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Computer-Aided Design AND APPLICATIONS

College English Education's Innovative Path Integrating Environmental Protection Literacy Training with E-Learning

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Abstract. Sustainable development is essential in designing and implementing geography curriculum standards. Environmental protection is an indispensable way and means to achieve sustainable development. Environmental protection depends not only on the continuous improvement of environmental management technology but also on citizens' long-term and practical education on environmental protection. In modern English education, environmental protection is rarely integrated into classroom and practical education, which is an excellent opportunity to teach the concept to college students. In this paper, we developed a SOFM neural network-based English teaching quality evaluation model to analyze the influence of environmental protection literacy on teaching quality improvement. We conducted training and generalization ability tests on the model. Experiments show that the established evaluation model can classify teachers' teaching quality according to the position of winning neurons in the competition layer. Fast convergence, high classification accuracy, and strong generalization ability can show the effectiveness of the proposed model. Moreover, our method provides a new direction for the innovative cultivation path of university English teaching.

Keywords: Training with E-Learning; Sustainable development; environmental management; English education; SOFM; neural network.
DOI: https://doi.org/10.14733/cadaps.2024.S22.135-147

1 INTRODUCTION

College English education is an essential form of deep and high-quality development for students, and it is the key to helping students acquire skills in English language expression, cognition, and comprehension[11]. However, there are many problems in the process of university English education in China, which seriously affects English education's effectiveness, efficiency, and

relevance. Some experts and scholars in China believe that the application of English in college has a distinct professional nature and needs to be shifted to ESP to help students become the complex talents necessary for social development through the form of "major + English." Some scholars believe that English education should integrate the humanistic and instrumental aspects and use the humanistic attributes of the English discipline to effectively improve students' overall quality. The author believes that English education should have the characteristics and features to keep pace with the times, develop and improve itself according to the needs of the times, and broaden the scope of English education for human development. Intelligent generation is the most essential tool for English education to keep pace with the times. With the continuous progress and development of the Internet and computer technology, the CAI (computer-assisted instruction) mode has overturned the traditional English teaching mode. The CAI mode has made considerable progress in China's higher education institutions. More and more schools are adopting this teaching mode and offering more and more courses, which is conducive to the sharing of teaching resources of better quality in schools, as well as the improvement of students' various abilities in the process of learning English, such as listening, speaking and translation skills[16]. However, the drawbacks of this multimedia-assisted teaching model have become increasingly apparent, such as the fact that the design of the curriculum does not meet the needs of individual students [4]; for example, in the online teaching process, students spend most of the time watching learning videos and rarely interact with each other, which makes students' learning effects lack a kind of assessment and monitoring mechanism. With all the drawbacks of the CAI teaching mode, there is an urgent need for a fast and effective learning system to solve this problem. With the rapid development of Internet technology, a set of methods can be developed to improve students' English learning efficiency based on their mastery of English and the characteristics of each student's English learning. With the increasing emphasis on digital learning, the M00C system for English learning with BP neural algorithm has been developed.

The reform of college English teaching based on web-based multimedia technology has become a hot research topic in recent years. However, the learning environments discussed by scholars are relatively homogeneous, basically focusing on the network environment, multimedia environment, etc., covering only one aspect of university English teaching or students' learning environment without starting from the overall learning environment that language learners rely on and proposing and designing a multi-dimension learning environment (Multi-dimension Leaming Envimn- ment). Leaming Envimn- ment). In addition, even if we follow the network-based university English teaching model proposed by the researchers, we still need to study in depth how to implement the "student-centered" teaching model in this model, which is the key to the reform of university English teaching and the "computer-based and classroom English" model. In this paper, we try to study how to implement the "student-centered" teaching model in this model, and "student-centered" is one of the basic requirements of the university English teaching reform and "computer-based and classroom English multimedia teaching mode ." Based on relevant research results, this paper attempts to understand further the intrinsic relationship between the learning environment of language learners and the effectiveness of college English teaching and to propose and design a student-centered, multidimensional learning environment based on the learning environment that language learners rely on as a whole, to help students improve their comprehensive language skills and better promote college English teaching. Evaluating the quality of college English-speaking classroom teaching is a sizeable multidimensional system. In the actual evaluation, there are biases caused by the subjective factors of the evaluators, which makes the evaluation system different from the general classroom teaching evaluation system. Most existing evaluation methods can only form quantitative evaluations regarding component values but cannot qualitatively classify the teachers' classroom teaching effectiveness. This paper proposes a self-organizing feature mapping (SOFM) neural network-based evaluation method for college English-speaking classroom teaching. We also program the SOFM network evaluation model based on the MATLAB R2013a platform. The

