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The construction and practice research of the integration of the college English audio-visual teaching mode based on the moodle platform

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ABSTRACT

We construct English audio-visual integration teaching mode by fuzzy mathematics method which is based on the references, and the practice of actual learning for the related English teaching. And optimize the module design based on the integration of multiple evaluation decision thorough investigation, so we can get the weight proportion of each module in the teaching of English. Through actual comparison and combining with the theoretical calculation domain, this paper established the Moodle platform English audio-visual teaching in each learning combination plan of module teaching, and finds the key direction of implementation, which provides the reference for teaching of English audio-visual integration based on the Moodle platform construction.

KEYWORDS

Moodle; English teaching; Audio-visual integration; Hierarchical analysis; Fuzzy evaluation.

INTRODUCTION

English is the lingua franca of the world with the rapid development of global economy since the 21st century. With the development of the economy in the world, international communication is also rising. In China, the world's largest developing country, economy is rising rapidly, and science and technology also made progress, the frequency between China and various countries in the world are increasing rapidly. Various industries are thirsty for talents of great English comprehensive ability, the social demand for English talents is expanding according to the social form.

The demands of society promote the reform and progress of English teaching, to adapt to the needs of the social demands, especially to communicate effectively. Therefore, English education would make students have English communication skills, which should teach on three sides by combining in English teaching, listening, speaking. The traditional pattern of heard of infusion teaching not only in the form of monotonous but also boring, it declines students' interest in learning English. Nowadays, as the network's developed, advanced in information technology, multimedia teaching makes teaching mode of the audio-visual integration easier and better. With the aid of network platform to enhance learning interest, improving learning environment, simulation scene dialogue is at the forefront of teaching English.

To student's English teaching based on network platform and model platform, to comprehensive English talent cultivation, we discusses the present situation of deaf English teaching mode l. And try to build English audio-visual integration teaching mode to solve the plight of the English teaching at present.

MOODLE PLATFORM

Moodle platform, its full name is Modular Object-Oriented Dynamic Learning Environment, is rising at the historic moment of Network platform and information technology. Moodle platform is the learning object that oriented dynamic modular learning environment. Which is made by Australia Dr Martin Dougiamas on the basis of constructivism education theory research.

English audio-visual integration teaching model is an application to develop students of English learning in the coming year, and helps to let student understand, communicate, see by that teaching mode, it also helps to strengthen the English environment by adding visual effects, which can increase the interest in learning, observe the language used in any environment. Actually it will improve English communication skills. Moodle teaching management platform is of surge powerful function, and its main functions are shown in Figure 1 below.

Moodle is modular teaching management, among them there are six modules of the students' part: the chat module, discussion module, operation module, test module, the questionnaire survey, and the resources module. And there are three big modules of teacher's: network management, course management, user management module. We can establish learning rule layer according to the module of students, which means to achieve the study effect and take the implementation of various modules as audio-visual integration scheme of learning. Analytic hierarchy structure is established.
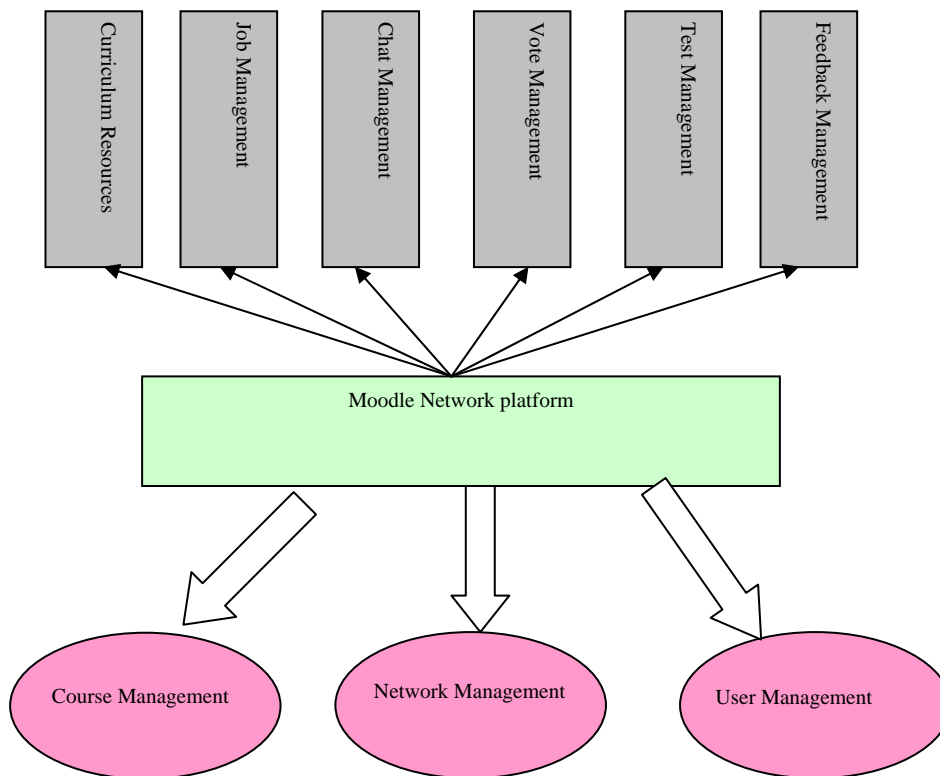
Figure 1 : Moodle function of graphic

