ISSN : 0974 - 7435 Volume 10 Issue 5

BioTechnology
An Indian Journal

FULL PAPER

BTAIJ, 10(5), 2014 [1299-1305]

Discuss ideological and political course teachers and students relations under analytic hierarchy process

Xia Wu
Marxism College, Anshun University, Anshun 561000, Guizhou, (CHINA)

ABSTRACT

No matter in secondary school or University, ideological and political education is important teaching objective. Relations between students and teachers in classroom are the problems of great concern from school, teachers, patriarch and students. Relations between students and teachers in ideological and political classroom seriously affect students' learning quality. The paper divides relations between students and teachers into teacher dominant type, student dominant type and equal cooperation type the three relations. Start from ideological and political classroom teachers and students relations five influence factors, utilize analytic hierarchy process, use three relations paired comparison and five factors paired comparison to make research on best teachers and students relations problems, the research results show that equal cooperation type is the best relations between teachers and students in ideological and political classroom. © 2014 Trade Science Inc. - INDIA

KEYWORDS

Ideological and political classroom;
Relations between students and teachers;
Analytic hierarchy process;
Equal cooperation type;
Mathematical model.

INTRODUCTION

Nowadays, people's material life improves; people pursuit of spiritual life has become more and more. People more focus on children educational problems. Teaching performance improvement is not surely increasing of teaching levels. By far, to teachers and schools, relations between teachers and students are key problems of researching.

In 2011, Su Ying in the article "High school ideological and political course teachers and students relations research", she adopted multiple research methods, discussed and researched current several kinds of teachers and students relations features and their impacts on ideological and political courses, research result showed that equal cooperation type teachers and students relations in ideological and political course would be beneficial to socialism harmonious society building. In 2008, Zhang Ling in the article "High school 'ideology and politics' life classroom teaching exploration and practice", she pointed out that current teachers concept transformation was not in place, teachers' awareness of comprehensive concerning students' development was not strong enough, they ignored students' classroom experience process, current curriculum reformation hadn't touched education essence. In the educational mode, students lost their due vitality. Life teaching ideal was basic way that let classroom to come alive. The article pointed out that implemented the education thought should transform classroom teach-

FULL PAPER

ing ideas, reconstruct classroom teaching contents, optimize classroom teaching process. In 2013, Zhou Yan-Ling in the article "Situational exploration method ideological and political classroom applied status and measures research", she took Weihai city first middle school classroom as research object, connected with the region politics course teaching modes, discussed situational exploration method fit for curriculum reformation requirements and conformed to students' cognitive level. The method would helpful for arousing students' enthusiasm of learning ideology and politics in classroom. In 2013, Xu Lei in the article "Active university ideological and political classroom exploration", made comparison of high vocational college and normal university, pointed out that high vocational college students had higher level requirements on ideological and political courses. In teaching process, it should major in students, encourage students to make presentation in platform and teacher participates; Students made interaction, teachers guided; Selected cases specific, teachers participated in evaluation, took these measures as important ways to active classroom atmosphere, impel 'morality establishment and people cultivation' engineering.

The paper will look for teachers and students relations influence factors, abstract teachers and students relations as hierarchical graph with logic relations, takes ideological and political classroom best teachers and students' relations as research objects, so as to teachers' educational work organizing.

MODEL ESTABLISHMENT

AHP principles

AHP can solve relative tedious and vague problems' decision-making problems. Use the method to construct model, it roughly needs four steps:

1) Establish hierarchical structure scheme;
2) Construct every layer that fully used in judgment matrix;
3) Hierarchical single arrangement and consistency test;
4) Hierarchical total arrangement and consistency test;

In the following, it respectively states each step detailed process.

Hierarchical structure

AHP Solved problems are required to be hierarchic, orderly and logic. Only then it can construct hierarchical scheme. Let tedious problems' elements to form into multiple hierarchies according to its attributes, membership and its relations. Last hierarchical element plays a dominate role in next hierarchical relative elements. In general, these hierarchies can be divided into 3 types:

(1) Top layer

Only one element in this hierarchy, it normally is final target of analytic problems. The layer is also called target hierarchy.

(2) Middle hierarchy

In this hierarchy, it includes intermediate links that get involved to fulfill targets, which can be composed of some hierarchies that include multiple and multilayer criterions that required to consider. It can also be called criterion hierarchy.

(3) The bottom hierarchy

This hierarchy includes optional each method and way to fulfill targets. It can also be called measure hierarchy or scheme hierarchy.