SOFM model was programmed and tested under different training steps. The simulation results show that the classification accuracy of the SOFM model is high, and the classification results are more intuitive, which verifies the method's effectiveness. Our process uses the environmental protection factor as an embedded representational feature to analyze its importance.

2 RELATED WORK

2.1 Principles of Designing a Multidimensional English Learning Environment

Several scholars in China have studied the English learning environment: Zhang Zhengdong believes that the foreign language learning environment is composed of the environmental factors of the school location, the ecological factors of the school society, the students' environmental factors, and the teachers' environmental factors, and Zeng Pucchu frames the foreign language learning environment as a macro-controlled environment, a meso-constrained environment and a micro-teaching environment. The author believes that teaching and learning English in college is a systematic project involving many factors, ranging from the state and society to the community, family, hostels, and individual learners, which require the cooperation of many factors. These factors are the English learning environment for English learners. Each English learner is in a different spatial and temporal environment, and multiple environmental factors can be organically integrated into the learner's learning environment. In short, the learning environment available to an English learner is multidimensional. Integrating and using the learning environment in college English teaching requires a rational design. We believe that the goal of designing a multidimensional English learning environment is to adapt to the educational reform requirements of the "Web-based and computer-based university English teaching system," to develop students' language application skills, and to improve the level of university English teaching. Under this goal, the following four principles should be followed: classroom-based teaching, highlighting the advantages of the campus environment; student-centered, highlighting the personalized learning environment; modern education technology as a platform, creating a three-dimensional learning environment; motivating students as a motive, creating an independent learning environment.

2.2 Environmental Education and Environmental Protection Education

Environmental protection education is a kind of education about environmental science from a technical point of view, and it is a kind of indoctrination education to promote and popularize knowledge. For example, there are many publicity slogans and slogans on the streets, environmental protection activities on Earth Day and Environment Day, and "environmental protection tips" often introduced on TV and in the press. "and so on. In China, environmental education is more frequently directed by the environmental protection department, and its connotation and substance are different from the understanding of geography educators. However, in our lives, many ecological education activities have been transformed into false show-like activities, which cause an average of 1.5 tons of soil loss per year in the forest. Suppose rubber is planted in alpine areas at more than 1,100 meters. In that case, it will bring no economic benefits and cause ecological damage such as soil erosion, landslides, flash floods, and thinning of the reclaimed land. In addition, deforestation and rubber planting absorb a lot of groundwater, which makes the cut-off of healthy water in the region more and more serious, resulting in water shortage even though they live in the rainforest. Rubber trees are an underground pumping machine, which has reduced surface and groundwater resources and damaged the region's ecological environment, which is linked to the 2009-2010 drought in the southwest. Environmental knowledge is necessary for solving environmental problems, and ecological awareness is a prerequisite for identifying and solving environmental issues [4]. Environmental education focuses on promoting sustainable development and the behavioral practices supported by this value that benefit the environment. In this context, ecological knowledge

is a means rather than an end, and environmental crises cannot be solved purely technically. Environmental education emphasizes the relationship between humans and the environment through a sustainable development perspective. In addition to long-term habitual behavior, it is essential to establish correct and relatively stable values to bring about long-lasting changes in individual behavior. Many of our studies have found that the values that individuals develop due to their personal experiences through participation in appropriate activities are stable. Therefore, environmental education should not only provide students with basic knowledge of ecological science but also make it essential that students actively participate in and develop sound environmental ethics based on the experiences they have gained and develop good behavioral habits. In this process, students' thinking undergoes a series of exploratory processes of acceptance, application, reflection, and development. The teaching methods used in environmental education are the same as the basic education curriculum reform philosophy.