FUZZY DECISION-MAKING MATHEMATICAL MODEL OF MULTIPLE LEVELS

Fuzzy classification refers to the objective things in indistinguishable street alive in the process of transition state; he has no clear distinguish. We often in a fuzzy state whether it is a real life or we are in the engineering research problems. American scholar Chad (L.A.Z soon) in 1965 proposed the concept of fuzzy mathematics according to the phenomenon of fuzzy number, fuzzy mathematics as a new branch of mathematics, created a new field of mathematics. Fuzzy comprehensive evaluation is comprehensive multiple factors alive index evaluation system to make a fuzzy evaluation, which means the principle of fuzzy relationship synthetic membership grade of system is calculated, is a method of the evaluation results.

The fuzzy evaluation steps

Establish the evaluation object factor theory field U, $U = (u_1, u_2 \cdots, u_n)$, in this paper: u_1 represents mobilizing students' active learning, u_2 represents improving the efficiency of English learning, u_3 represents Enhancing students' integrated English level, u_4 represents four factors of Increasing interaction between teachers and students.

Determine the factors of qualitative evaluation of the language level in concerning domain V, $V(v_1, v_2, \cdots, v_n)$, The determination of evaluation usually be decided, such as good or bad, high and low, the importance. this article aims to see whether it can effectively improve the students' English level, the assessment is set to (very effective, more efficient, effective, less work, not very much), represented by $v_n (n = 1,2,3,4,5,)$.

To determine the scheme theory field F, there are $F = (f_1, f_2, f_3, f_4, f_5, f_6)$, they respectively represent English chat, discuss, English homework, English test, feedback, English resources. We establish the fuzzy relation matrix through the membership degree of evaluation theory domain of corresponding factors. Through expert review, we can press the TABLE 1 to show a corresponding membership form.

TABLE 1: Membership value table

	very effective v_1	more efficient v_2	effective v_3	less work v_4	Not very much v_5
u_1	0.16	0.42	0.23	0.12	0.07
u_2	0.54	0.21	0.16	0.09	0
u_3	0.53	0.23	0.14	0.10	0
u_4	0.13	0.19	0.44	0.18	0.06

So we confirm the scheme of the membership function relation to factors and use the following matrix:

$$R_1 = \begin{pmatrix} 0.16 & 0.42 & 0.23 & 0.12 & 0.07 \\ 0.54 & 0.21 & 0.16 & 0.09 & 0 \\ 0.56 & 0.23 & 0.14 & 0.10 & 0 \\ 0.13 & 0.19 & 0.44 & 0.18 & 0.06 \end{pmatrix}$$

