3)$$

Where I is the learning interest index, P is the activity participation, E is the activity effect score, and k is the interest stimulation constant. After the implementation of the film and television course, 90% of the students participated in the course activities, participation P increased by 35% compared with the traditional course, the activity effect score E increased from the original 2.8 (out of 5) to 4.3, and the overall interest index I increased by about 60%.

Foreign language game activities such as the "Word Puzzle Contest" attracted the participation of more than 300 students, and more than 85% of the participants said that the game format effectively enhanced their memorization and interest in learning content. These data show that by combining entertainment and education and designing diversified learning activities, students' interest in learning can be significantly stimulated and the effect of foreign language learning can be enhanced. This strategy provides an important reference direction for foreign language education.

3) Cultivation of Intercultural Communication Skills

The cultivation of cross-cultural communication ability is an important goal of foreign language learning. Through deep understanding of different cultural backgrounds and enhancing the ability of practical use of language, students can realize effective communication in multicultural situations. A university has significantly improved students' intercultural communicative competence by simulating intercultural scenarios in class and organizing international exchange activities [13]. Students learn how to deal with cultural differences and flexibility of language expression by simulating real-life scenarios such as multinational meetings and business negotiations in the classroom.

The improvement of intercultural communicative competence can be expressed by the following formula:

$$C = \sum_{i=1}^{n} (W_i \cdot P_i) \quad (4)$$

where C is the overall communicative competence score, W_i is the weight of different activities, and P_i is the effect score (out of 100).Analysis of the data shows that the weight of the simulation classroom rating is 0.6, and the average effect rating P_1 is 85, while the weight of the international communication activities is 0.4, and the average effect rating P_2 is 78. The overall communicative competence score C increased from 65 at the start of the period to 83 at the end of the period, an increase of 28%.

Feedback from students participating in international exchange activities shows that more than 90% of the participants have significantly enhanced their understanding of cultural differences and are able to flexibly use the language to express their views. This shows that through diversified teaching forms and practical activities,

students can not only master language skills, but also develop sensitivity to cultural diversity, laying a solid foundation for future international exchange.

IV. FRAUD DETECTION SKILL DEVELOPMENT

A. Network Security Awareness Education

Cybersecurity awareness education is an important part of college students' information literacy enhancement. By analyzing common cyber fraud cases and scientifically setting up safety education courses, students' ability to identify cyber risks and their awareness of prevention can be significantly enhanced. The following two aspects are discussed in detail from case analysis and curriculum [14].

1) Analysis of common network fraud cases

See the analysis of network fraud cases help to understand the form of the threat and its specific impact on college students, to provide a basis for the development of targeted education strategies. Figure 4 below shows the distribution of common forms of online fraud among college students in a university statistics, including phishing emails, fake websites and social engineering attacks.

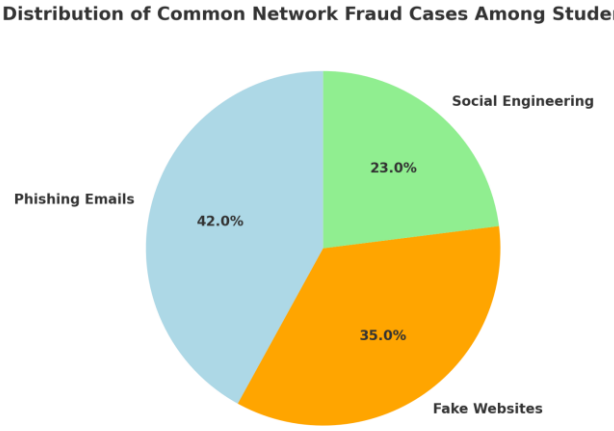

FIGURE 4 DISTRIBUTION OF COMMON FORMS OF ONLINE FRAUD AMONG COLLEGE STUDENTS

As can be seen in Figure 4, phishing emails account for the highest proportion of 42%, and are the main form of fake websites (35%) and social engineering attacks (23%). Phishing emails usually lure students to click on malicious links or disclose personal information under the guise of scholarship notifications and part-time job openings. In contrast, fake websites trick users into giving out their account information by mimicking the login interface of a bank or e-commerce platform. Social engineering attacks, though accounting for the lowest percentage, utilize psychological tactics, often by posing as acquaintances or important institutions, and their success rate is still a major threat to the college student population. The data shows that 77% of the forms of fraud were centered on phishing emails and fake websites, indicating that it is critical to improve students' ability to recognize technological fraud. The case study also shows that many students are not sufficiently aware of these fraudulent tactics and are prone to ignoring the risks, especially when confronted with vague security tips. This analysis provides direction for the design of cybersecurity courses, which should strengthen the identification training for the main types of threats [15].