2.3 Deep Learning and Teaching Research

Deep learning is an essential concept in contemporary learning science, which Ference Marton and Roger Saljo introduced in their 1976 paper "The Essential Difference Between Learning: Outcomes and Processes ."Entwistle, Ramsden, and John Biggs have described the theory of deep and shallow learning and analyzed the characteristics of deep and external learning [3]. Entwistle, Ramsden, and John Biggs discussed deep learning from different perspectives [14], suggesting that deep learning is reflected in students' commitment to using a variety of learning strategies, such as extensive reading, communication and interaction, systematic thinking, and contextual learning, to achieve a deeper understanding of knowledge. Jiao Jianli points out that "deep learning is a kind of understanding-based learning, which emphasizes that learners critically learn new ideas and knowledge, integrate them into their original cognitive structures, and transfer their previous knowledge to new situations to help make decisions and solve problems ." According to the cognitive hierarchy theory proposed by American educational psychologist Benjamin Bloom in 1956, academic (learning) goals are divided into three categories: cognitive, affective, and skill. In 2001, Bloom's students Anderson and Krathwoh revised his cognitive hierarchy theory [18], describing cognitive processes as memory, comprehension, application, analysis, evaluation, and creativity. The six levels of cognitive processes are described as memory, comprehension, application, analysis, evaluation, and creation, and the level of "creation" is added to the top of the original cognitive hierarchy. The higher mental goal level emphasized by deep learning mainly refers to analysis, evaluation, and creation in the six levels. Jinju Duan and Shengquan Yu summarize the characteristics of deep learning: "Deep learning emphasizes higher cognitive goal levels, the development of higher-order thinking skills, reflection and metacognition in the learning process, and high emotional and behavioral input in learning behavior; in terms of cognitive structure, it focuses on conceptual transformation and the development of complex cognitive structures. " SPOC (Small Private Online Course) was first proposed and used by Professor Armand Fox at the University of California, Berkeley, and is a more refined type of course, a fusion of MOOC and traditional campus teaching. The term "small" refers to a relatively small class size compared to a MOOC, usually a few dozen to a few hundred students. The term "Private" refers to the restricted access conditions for student applications, and only qualified students can be included in SPOC, so there is a certain degree of privacy, which Zhu Zhiting translates as "private broadcast class ."SPOC is an educational model that applies MOOC teaching resources such as micro-videos, learning materials, exercises and quizzes, peer assessment, forums, etc., to small-scale courses. Andreas and Michael discussed the historical evolution of online distance learning, the advantages of online courses for institutions, and the relationship between online classes and social media [7]. Zeng Mingxing et al. constructed a deep learning model consisting of SPOC flipped classroom, DELC deep learning process, and SPOC support for deep learning; Chen Guoyen suggested that in the implementation of SPOC, attention should be paid to showing students the advantages of SPOC, and some special measures should be

taken in the structural design of the course, face-to-face content, grade assessment, and course management. Scholars have discussed the design of SPOC resources, learning environment, and assessment, but there are few studies on integrating SPOC with university English courses.