Among them, r_{ij} represents the membership degree of factors for evaluation of the concerning domain in analects is the fuzzy matrix. Similarly we get the scheme of fuzzy relationship matrix respectively as follows.

$$R_2 = \begin{pmatrix} 0.46 & 0.25 & 0.18 & 0.11 & 0 \\ 0.14 & 0.39 & 0.28 & 0.19 & 0 \\ 0.57 & 0.23 & 0.10 & 0.08 & 0.02 \\ 0.15 & 0.15 & 0.48 & 0.12 & 0 \end{pmatrix}$$

$$R_3 = \begin{pmatrix} 0.08 & 0.18 & 0.12 & 0.39 & 0.23 \\ 0.13 & 0.23 & 0.28 & 0.19 & 17 \\ 0.11 & 0.13 & 0.21 & 0.28 & 0.26 \\ 0 & 0 & 0.13 & 0.54 & 0.33 \end{pmatrix}$$

$$R_4 = \begin{pmatrix} 0.18 & 0.22 & 0.25 & 0.19 & 0.16 \\ 0.09 & 0.13 & 0.28 & 0.47 & 0.03 \\ 0.16 & 0.38 & 0.25 & 0.18 & 0.03 \\ 0 & 0 & 0.13 & 0.67 & 0.20 \end{pmatrix}$$

$$R_5 = \begin{pmatrix} 0 & 0.12 & 0.33 & 0.28 & 0.27 \\ 0.63 & 0.21 & 0.15 & 0 & 0 \\ 0.23 & 0.18 & 0.31 & 0.28 & 0 \\ 0.58 & 0.27 & 0.15 & 0 & 0 \end{pmatrix}$$

$$R_6 = \begin{pmatrix} 0.31 & 0.23 & 0.18 & 0.15 & 0 \\ 0.21 & 0.56 & 0.12 & 0.09 & 0.01 \\ 0.30 & 0.41 & 0.0.15 & 0.12 & 0.02 \\ 0.07 & 0.13 & 0.18 & 0.46 & 0.16 \end{pmatrix}$$

Determine the weights of factors concerning domain. Then Weight vector W, $W = (w_1, w_2, \cdots w_n)$, among them a_i represents the subordinate relations of evaluation system which

means the distribution of the importance of various factors on the evaluation of the system. There are two commonly kinds of method for determining that always be used, One is directly through expert interview assignment, The second is through the analytic hierarchy process to establish judgment matrix to solve factors weights. the steps are as follows:

(1) Construct judgment matrix

Comparing all the factors, and represent the comparison results by the quantitative value. such as using a_{ij} to represents the results of comparison between u_i, u_j, so matrix A can be obtained after all of the factors comparison. It said as follows.

$$A = \begin{pmatrix} a_{11} & a_{12} & \cdots & a_{1j} \\ a_{21} & a_{22} & \cdots & a_{2j} \\ \vdots & \vdots & \ddots & \vdots \\ a_{i1} & a_{i2} & \cdots & a_{ij} \end{pmatrix}$$

Among them, the value of a_{ij} are respectively represented by 1~9 scale and its reciprocal, Saaty thinks that using 1~9 scale to represent the Comparing structure can meet the people's judgment In psychology. The meaning of digital respectively as follows: TABLE 2.

TABLE 2 : The meaning of the scale1~9

scale	meaning
1	Two factors of the target are equally important
3	The former factor is slightly important than the next one
5	The former factor is important than the next one
7	The former factor is more important than the next one
9	The former factor is much more important than the next one
even number	represent the importance between the two Odd numbers
reciprocal	Represent the order of the front-to-back ratio of the factors

(2) Consistency check and the calculation of the weight vector

The definition of consistent matrix is:for matrix $A = \left(a_{ij} \right)_{n*n}$, If the elements in the matrix $a_{ij} a_{jk} = a_{ik}$, so that the matrix is the consistent matrix. Among them, $a_{ij} > 0$, $a_{ij} = 1/a_{ji}$. In order to use it to calculate the weight vector, we require that inconsistencies matrix should be in acceptable condition. The more difficult now is that we can't take all the factors into consider in it, which leads to the undesirable state of the Consistency of judgment matrix when comparing the two structure judgment matrix.