Hierarchy numbers in hierarchical structure have something to do with problem's complicated degree as well as analysis detailed requirements, normally the hierarchy numbers are not limited, each element in every hierarchy governs less than 9 elements. Hierarchical structure is as Figure 1.

In Figure 1, layer 1 is target layer that is the purpose which is required to finally fulfill for researching problems, layer 2 is criterion layer that is the medium

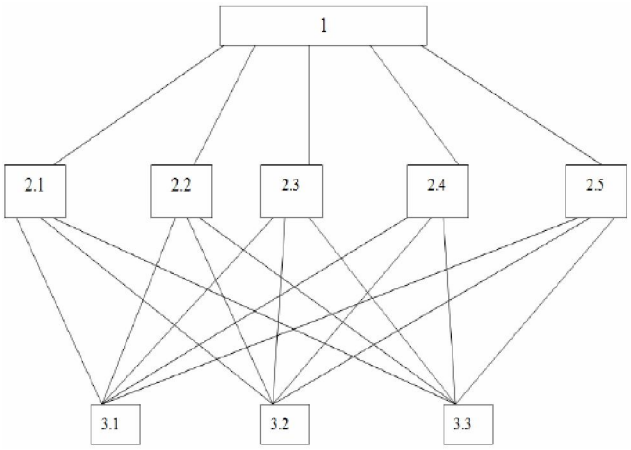

Figure 1 : Hierarchical structure chart

process that researching problems go through, layer 3 is scheme layer that is each kind of referencing schemes.

Judgment matrix construction

Each layer structure can show factors relationships, but in middle layer, each factor occupied proportion in target evaluation basically will not be fully the same, in the heart of evaluators, each factor has certain proportions.

When define each factor proportion that is to compare n pieces of factors $X=\{x_1,\cdots,x_n\}$ to factor Z impacts. *Saaty* and others proposed to carry out paired comparison among factors, and constructed comparison matrix method. That is to say, it selects two factors x_i and x_j every time, uses a_{ij} to express x_i and x_j to Z impacts ratios, all comparison is using matrix $A=(a_{ij})_{n\times n}$ to express, A has become judgment matrix between $Z-X$. From matrix, it is clear that if x_i and x_j to Z impact ratio is a_{ij}, thenandto impact ratio is $a_{ji}=\dfrac{1}{a_{ij}}$.

According to linear algebra theoretical knowledge, if matrix $A=(a_{ij})_{n\times n}$ meets $a_{ij}>0$ and $a_{ji}=\dfrac{1}{a_{ij}}(i,j=1,2,\cdots,n)$, then matrix A is positive reciprocal matrix.

a_{ij} value determination can according to scale table, contents are as following TABLE 1:

TABLE 1 : Scale table

Scale	Definition
1	Indicates two factors have equal importance by comparing
3	Indicates the former is slightly more important than the later by comparing two factors
5	Indicates the former is obviously more important than the later by comparing two factors
7	Indicates the former is intensely more important than the later by comparing two factors
9	Indicates the former is extremely more important than the later by comparing two factors
2, 4, 6, 8	Indicates middle level of above judgment
Reciprocal	If importance ratio between i and j is a_{ij}, then importance ratio between j and i is $a_{ji}=\dfrac{1}{a_{ij}}$.

Matrix A corresponding maximum feature value $\lambda_{\max}$ feature vector W, it is the priority weight of same hierarchy corresponding elements relative importance to last hierarchy some element through normalization, the process is called hierarchical single arrangement. Though the process can reduce other factors interference, it is hard to avoid appearing inconsistency to some extent when integrate all comparison results. If comparison results are consistent, then A factor should also meet:

$$a_{ij}a_{jk}=a_{ik},\forall i,j,k=1,2,\cdots,n \quad (1)$$

The positive reciprocal matrix that meets above formula is called consistent matrix. To easy define A can be accepted or not, it should test A inconsistency is very serious or not.

If A is consistent matrix, then

① A surely is positive reciprocal matrix.

②Transposed matrix A^T is consistent matrix.

③ A matrix any two lines are in proportions, and factors are above 0, therefore $rank(A)=1$, so is the column.

④In A, $\lambda_{\max}=n$, n is matrix order number. Other features roots of A is 0.