3 METHODOLOGY

3.1 English Course Design Guided by Environmental Protection

Environmental issues are the primary concerns of human development, but their distribution and manifestations vary significantly from region to region. Currently, the leading global environmental problems are population growth, overconsumption of resources, soil erosion, land degradation, deforestation, decline of biological species, shortage of water resources, increase in temperature, frequent natural disasters, and so on. The Xiang Education version of the textbook outlines three environmental problems: global environmental pollution, widespread ecological damage, and sudden and severe pollution events. Introducing major environmental issues in each edition is factual, primarily knowledge, which is highly interesting to students. Teachers can reduce classroom teaching, increase opportunities for students to learn independently and cooperatively, and encourage "student-student interaction" to share their knowledge. The primary purpose of introducing environmental issues is to make students aware of the profound impact of these issues on human development[8]. Depending on the level of students' thinking, teachers can guide students to focus on understanding the complexity of environmental issues. (See Figure 1)

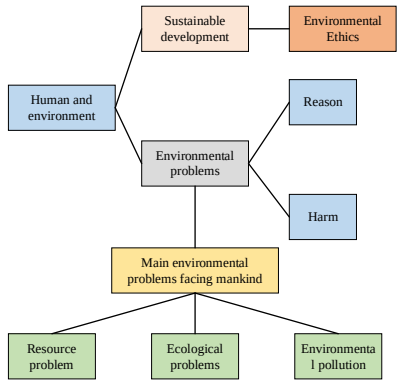

Figure 1: knowledge structure of "environment and environmental problems".

Resource issues are linked to the need for "development," and only rational exploitation of resources can contribute to the sustainable development of human society, which is the second challenge in this chapter. For example, to protect arable land resources, reasonable conservation farming is the best way to develop the land ecosystem sustainably, while for non-renewable resources such as minerals, conservation and development measures should be adopted to improve the depth and efficiency of utilization, increase the degree of recycling and research on alternative development of new resources. In essence, conservation and development are not contradictory, but the inertia of human beings opposes them. In specific teaching, we can develop students' ability to analyze problems through debates and seminars. Resource issues are urgent in China's current and future socio-economic development. Students can try problem-solving strategies in teaching and encourage them to explore corresponding countermeasures. For example, a typical region can be selected to discuss its development and available resources, or a particular resource problem (e.g., China's iron ore import problem) can be the focus of research studies[2]. Teaching should focus on

developing students' ability to think dialectically and synthesize and analyze information to solve problems. (See Figure 2)

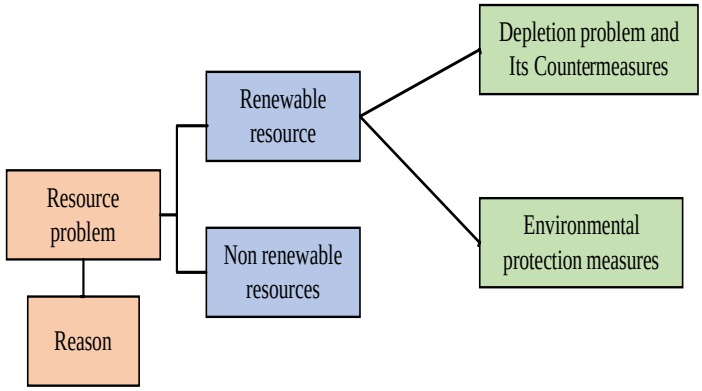

Figure 2: knowledge structure diagram of "resource problems and resource utilization and protection."

The interrelationship with the surrounding environment is relatively stable, an essential prerequisite for the orderly development of human society. At present, many human activities have disrupted the ecological balance of nature and caused severe disorders in the structure and function of ecosystems, thus threatening the future survival and development of human beings. Although many environmental problems caused by natural causes also affect human survival and development, in teaching, we should pay more attention to those ecological problems caused by human's unreasonable activities. These are problems that should not have arisen in the first place and can be avoided or eliminated through measures in future development. The curriculum uses case studies to understand the causes and processes of a particular ecological problem and the possible effects of the problem in one region on other regions. The analysis of cases to discover the causes of a specific environmental problem is a significant focus of this chapter. (See Figure 3)