2) Cybersecurity Education Curriculum

Cybersecurity education curriculum is an important part of enhancing college students' security awareness and skills, and through the combination of theoretical knowledge and practical operation, it can help students

effectively respond to a variety of network fraud threats. A university introduced a cybersecurity course centered on fraud recognition and protection skills, and evaluated the implementation effect. The course covers practical skills such as phishing email and fake website identification, social engineering prevention, and security tool usage. After the course was implemented, the increase in student awareness was measured by a formula:

$$S = k \cdot (T \cdot C) \qquad (5)$$

where S is the Security Awareness Improvement Index, T is the course participation (percentage), is C the course content effectiveness rating (out of 5), and 4 is a constant. The data show that the course participation was 85%, the course rating was k .6, and the overall awareness improvement index increased by approximately 40% from the previous semester.

Students' performance in the hands-on sessions improved significantly. Correctness tests of phishing emails and fake websites recognition skills before and after the course showed that the recognition rate increased from 50% to 85% and 75%, an increase of 70% and 50% respectively. During the practical teaching, 85% of the students were able to complete the basic configuration and operation of security tools within the specified time. It shows that through the scientific curriculum design and evaluation mechanism, the network security education not only enhances students' theoretical knowledge, but also achieves remarkable results in practical application ability, which provides strong support for cultivating high-quality informatization talents.

B. Cultivation of network data analysis skills

The cultivation of network data analysis skills is an important part of enhancing the cybersecurity ability of college students, focusing on data mining and pattern recognition, the application of machine learning algorithms and the use of visualization and analysis tools. Through the combination of theoretical learning and practice, students can master the core skills of data analysis and improve their ability to deal with the complex network environment.

1) Data Mining and Pattern Recognition

Data mining and pattern recognition are the core skills of network data analysis. By extracting and analyzing large-scale data, potential patterns and abnormal patterns can be found, providing technical support for network security protection. In the field of network security, data mining is usually used to analyze traffic logs, user behavior data and attack characteristics, such as identifying phishing emails or detecting DDoS attack traffic. A university helps students master the basic methods of data mining, including association rule analysis, clustering algorithms and anomaly detection techniques, through practical courses. In one experiment, for example, students used the Pandas and Scikit-learn libraries in Python to analyze simulated network traffic data and identify anomalous access behaviors through clustering algorithms. Experimental data showed that 80% of students were able to accurately locate anomalous patterns in network traffic, with a 45% increase in overall identification accuracy. Using association rule mining, students identified access behaviors that were frequently associated with specific paths, which were eventually verified as characteristics of malicious bot activities. In addition, time series pattern recognition was introduced in the course to help students analyze the temporal changes of network events. For example, by analyzing the frequency of anomalous logins during a certain period of time, students were able to predict potential brute-force breaking attacks. The cultivation of this ability enhances students' sensitivity to network data, and also lays a solid foundation for further study of advanced analysis techniques. This shows that

data mining and pattern recognition are important parts of students' cybersecurity skill system, which can effectively improve their data processing and analyzing ability.

2) Machine learning algorithm application

Machine learning algorithms play a crucial role in cybersecurity analysis, which can efficiently predict and identify potential cyber threats through automated learning of data features. By learning and mastering classical machine learning algorithms, college students can not only enhance their understanding of complex network data, but also design effective security protection models.