⑤ $\lambda_{\max}$ corresponding feature vector $W=(w_1,\cdots,w_n)^T$, then $a_{ij}=\dfrac{w_i}{w_j},\forall i,j=1,2,\cdots,n$, so

FULL PAPER

$$A=\begin{bmatrix} \frac{w_1}{w_1} & \frac{w_1}{w_2} & \cdots & \frac{w_1}{w_n} \\ \frac{w_2}{w_1} & \frac{w_2}{w_2} & \cdots & \frac{w_2}{w_n} \\ \vdots & \vdots & \vdots & \vdots \\ \frac{w_n}{w_1} & \frac{w_n}{w_2} & \cdots & \frac{w_n}{w_n} \end{bmatrix} \quad (2)$$

A is n order positive reciprocal matrix, when it is consistent matrix, when and only when $\lambda_{max}=n$ as well as when is inconsistent, it surely has. Thereupon, useand relationship to test when A is inconsistent, it surely has $\lambda_{max}>n$. Thereupon, use λ_{max} and n relationship to test whether A is consistent matrix or not.

A consistency test steps:

Calculate consistency indicator CI,

$$CI=\frac{\lambda_{max}-n}{n-1} \quad (3)$$

Consult corresponding average random consistency indicator RI. *Saaty* Researched RI value, RI value could refer to TABLE 2.

TABLE 2 : RI value

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

RI Value is got in this way that randomly constructs 500 sample matrixes. Random select numbers from 1 to 9 as well as its reciprocals to construct positive reciprocal matrix, and determine average value of maximum feature root λ'_{max}, and define:

$$RI=\frac{\lambda'_{max}-n}{n-1} \quad (4)$$

Solve consistency ratio CR:

$$CR=\frac{CI}{RI} \quad (5)$$

When $CR<0.10$, it is thought that A consistency is acceptable, otherwise it should make proper correction.

In the process, it also includes hierarchical total arrangement and consistency test, due to article lengths are limited, no theoretical statements here, directly apply it in the following.

BEST TEACHERS AND STUDENTS RELATIONS MODEL ESTABLISHMENT

Ideological and political course is an important course of enlightening the mind of students and let them to understand current events. In the classroom, teachers and students discussion teaching way is the main teaching way. On this basis, teacher-student relationship in classroom has become the important factor that affects students mastering knowledge. At present, teacher-student relationship mainly has three types, teacher dominant type, student dominant type and equal cooperation type. Factors that affect teacher-student relationship is classroom atmosphere, teacher information output, teachers schedule to complete, students' thinking ability and degree of teacher-student communication these five influence factors.

Hierarchical structural graph construction

The paper aims to look for best ideological and political classroom teacher-student relationship, therefore target layer factor is best teacher-student relationship. By referencing lots of relative documents, ideological and political classroom teacher-student relationship influence factors roughly are divided into five that are respectively ideological and political classroom, teacher information output, teachers schedule to complete, students' thinking ability and degree of teacher-student communication. Therefore, criterion layer should include these five influence factors. Assume during this

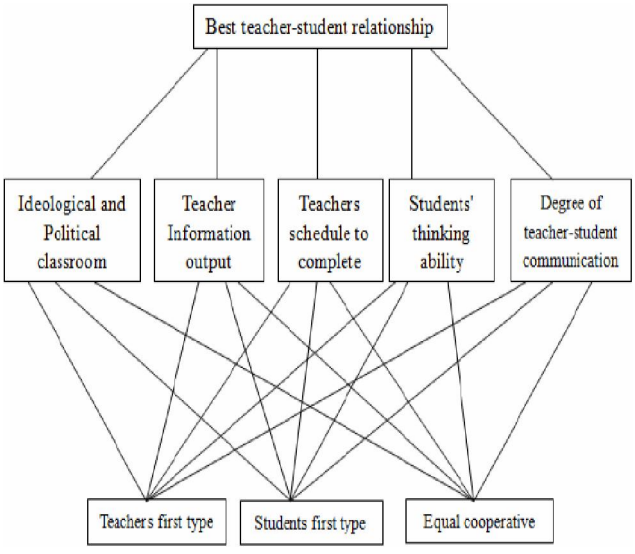

Figure 2 : The hierarchy chart of Best teacher-student relationship

time, it compares three kinds of teacher-student relationship P_i, then scheme layer includes three schemes. Constructed hierarchical structure is as Figure 2.

Judgment matrix construction

Judgment matrix construction firstly should define ideological and political classroom teacher-student relationship affected five factors importance. TABLE 3 is questionnaire survey result targeted students and teachers. From TABLE 3, it is clear that ideological and political classroom, teacher information output, teachers schedule to complete, students' thinking ability and degree of teacher-student communication these five factors impacts degrees on ideological and political course teacher-student relationship.