The consistency of judgment matrix CI, and the Judgment matrix consistency ratio CR, their formula of calculation is in the following:

$$CI = \frac{\lambda_{\max} - n}{n - 1}$$

Among them n represents the Order number of the Judgment matrix, which means the number of comparing factors.

$$CR = \frac{CI}{RI}$$

Among them RI represents the value of Random Consistency Index, in the following TABLE 3

TABLE 3 : The value of RI

n	1	2	3	4	5	6	7	8	9	10	11
RI	0	0	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49	1.51

when $CR \geq 0.1$, we think that judgment matrix becomes inconsistencies, and need to adjust the judgment matrix again. when $CR < 0.1$, the inconsistencies of judgment matrix can be accepted in some field and we can go on the next calculation. Then we calculate levels of total sorts and the consistency check further more.

The calculation of weight, there are many ways to calculate the weight vector of judgment matrix such as Define the computing, computer iteration, power method and the harmonization method, among them the easiest one is harmonization method. Assuming that the weight vector of factor An is:

$$W = (w_1, w_2, w_3 \cdots w_n)$$

Then the judgment matrix is:

$$A = \begin{pmatrix} w_1/w_1 & w_1/w_2 & \cdots & w_1/w_n \\ w_2/w_1 & w_2/w_2 & \cdots & w_2/w_n \\ \vdots & \vdots & \ddots & \vdots \\ w_n/w_1 & w_n/w_2 & \cdots & w_n/w_n \end{pmatrix}$$

According to the nature of the above matrix, we can normalize all the A vector into matrix D.

$$D = \begin{pmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{n1} & a_{n2} & \cdots & a_{nn} \end{pmatrix} \bullet \begin{pmatrix} 1/\sum_{i=1}^{n} a_{i1} & 0 & \cdots & 0 \\ 0 & 1/\sum_{i=1}^{n} a_{i2} & \cdots & 0 \\ 0 & \vdots & \ddots & \vdots \\ 0 & 0 & \cdots & 1/\sum_{i=1}^{n} a_{in} \end{pmatrix}$$

We will obtain the sum of each line of the matrix after the normalization and get matrix E.

$$E = D \bullet \begin{pmatrix} 1 & 1 & \cdots & 1 \end{pmatrix}_{1 \times n}^{T}$$

$$E = \begin{pmatrix} e_{11} & e_{12} & \cdots & e_{1n} \end{pmatrix}^{T}$$

After the normalization of matrix E, we can get the weight vector.

$$W = \begin{pmatrix} w_1 & w_2 & \cdots & w_n \end{pmatrix} = \left(e_{11}/\sum_{i=1}^{n} e_{i1} \quad e_{12}/\sum_{i=1}^{n} e_{i1} \quad \cdots \quad e_{1n}/\sum_{i=1}^{n} e_{i1} \right)$$

The calculation of eigenvalue of maximum:

$$\lambda_{max} = \frac{1}{n} \sum_{i=1}^{n} \frac{(AW)_i}{w_i}$$

(3)the result of the weight vector.
We can construct judgment matrix by the above method

$$P = \begin{pmatrix} 1 & 2 & 1/3 & 4 \\ 1/2 & 1 & 1/4 & 5 \\ 3 & 4 & 1 & 7 \\ 1/5 & 1/3 & 1/7 & 1 \end{pmatrix}$$

the weight vector:

$$W = \begin{pmatrix} 0.25 & 0.14 & 0.55 & 0.06 \end{pmatrix}$$

The eigenvalue of maximum:

$$\lambda_{max} = 4.068$$

Consistency check ratio:

$$CR = 0.025 < 0.1$$

The calculation results pass the consistency check.

