

Study on Comprehensive Evaluation of Students' Morality in College

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Abstract. The paper applies fuzzy comprehensive evaluation theory to build the students' morality quality model by determining the evaluation factors and factor weights. For colleges, the model provides scientific assessment tool of morality education.

Introduction

In college's student work, as employment mechanism and social competition mechanism turns more mature and perfect, college students' evaluation changes from simple business capability into the comprehensive morality investigation. Morality requirement for each student is increasingly highlighted, but the measurement of morality education has not specific determination numbers and the quite mature measurement mechanism like intellectual education and physical education. How to evaluate students' morality education level objectively and accurately, it has troubled workers of managing students.

At present, universities and subjects try to do this work. The weighted average method is common, namely the evaluation of morality education is divided into a number of indexes, given different weights and different points. These indicators' weights are still lack of scientific basis. The paper uses the theory of fuzzy mathematics to establish comprehensive evaluation model of medical college students' morality quality, thus provide scientific assessment tools for medical morality education of college students.

The Design Of Evaluation Index System

The Construction of Index System

According to the expert consultation method, the paper builds a scientific and comprehensive evaluation index system of on the university students' morality education various aspects. The morality education evaluation of students is divided into three aspects: morality quality, daily behavior and social norms. There are 3 first grade indexes, 14 second grade indexes. The college students' morality education evaluation system is shown in table 1.

Determining on the Weight

Analytic hierarchy process (AHP) is a qualitative and quantitative analysis method of system analysis and evaluation. It can resolve multi-factor and multi-level complex problem of decision analysis. After constructing evaluation index system, the author use AHP to determine the weight coefficient of each index in the evaluation index system.

Applying T.L.Saaty's 9 scaling method, it makes a questionnaire, which need to know about the problem. Please experts compare two indexes on the same level. At last, according to the results, the author could build the judgment matrix in hierarchy, obtained the largest characteristic value T , the corresponding feature vector and normalized weight vector W . $C_i = (T_{max} - n) / (n - 1)$, T_{max} is the largest characteristic value, n is the matrix order, the same order matrix mean is R_i , the paper got consistency ratio index $Cr = C_i / R_i$. If $Cr < 0.1$, T was a satisfactory consistency.

Tab. 1 an evaluation index and weight system

First index X_i	Weight X_i	Second Index X_{ij}		Weight X_{ij}
Morality character X_1	0.544	Exemplary role	X_{11}	0.311
		Scientific goal	X_{12}	0.093
		Psychological quality	X_{13}	0.231
		Correct personal style	X_{14}	0.174
		Optimistic attitude	X_{15}	0.063
		Positive behavior	X_{16}	0.129
Everyday behavior X_2	0.160	Law-abiding	X_{21}	0.412
		Civilization habits	X_{22}	0.107
		Various activities	X_{23}	0.189
		Good cooperation	X_{24}	0.292
Social norms X_3	0.296	Patriotism	X_{31}	0.358
		Uprightness	X_{32}	0.350
		Social responsibility	X_{33}	0.186
		Social adaptation	X_{34}	0.103

The Fuzzy Comprehensive Evaluation Model

Comprehensive evaluation is based on the fuzzy membership degree theory, the qualitative evaluation into quantitative evaluation, which uses fuzzy mathematics to make an overall evaluation on many affected and restricted factors of things or object. Because the comprehensive quality of college morality education is a complex system with multi factors, fuzzy concept, characteristic, dynamic characteristic, the model can be studied by using fuzzy comprehensive evaluation.

Establish the Evaluation Index Set

Index set $X=\{X_1,X_2,\dots,X_n\}$ is a common set of all the evaluation indicators. $X_i(i=1,2,\dots,n)$ is the impact indicators.

Structure the Value Set

The value set is deeply and synthetically thought of by judges. According to the different characteristics of evaluation index, the paper pleases evaluation expert to determine between evaluation value and evaluation indexes. The value set is expressed $Y=\{Y_1,Y_2, \dots ,Y_m\}$ and $Y_i(i=1,2, \dots,m)$ is evaluation value, {excellent, good, medium, poor}. The corresponding evaluation weighted coefficient matrix is $Y=[9 \ 7 \ 5 \ 3]$.

Weight Set

Weight is through the scores given to reflect the degree of the importance of each index in total. Weight can be considered as factors $X_i(i=1,2, \dots, n)$ degree of 'important' . $b_i(i=1,2, \dots,n)$ is

weight of X_i . A collection of each index weight is $B = \{b_1, b_2, \dots ,b_n\}$. At the same time, $\sum_{i=1}^n b_i = 1$, $b_i \leq 1(i=1, 2, \dots, n)$

Indicators' Independent Calculation

For degree of all levels of index evaluation, statistical and fuzzy evaluation matrix is established $R=(r_{ij})_{n \times m}$. The matrix is constructed through judge's vote.

Fuzzy Transfer

$$A = B \cdot R = (A_1, A_2, \dots, A_m)$$

A-The fuzzy comprehensive evaluation of evaluation system

$$A_j = \bigcup_{i=1}^n (b_i \cap r_{ij}) \quad (j=1,2, \dots, m); \cap\text{-min}; \cup\text{-max};$$

$$\bar{A}_i = \frac{A_i}{\sum_{i=1}^m A_i} .$$

Calculation

At last, calculate the end of the evaluation object, $Z = \bar{A} Y T$. Z means a comprehensive evaluation score of a surveyed student's morality.

If the total score $Z \geq 9$, the judged student's morality is excellent.

If the total score $Z \geq 8$, the judged student's morality is good.

If the total score $Z \geq 6$, the judged student's morality is medium.

If the total score $Z < 6$, the judged student's morality is poor.

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