Research Article
Fuzzy Evaluation on Students Practice Project Quality in Food Enterprise

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Abstract: This study puts forward an evaluation level model of students practice quality in food enterprise and the algorithm of the evaluation is designed. The test result proved it may improve the evaluation quality in food enterprise. It also proposed the dynamic fuzzy evaluation model of the study effect and designed the algorithm of the model. The test result proved it's effective to evaluate the study efficiency. And this model may avoid the shortage of traditional evaluation methods effectively.

Keywords: Effective methods, food enterprise, fuzzy evaluation model

INTRODUCTION

The students practice quality in food enterprise is the core of students practice work. It may help us to find out the actual students practice situation through students practice evaluation and monitoring. To improve the students practice quality in food enterprise and the students practice environment, promotes the school students practice training work development through the analysis of the students practice work with the teacher and the studies with the student (Zhang *et al*., 1998).

Assessment for practice as well as evaluation for practice is an important part during the whole students practice process. But sometimes, people who only took the examination as the whole of evaluation will get in the way for the overall development of students and improve the students practice level (Petrich and Stilwell, 2010). In the new practice oriented students practice mode, the standard of students practice effect is transformed from the standard of testing to the ability of practice knowledge, which can be included: practice motivation, interest and other non-intellectual factors (Cao *et al*., 2007). Therefore, it is difficult to use precise numerical data to represent and reflect the students' situation, thus, people would like to use natural language to describe. Among natural language, a large number of statements are fuzzy, evaluation of standard as well as description is not exceptional, which feature is fuzziness. Such as: very strong practice ability, strong practice interest, less practice motivation, not very good at cooperating with others, etc. Although the evaluation is clear, specific, it is fuzzy at the same time (Li *et al*., 1996).

MATERIALS AND METHODS

Theory of fuzzy system: The theory of fuzzy system is generally spread theory, which was created by control theory expert, Zdahe, who is from University of California, the United States in 1965. This theory can describe the concept of fuzzy phenomena without clear boundaries and extension. By using these uncertain phenomenon and the membership function, it establish one to one corresponding relation, which can be used to analyze many inexact fuzzy phenomena in nature with favorable mathematical tool (Sprague, 1994).

Fuzzy concept: In ordinary set theory, one object and its set of relation can be defined, either in the set, or not in the set, there is no other situation, that is to say, the ordinary set theory can only say "either/or" phenomenon (Oh, 1995). However, in real life, there are some common concepts, such as: the middle-aged people and young people, the meaning of these concepts is not exact and clear, we put this concept as fuzzy concept. Usually people in order to deal with the natural phenomenon, the concept that they formed in their brains are often fuzzy concept, moreover, the judgment and reasoning of the concept is also fuzzy.

Fuzzy set: The fuzzy set is the method of representing fuzzy concept, it is an extension of ordinary set theory: among the ordinary set, the degree of membership for element u in set A has only two values, namely 0 and 1. While fuzzy set can expand the degree of membership for element u in set A from 0 or 1 to the expansion of (0, l).

Students' practice situation and fuzzy evaluation on practice: The traditional student's practice situation and practice evaluation model can be included the itemized
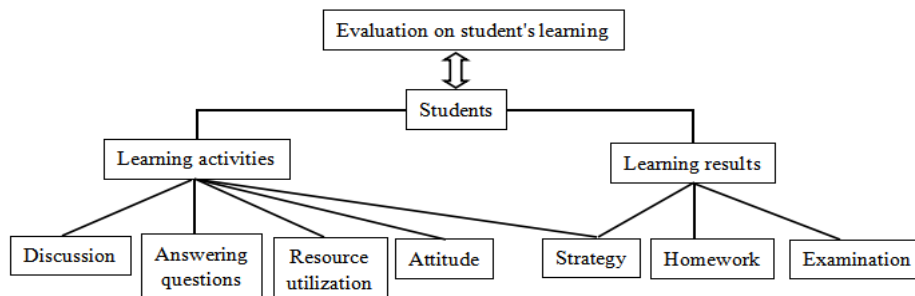
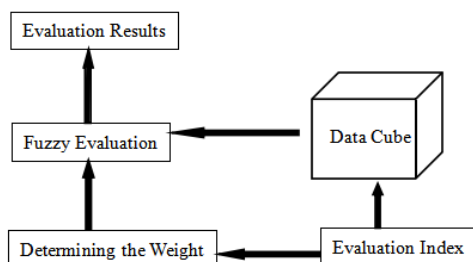Fig. 1: Evaluation on student's practice situation and practice

Fig. 2: Collection of evaluation information evaluation and processing model

evaluation method, weighted comprehensive evaluation method, expert scoring method and so on. These models have the advantages of simple calculation, easy modeling, wide-spread use, etc. However, the basic starting point is based on the evaluation factors are based on the linear relationship, the result of evaluation can be superimposed, thus the application is not very satisfactory and the credibility of evaluation results is low, which cannot meet the needs of practice.

As for the evaluation of student's practice situation and practice evaluation, it is a multi-level, multi-target evaluation, which involves many aspects. And the evaluation factors are directly affected by the level of knowledge, the cognitive ability and personal preferences, which is difficult to completely eliminate the bias caused by human factors. Moreover, the evaluation factors are generally qualitative description, which have fuzzy characteristic and bring certain difficulty to the specific operation. On the other hand, the evaluation work needs from different sides, which requires multi-level comprehensive evaluation objectively, thus teachers' students practice quality in food enterprise evaluation is a hierarchical fuzzy comprehensive evaluation issue. As shown in Fig. 1.