CALCULATION AND RESULTS ANALYSIS

The calculation of scheme evaluation

We can get vector W through the above way to calculate, the fuzzy matrix. We can take A and R as well as the synthetic operator $M(\bullet, \oplus)$ to get the vector $B = (b_1, b_2, \cdots b_m)$, the evaluation model of calculation scheme calculates all the methods respectively and finally get a reasonable English teaching methods.

$$B_1 = WOR_1 = (0.25 \quad 0.14 \quad 0.55 \quad 0.06)O \begin{pmatrix} 0.16 & 0.42 & 0.23 & 0.12 & 0.07 \\ 0.54 & 0.21 & 0.16 & 0.09 & 0 \\ 0.56 & 0.23 & 0.14 & 0.10 & 0 \\ 0.13 & 0.19 & 0.44 & 0.18 & 0.06 \end{pmatrix}$$

We can get:

$$B_1 = \begin{pmatrix} 0.43 & 0.27 & 0.18 & 0.11 & 0.02 \end{pmatrix}$$

In the same way we can get other results:

$$B_2 = \begin{pmatrix} 0.46 & 0.58 & 0.32 & 0.25 & 0.14 \end{pmatrix}$$
$$B_3 = \begin{pmatrix} 0.10 & 0.04 & 0.06 & 0.07 & 0.09 \end{pmatrix}$$
$$B_4 = \begin{pmatrix} 0.15 & 0.07 & 0.11 & 0.11 & 0.11 \end{pmatrix}$$
$$B_5 = \begin{pmatrix} 0.25 & 0.79 & 0.33 & 0.25 & 0.06 \end{pmatrix}$$
$$B_6 = \begin{pmatrix} 0.28 & 0.24 & 0.32 & 0.14 & 0.13 \end{pmatrix}$$

Priority of calculation in each plan

Calculating priorities of each scheme, and determining the investment proportion of the scheme in the comprehensive implementation process. The method is in the following. Quantitative the evaluation of the fuzzy value, let:

$$V = \begin{pmatrix} 0.5 & 0.4 & 0.3 & 0.2 & 0.1 \end{pmatrix}$$

Then the formula of the normalization :

$$N_k = B_k V^T, (k = 1,2,3,4,5,6)$$

We can get the matrix B from 4.1,

$$B = \begin{pmatrix} 0.43 & 0.27 & 0.18 & 0.11 & 0.02 \\ 0.46 & 0.58 & 0.32 & 0.25 & 0.14 \\ 0.10 & 0.04 & 0.06 & 0.07 & 0.09 \\ 0.15 & 0.07 & 0.11 & 0.11 & 0.11 \\ 0.25 & 0.79 & 0.33 & 0.25 & 0.06 \\ 0.28 & 0.24 & 0.32 & 0.14 & 0.13 \end{pmatrix}$$

We can get:

$$N = \begin{pmatrix} 0.4 & 0.6 & 0.11 & 0.17 & 0.6 & 0.37 \end{pmatrix}^T$$

The normalization of the above results:

$$N_{归一化} = \begin{pmatrix} 0.18 & 0.27 & 0.05 & 0.07 & 0.26 & 0.16 \end{pmatrix}$$

CONCLUSIONS

After the calculation of the number of fuzzy multi-objective decision making, we can get the weight of every scheme. English chat 0.18, English discussion 0.27, English homework 0.05, English Quiz 0.07, Feedback 0.26, English resources 0.16, in the tutorial of the implementation of the integration of English audio-visual, which means the design of the class of English discussion, mechanism of feedback Problem, English chat, and taking fully use of the English resources are all the efficient ways to improve English. The design of the visual-audio-oral class should pay attention to four aspects. On the contrary, the traditional operation mode and Examination can not motivate the teaching of the visual-audio-oral. The integration of the visual-audio-oral class should focus on English discussion and problem feedback, English chat and English resource should be the assist.

And as for the homework and examination should be the final test. We can get that the allocation proportion of English discussion, English chat and using English resource should be15:22:13. The key point is to focus on the problem feedback and the English discussion.

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