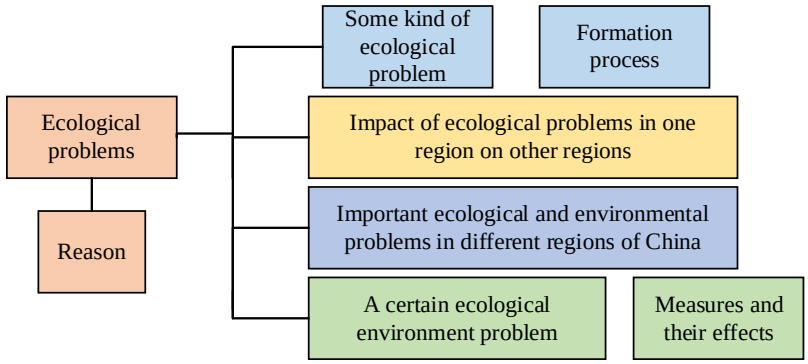

Figure 3: Knowledge structure of "ecological problems and environmental protection."

Environmental pollution has the most direct relevance to students' personal lives and is likely to be of concern and resonance to high school students[2]. All textbook editions design this chapter to introduce the significant global environmental pollution problems and then submit some environmental pollution incidents through case studies. Teachers can encourage students to work

independently or collaboratively to understand the basic knowledge provided in the textbook. In the case study section, students can use a backward process, starting with the hazards of the pollution event to draw attention to their health and safety and that of the people around them and then analyzing the process of the pollution event to find out the causes of the event and the irrational human activities behind the seemingly simple pollution event. Once these causes have been identified, exploring measures to prevent and control such pollution is easier. In the process of exploring solutions, it is recommended that good topics be chosen for research activities and that they be combined with comprehensive practical activities such as community service in areas where conditions are favorable. (See Figure 4)

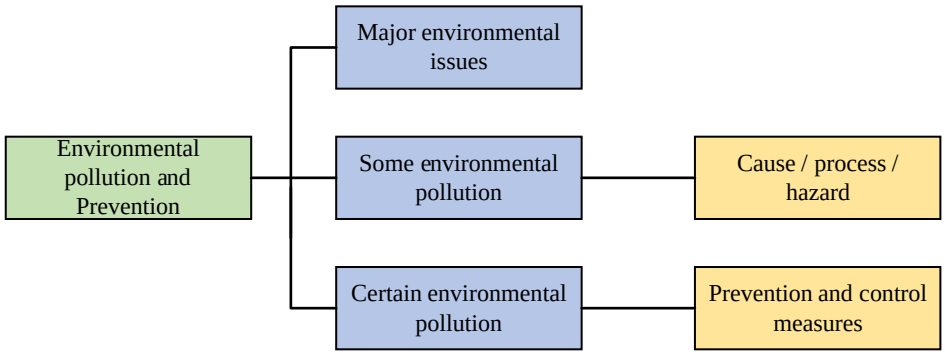

Figure 4: Knowledge structure of "environmental pollution and prevention."

3.2 Algorithm of SOFM Neural Network Teaching Quality Evaluation Model

The learning algorithm of the SOFM neural network is as follows: let x=(x_1,x_2,...x_n) be the input n-dimensional. The training sample vector; $w_i^{'}(k)$ =[$w_1(k)$,$w_2(k)$...$w_n(k)$]. [12]A small random weight initializes the network, and the training sample vector is normalized according to equation (1).

$$x' = \frac{x}{\|x\|} \tag{1}$$

$$w_i'(k) = \frac{w_i(0)}{\|w_i(0)\|} \tag{2}$$

1. The new input sample vector from the input sample space counts x'. (2) Calculate the resulting winning neuron A according to equation (3).

$$\|x' - w_A'\| = min_{\,i}\,\|x' - w_i''\|, \quad (i = 1,2,3,\cdots,N) \tag{3}$$

3. Obtain the neighborhood neuron A(k) of the winning neuron according to equation (4); update the connection weights of the neighborhood neuron A(k) of the winning neuron according to equation (5). In Eq. (5), 7/(k) is the updated learning rate.

$$A(k) = INT\left[A(0)\left(1 - \frac{k}{N}\right)\right] \tag{4}$$

$$w'(k+1) = w'(k) + \eta(k)[x' - w_i'(k)] \tag{5}$$

5. The updated weights are re-normalized according to equation (6).

$$w_i'(k+1)_{\text{new}} = \frac{w_i'(k+1)}{\|w_i'(k+1)\|} \tag{6}$$

6. If the number of iterations k≤N, add 1 to the value of k and go to step ⊜. Otherwise, the iterative process is finished.