The traditional evaluation on practice effect can be simply attributed to the end of the quantitative examination, this evaluation method makes it difficult for students to give their abilities full play, so it is difficult to give fair and impartial evaluation results, which is not conducive to the students to develop their abilities and block the quality in food enterprise of students comprehensively. At the same time, it also very difficult for teachers to obtain comprehensive and reliable evaluation feedback information from the students in the traditional way.

Based on the above understanding about the evaluation of traditional practice, constructing a new fuzzy evaluation model for the practice effect, making fuzzy language description with quantitative analysis can be carried on by traditional mathematical methods. As shown in Fig. 2.

Using fuzzy evaluation model by means of multi-order evaluation on student's practice situation and practice: Such as set can determine the allocation of weight values by using statistical iterative method, in order to satisfy the normalization of the weight ( ), it will inevitably lead some weight is relatively small, which will make $w_i \leq r_{ij}$. The reasons are as follows:

$$bj = \sum_{i=1}^{n} w_i \circ r_{ij} , \, j = 1,2,\cdots m$$

Through the operation, a lot of information will be "flooded and covered", so there will be vague evaluation results. Of course, we can adopt the layered approach to solve this kind of problem.

Fuzzy comprehensive evaluation method is a comprehensive evaluation method based on fuzzy mathematics. According to membership theory of the fuzzy mathematics, the method translates the qualitative evaluation into quantitative evaluation, which uses fuzzy mathematics to make an overall evaluation for things or object that subject to many factors. It results clearly and is very systematic, which can well solve the fuzzy problems, suitable for all kinds of uncertain problems to solve.

RESULTS AND DISCUSSION

The evaluation factors: Student's practice situation and quality in food enterprise of practice can be influenced by many factors, each factor we can use a symbol ui to represent, if there are n factors existed, then i = 1, 2, ... n. All these factors that have influence on the students' practice situation and practice can form a influenced factors set, which can be represented by U, i.e.:
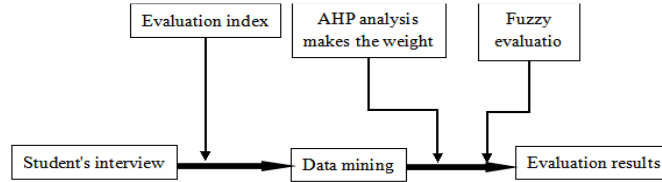
$$U = \{ui|i = 1, 2, \ldots, n\}$$

Fig. 3: The overall structure of evaluation on student's practice situation and practice based on AHP fuzzy theory

Among them, ui, $i = 1, 2, ...n$ can be called the evaluation factor of student's practice situation and practice, while U is known as the set of evaluation factor.

First of all, Dividing factor set $U = \{u1, u2, ..., um\}$ ui, $i = 1, 2, ..., m$ into subset $U_i = \{Si1, Si2, S..., Sin\}$ $i = 1, 2, ..., S$ according to some properties so as to meet the conditions:

$$\sum_{i=1}^{s} U_i = Sin ; \bigcup_{i=1}^{s} Ui ; Ui \cap Ui = \phi, (i \neq j)$$

Then making a comprehensive evaluation on each factor set. If the evaluation result set $V = \{v1, v2, ..., vn\}$ vj, $j = 1, 2, ..., n, i = 1, 2, ...,$ Then, the distribution of the weight of n is:

$$W = \{w_{i1}, w_{i2}, ..., w_{in}\}\ i, 1, 2, ..., n$$

Among them $\sum_{i=1}^{s} Win = 1.0 \leq Win \leq 1$. If Ri is the single factor evaluation matrix, then we will get a vector:

$$Bi = Wi\ Ri = (bi1, bi2, ... bim)\ i = 1, 2, ..., s$$

Then taking each Ui as a factor, $\mu = \Delta \{U1, U2, ..., Un\}$, Thus, μ is a set of factor, the single factor evaluation matrix of μ is:

$$R_j = \begin{bmatrix} B_1 \\ B_2 \\ ... \\ B_3 \end{bmatrix} = \begin{bmatrix} B_{11} & B_{12} & \cdots & B_{1m} \\ B_{21} & B_{22} & \cdots & B_{2m} \\ ... & ... & ... & ... \\ B_{s1} & B_{s2} & \cdots & B_{sm} \end{bmatrix}$$

Each Ui is a part of U, which can reflect an attribute of U, it can be assigned according to the importance of the weight of $Wj = \{wj1, wj2,... Wjn\}$ $j = 1, 2, ...m$, therefore, we can get two grade evaluation vector:

$$Bj = Wj \circ Rj = (Bj1, Bj2, ..., Bjn)$$

If each factor set U_i contains more factors, then it can be further decomposed till it becomes three model, four model and so on. Establishing a hierarchy structure model, as shown in Fig. 3.

CONCLUSION

In recent years, the comprehensive fuzzy evaluation as a new method has got rapid development,

its application scope is also expanding rapidly. The more complex things to make accurate and meaningful description, the more difficulty it will be increased, the description ability will be reduced at the same time. If it is beyond a certain threshold, the accurate feature and meaningful feature will repel each other. Generally speaking, the more complex the things are, the more fuzzy people's understanding will be, then it needs to use fuzzy mathematics at this time. The comprehensive fuzzy evaluation can give full consideration about the fuzziness of the complexity and the value system of the internal relationship, which can not only order the value of evaluation objects according to the comprehensive evaluation, but also can evaluate the object grade based on fuzzy evaluation set, in accordance with the principle of maximum degree of membership.

It is consisted of the realization of this subject will have a very important meaning on the theory and students practice in food enterprise. In theory, under the guidance of existing evaluation administration system, try to explore that combines advanced information, management theory, fuzzy theory and practice management together in order to improve the efficiency and students in food enterprise practice quality evaluation and realize that fair, high-efficient, rational teaching evaluation.

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