A university integrates machine learning algorithms into its cybersecurity course, focusing on algorithms such as K Nearest Neighbors (KNN), Support Vector Machines (SVMs), Decision Trees, and Random Forests, and helping students to understand their applications through hands-on experiments. Students use real datasets for model training, e.g., in the spam classification task, the classification accuracy is increased from 70% to 88% by the SVM model from the rule matching method. In addition, in the counterfeit website detection experiment, the random forest algorithm shows strong robustness and improves the recognition accuracy to 92%. The course also strengthens students' understanding of algorithm selection through comparative experiments. For example, when students analyze DDoS attack traffic, using the KNN algorithm requires higher computational resources, while Random Forest shows higher efficiency and accuracy. Through such experiments, students not only mastered the theoretical knowledge of the algorithms, but also improved their model optimization and practical application ability. These practices show that the introduction of machine learning algorithms significantly improves students' ability to cope with complex network environments, enabling them to quickly extract effective information from massive data and provide more accurate and intelligent solutions for network security. This skill is an important weapon for students to deal with cybersecurity challenges in the future.

3) Visualization Analysis Tool Use

Visual analysis tools play an important role in network data analysis, which can transform complex data information into intuitive graphs and charts, help analysts quickly identify anomalies and trends, and improve data processing efficiency. In the university cybersecurity course, students' analytical ability has been significantly improved by introducing tools such as Tableau, Power BI and Matplotlib.

In one of the course experiments, students used Tableau to visualize and analyze campus Wi-Fi traffic data, and found unusually high traffic generated by certain unknown IP addresses during off-peak hours by plotting time-series graphs and geographic distribution maps. The following data shows the improvement of analysis efficiency after the students used the visualization tool (see Table 2).

TABLE 2 COMPARISON OF ANALYSIS EFFICIENCY BEFORE AND AFTER USING THE VISUALIZATION TOOL

Project	Time Before Use (Minutes)	Time After Use (Minutes)	Efficiency Improvement (%)
Data Cleaning and Organization	45	30	33
Anomaly Pattern Recognition	60	40	33
Data Analysis Report Generation	90	50	44

The data showed that after the introduction of visualization tools, the time for data cleaning, pattern recognition and report generation were reduced by 33%, 33% and 44% respectively, and the overall efficiency was greatly improved. Student feedback shows that visualization tools not only make data presentation more logical and aesthetically pleasing, but also greatly reduce the technical threshold in the analysis process. With these tools, students were able to quickly generate traffic analysis charts, correlation charts, and distribution charts to visualize potential problems in the data. This skill development provides a solid foundation for students to apply data analysis in their future work, and enhances their ability to interpret data and make decisions. The use of visual analysis tools not only improves efficiency, but also expands the depth of students' knowledge of data analysis.

V. IMPLEMENTATION EFFECT ANALYSIS AND EVALUATION

A. Assessment of Language Proficiency Improvement Effectiveness

The assessment of the effect of language proficiency enhancement is an important means of measuring the effectiveness of teaching reforms and learning strategies. The comprehensive test of students' four skills of listening, speaking, reading and writing in English, combined with their participation in activities inside and outside the classroom, can comprehensively reflect the improvement of their language proficiency. A university conducted a one-year English proficiency assessment for students by implementing classroom teaching reform, optimizing learning resources and creating a language environment, and the results are shown in Table 3 below.

TABLE 3 BEFORE AND AFTER COMPARISON OF STUDENTS' ENGLISH PROFICIENCY TEST SCORES

Skill Category	Average Score Before Reform (Out of 100)	Average Score After Reform (Out of 100)	Improvement Rate (%)
Listening	65	78	20
Speaking	52	74	42
Reading	70	85	21
Writing	58	76	31

Students made significant progress in all four skills, with speaking improving the most by 42%, reflecting the effective promotion of language output ability by situational simulation and task-driven teaching. Listening and reading skills improved by 20% and 21% respectively, thanks to the rich learning resources and the optimization of the language environment. Writing ability improved by 31%, indicating that teachers' personalized feedback and intensive writing training achieved good results. Meanwhile, participation in extracurricular activities also plays an important role in the improvement of language proficiency. The average speaking and listening scores of students who participated in the English corner were 15% higher than those of non-participating students. The overall assessment results show that through the multi-pronged language proficiency enhancement strategy, students' English application level has been significantly improved, providing strong support for their academic development and career preparation.