3.3 Establishing a SOFM Network Teaching Quality Evaluation Model for College English Classrooms

In this paper, we take the teaching quality of 18 English teachers' oral classes in a university as the research object and establish a teaching quality evaluation model based on the SOFM neural network. In this paper, we refer to the index system of evaluation of teaching level in general colleges and universities, combine the questionnaires of teachers and students, consult with experts and supervisors in related fields, and finally establish the evaluation indexes covering four parts: teaching department, students, peers and supervisors[5]. The primary index of teaching department evaluation is teacher morality, and there are three secondary indexes; the primary indexes of student evaluation include teaching content, teaching method, teaching attitude, and teaching effect, and there are eight secondary indexes; the primary indexes of peer evaluation have scientific research ability and professionalism, and there are three secondary indexes; the primary indexes of supervisor evaluation include professional quality, teaching design, and instrumentation, and there are six secondary indexes[19]. The process of model building is as follows. The number of nodes in the input layer depends on the dimensionality of the input feature vector, and the input training sample vector in this paper is an 18×20 vector matrix. Considering the inconsistency of the sample data, the mapminmax function is used to normalize the elements in the training sample set to the range of (0~1), which improves the training speed of the model. The number of neurons in the competitive layer significantly impacts the evaluation model's performance. If the number of neurons is too small, the model cannot be classified correctly; if the number is too large, the model structure is too complicated, which leads to long training time and affects the model performance[20]. In this paper, we evaluate and classify the training sample set in Figure 5 and finally determine the topology of the competing neurons as a 2×2 two-dimensional array after repeated trials and considering the complexity and classification accuracy of the model.

The BP neural network has a multilayer unidirectional propagation network, and the input and output have a robust nonlinear mapping relationship. The network is used to measure the teaching effectiveness procedure of the English M00C system, as shown in Figure 5.

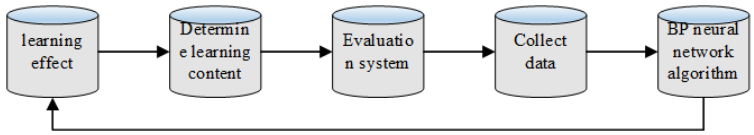

Figure 5: BP neural network teaching evaluation model for English MOOC system.

In the process of system learning effect evaluation by the BP neural network, the first step is to normalize various evaluation indexes of the system learning effect, and the processing result is used as the input vector of the BP neural network so that the learning effect is changed from abstract form to quantified form as the output vector. In the second step, the BP neural network is combined with relevant experts' empirical knowledge, and a certain number of training samples are used to make the BP neural network self-adaptive learning and adjustment of the weights until the neural network can represent the knowledge more accurately[12]. In the third step, the trained BP neural network model is used to evaluate the teaching effectiveness of the English M00C system. The student's learning can be assessed fairly, objectively, and accurately according to the indicators collected by the system.

4 EXPERIMENTS

4.1 Implementation Details

The SOFM network evaluation model is used to evaluate the teaching quality of 18 English teachers in a university, and the process is as follows: (1) the SOFM network model is programmed based on MATLAB R2013a software platform; (2) the model is trained with the teaching quality evaluation indicators in Table 1 as training samples, and after the training, the model represents the evaluation results in the form of the positions of the winning neurons in the competition layer; (3) the evaluation model is tested for generalization ability. (3) The evaluation model is tested for generalization ability. Suppose the position of the winning neuron in the competitive layer is the same as that of a standard training sample. The test sample belongs to the same category as the corresponding standard training sample[17].