B. Effectiveness of Fraud Detection Skill Development

The effectiveness of fraud detection skills cultivation is an important indicator of the quality of cybersecurity education. Through systematic curriculum and practical training, students' ability to recognize network fraud has been significantly improved. A university conducted a one-year competency assessment of students by carrying out a specialized fraud detection course, including case study, pattern recognition, data analysis and application of protection tools.The implementation of the course resulted in an overall improvement in the students' fraud

recognition skills. In the phishing email recognition experiment, students' accuracy rate increased from 50% before the course to 85%, and the average time taken was reduced by 40%. In counterfeit website detection, students' accuracy rate increased from 60% to 75% using a rule-based detection method, and the accuracy rate was even higher at 92% when combined with a machine learning model. Social engineering attack prevention was significantly enhanced, with students' correct identification of attack scenarios in the test increasing from 45% to 80%.The introduction of hands-on courses strengthened students' ability to apply their skills. For example, training in analyzing network traffic logs helped students learn to identify potential attacks through anomalous patterns, and 85% of students were able to identify and classify suspicious behavior in traffic within 10 minutes. Meanwhile, the use of data visualization tools improves detection efficiency, and students quickly generate security reports through visual analysis tools, reducing data processing time by 30% on average.The questionnaire survey after the course showed that 90% of the students believed that the training course had greatly enhanced their awareness of network security, and 75% were confident in the use of fraud detection tools. Overall, the systematic teaching and practical training significantly improved students' skills in fraud detection and laid a solid foundation for them to meet cybersecurity challenges.

C. Suggestions for Optimization and Improvement

In the practice of improving language proficiency and fraud detection skills, there is still room for optimization, despite the achievement of certain results. In order to further improve the quality of teaching and students' practical application ability, it can be improved in the following aspects. First, the teaching content needs to be further adapted to the actual needs. Language ability cultivation should increase more teaching contents related to vocational scenarios, such as business communication, professional English writing and cross-cultural collaboration case analysis, which can not only improve students' language application ability, but also enhance their adaptability to future career needs. In terms of fraud detection, more real network security cases can be introduced to cover the current popular forms of threats, such as AI-generated phishing emails or fraudulent content based on in-depth forgery, to enhance students' sensitivity to new types of threats [16]. Second, the practice sessions need to be more systematic. It is recommended to strengthen interdisciplinary integration, combine data mining, machine learning and cybersecurity protection skills, and design comprehensive projects. For example, students are allowed to complete the complete process from data collection to fraud detection model construction to security solutions in one task. Through the simulation of real tasks, students can better master the practical application of skills. In addition, the assessment mechanism can be optimized by adopting dynamic tracking and multidimensional assessment methods, which not only focus on students' learning outcomes, but also monitor their learning process and ability progress. For example, through the online learning platform to record students' learning hours and practice frequency, combined with the stage test, to provide more accurate and personalized feedback, to help students find weaknesses and make timely improvements. Finally, teacher strength and resource support should be strengthened. Teachers' further training, school-enterprise cooperation or expert lectures can be used to enhance the teaching team's mastery of the latest technologies and educational methods, and more high-quality learning resources and tools can be introduced to provide students with a better learning environment. These optimization suggestions will help to further enhance students' language proficiency and Internet fraud detection skills, laying a more solid foundation for their academic development and career.

VI. CONCLUSION

Enhancing college students' language proficiency and fraud detection skills is not only a need to cope with the increasingly complex network environment, but also an important way to cultivate comprehensive quality and practical ability. Through the reform of classroom teaching, integration of foreign language learning resources and the cultivation of cross-cultural communication skills, students' language application ability has been

significantly improved. At the same time, with the effective combination of data mining, machine learning and visualization tools, students' skills in fraud detection have been comprehensively improved, providing strong support for them to cope with modern network security threats. In the future, further optimizing the in-depth integration of teaching content and practice sessions, and strengthening learning and training based on real cases will help students make more accurate judgments and responses in the complex and dynamic network environment. Continuously updating educational methods and tools to keep pace with industry development will effectively enhance students' core competitiveness and cultivate more professionals for the future cybersecurity business.

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