4.2 Experimental Analysis

The SOFM evaluation model developed in the paper is trained using the samples in Table 1. Since the number of training steps directly affects the clustering effect of the model, the number of training steps is set to ep.ochs=20, 50, 150, and the classification effect is tested. The simulation experiments show that after repeated training, the evaluation model can map from the sample number and the winning neuron's node position to the evaluation model's competitive layer. Table 1 shows the characteristic mapping of the output layer of the evaluation model under different training steps[1]. Table 1 shows that the model's evaluation results are inconsistent with other training steps. The gray hexagon in the figure is the winning neuron A(m, n) in the output layer, and m is the number of neurons in the output layer of the mode[9]l. The number of samples in the mth neuron in the output layer is the number of the winning neuron in A(m, n). (See Table 1)

Evaluation Indicators	*Teacher Order*																	
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*
X1	*10*	*10*	*9*	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*10*
X2	*10*	*10*	*9*	*9*	*10*	*10*	*10*	*10*	*10*	*10*	*9*	*10*	*10*	*10*	*10*	*10*	*10*	*9*
X3	*10*	*9*	*9*	*10*	*10*	*8*	*10*	*10*	*10*	*10*	*9.5*	*10*	*10*	*10*	*10*	*10*	*10*	*9*
X4	*9*	*8*	*9*	*7.5*	*8*	*9*	*8.5*	*7*	*8*	*8.5*	*6.5*	*9*	*7.5*	*8*	*8.5*	*7.5*	*9*	*7*

Table 1: Sample training set for oral classroom teaching quality evaluation model.

Simulation experiments show that after the model is trained, a specific neuron in the competitive layer must be sensitive to each of the standard training samples of the input. As shown in Figure 6, when epochs=20, neurons 1-4 in the competitive layer are sensitive neurons, i.e., winning neurons, and the model divides the set of training samples in this study into four categories. Samples 1 and 17 in the sample set excite neuron number 2 in the competitive layer and make it win, i.e., samples 1 and 17 are classified as one class, inconsistent with the expert evaluation results, and the model incorrectly classifies sample number 1 as the second class. The model incorrectly classifies samples 4 and 8 as the third category, which means that the model only initially classifies the samples, and

the classification accuracy needs to be higher. As shown in Figure 7, when epochs=50, neurons 1-4 in the competitive layer are the winning neurons, and the model classifies the samples in Table 1 into four classes. The model classifies samples 4, 8, 15, and 17 into one category, which is inconsistent with the expert evaluation results, and the model incorrectly classifies sample 15 as the second category. Nevertheless, it shows that the model can improve its classification accuracy by increasing the number of training steps[20,21]. (See Figure 6, Figure 7, Figure 8)

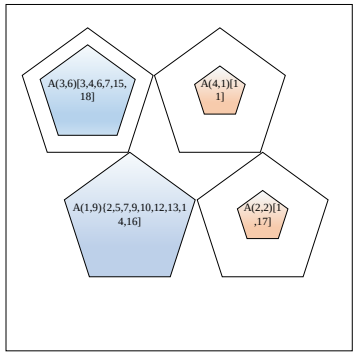

Figure 6: Self-organizing training sample feature map (Epochs = 20).

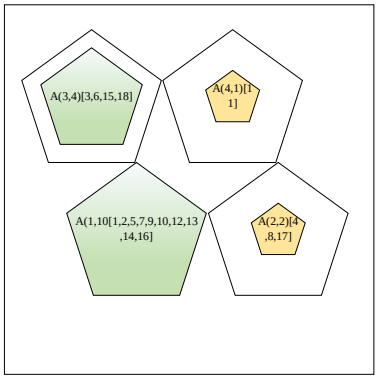

Figure 7: Self-organizing feature map of training samples (Epochs = 50).

To test the generalization ability of the SOFM evaluation model, the sample data in Table 2 was used for testing. The simulation results are shown in Fig. 8. It can be seen that the test samples C1, C2, C3, and C4 excite the neurons 1, 2, 3, and 4 of the competitive layer of the model to make them win, respectively, and the positions of the winning neurons are the same as those of the winning neurons in Fig. 9, i.e., the constructed evaluation model successfully classifies the test samples in Table 2 into four categories. The evaluation results are the same as the expert evaluation results. (See Table 2, Figure 8, Figure 9)

Evaluation Indicators	*X1*	*X2*	*X3*	*X4*	*X5*	*X6*	*X7*	*X8*	*X9*	*X10*	*Expert evaluation results*
C1	*9*	*9.5*	*9*	*7*	*7.5*	*6.5*	*7*	*6.5*	*8.5*	*9*	*I*

Teacher	*C2*	*8.5*	*8*	*7*	*7.5*	*7*	*6*	*7*	*7*	*7.5*	*7*	*II*
serial	*C3*	*9*	*9*	*8.5*	*8*	*8*	*7.5*	*8*	*8*	*8*	*8*	*III*
Number	*C4*	*10*	*10*	*9*	*8.5*	*9*	*9.5*	*9*	*9.5*	*8.5*	*9*	*IV*

Evaluation Indicators	*X11*	*X12*	*X13*	*X14*	*X15*	*X16*	*X17*	*X18*	*X19*	*X20*	*Expertevaluation results*	
	C1	*8.5*	*8.5*	*8*	*6.5*	*8*	*8*	*7*	*6.5*	*8*	*9*	*I*
Teacher	*C2*	*9*	*6.5*	*7*	*6.5*	*6*	*7*	*7*	*7.5*	*7*	*9.5*	*II*
serial	*C3*	*8.5*	*8.5*	*8*	*7.5*	*8.5*	*8*	*8*	*8*	*8.5*	*9*	*III*
Number	*C4*	*8.5*	*9*	*8.5*	*8*	*9*	*9*	*9*	*9*	*9*	*9*	*IV*

Table 2: Sample set of testing the oral language classroom teaching quality evaluation model.

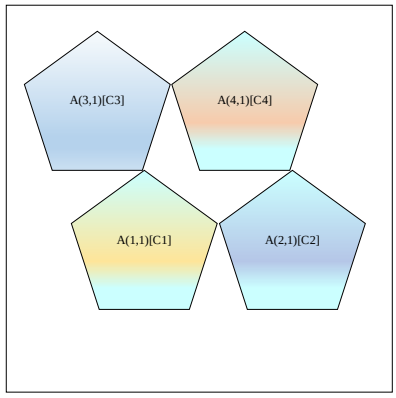

Figure 8: Self-organizing feature map of test samples.

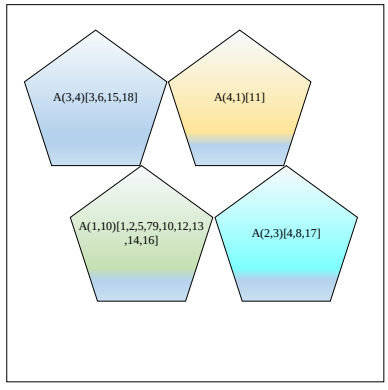

Figure 9: Self-organizing feature map of training samples (Epochs = 150).

5 CONCLUSION

The rapid development of information technology in education has provided teachers with opportunities and challenges. Online learning and mobile learning have brought diversity to students' learning activities. Teachers must keep up with the times, improve their educational skills, and create a learning environment that enhances students' learning outcomes. In this paper, we propose a method to evaluate the quality of English teachers' classroom teaching by using the s0FM neural network and establish a model to assess the quality of teachers' classroom teaching by using the specific response relationship between neurons in the competing layer and neurons in the losing layer. The simulation results show that the SOFM evaluation model achieves 100% classification accuracy for both training and test samples, which indicates that the model has strong generalization ability and validates its effectiveness. Thus, environmental protection literacy is effectively integrated into college English education. Integrating environmental literacy into college English via e-learning intertwines language and ecological awareness. This fusion cultivates linguistically adept individuals with a profound understanding of global environmental challenges. Through dynamic modules, real-world context, and collaborative projects, it enriches language skills while nurturing responsibility and advocacy for sustainability.

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