TABLE 3 : Five factors influence status

	Number of people	Percentage (%)	Rank
Ideological and political classroom	99	49.5	1
Teacher information output	47	23.5	4
Teachers schedule to complete	35	17.5	5
Students' thinking ability	69	34.5	3
Degree of teacher-student communication	92	46	2

TABLE 4 : Target layer paired comparison matrix

A	B_1	B_2	B_3	B_4	B_5
B_1	1	5	7	3	2
B_2	1/5	1	2	2	1/4
B_3	1/7	1/2	1	1/3	1/5
B_4	1/3	1/2	3	1	1/2
B_5	1/2	4	5	2	1

TABLE 5 : Criterion paired matrix on

B_1	P_1	P_2	P_3
P_1	1	1/3	1/2
P_2	3	1	2
P_3	2	1/2	1

TABLE 6 : Criterion paired matrix two

B_2	P_1	P_2	P_3
P_1	1	4	3
P_2	1/4	1	1/2
P_3	1/3	2	1

TABLE 7 : Criterion paired matrix three

B_3	P_1	P_2	P_3
P_1	1	4	3
P_2	1/4	1	1/2
P_3	1/3	2	1

TABLE 8 : Criterion paired matrix four

B_4	P_1	P_2	P_3
P_1	1	1/4	1/2
P_2	4	1	3
P_3	2	1/3	1

TABLE 9 : Criterion paired matrix five

B_5	P_1	P_2	P_3
P_1	1	1/3	1/5
P_2	3	1	1/3
P_3	5	3	1

Thereupon, we establish target layer paired comparison matrix, as TABLE 4 show.

And then, establish criterion layer paired matrix, contents are as TABLE 5-9.

Computed result

2.1 stated computing process can use *Matlab* software program to calculate, computed result is as

FULL PAPER

TABLE 10 : Hierarchical total arrangement

Criterion		Ideological and political classroom	Teacher information output	Teachers schedule to complete	Students' thinking ability	Degree of teacher-student communication	Total arrangement weight
Criterion weight		**0.2042**	**0.0786**	**0.0885**	**0.2000**	**0.4288**	
Scheme layer single arrangement	Teacher dominant type 1	0.1634	0.6250	0.6250	0.3039	0.1595	0.266977
	Student dominant type2	0.5396	0.1365	0.1365	0.4900	0.1291	0.286354
	Equal cooperation type3	0.2970	0.2385	0.2385	0.2061	1.2887	0.694315

TABLE 10.

In order to intuitional express teacher dominant type, student dominant type and equal cooperation type influence status on ideological and political classroom, draw TABLE 10 total weights data as pie graph, as Figure 3.

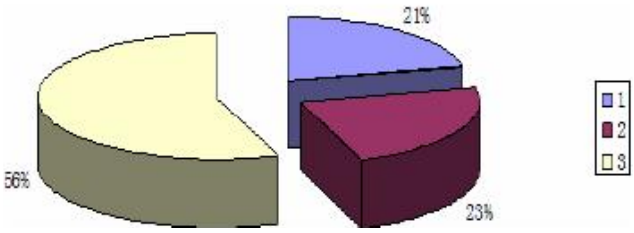

Figure 3 : The figure of evaluation results

By Figure 3, we can discover that equal cooperation type is ideological and political classroom best teacher-student relationship. In future teaching, educational workers should focus on construct equal cooperative teacher-student relationship.

CONCLUSION

Analytic hierarchy process is easy using and flexible applying. The method needs to judge paired factors importance ratio, when ratios judgment are incorrect, obtained results are also incorrect. In addition, analytic hierarchy process needs to abstract practical problems as hierarchical chart with logic structures. By far, the analysis method is applied to financial risk evaluations, coal mine safety and bank system security fields.

The paper applies analytic hierarchy process into ideological and political classroom teacher-student relations, by comparing teacher-student relations influence factors, it further finds out ideological and political classroom best teacher-student relationship. The paper gets the conclusion that equal cooperation type is ideological and political classroom best teacher-student relationship. Equal cooperation type teacher-student relation is more helpful for teacher teaching level improving and students' ability and quality improvements. Teacher and student equal relationship let student and teacher can speak out freely, put forward their real opinions, which let teacher to more clearly understand student's ideological trend so as to help teachers work proceeding.

REFERENCES

[1] Wang Yi; Application Design and Discussion about College Ideological and Political Education Micro-blog[J]. Journal of Qiqihar Junior Teachers' College, **4**, 5-7 **(2012)**.

[2] Sun Qiang; On the Core Principle of College Ideological and Political Education[J]. Journal of Yangzhou University (Higher Education Study Edition), **14(5)**, 78-81 **(2010)**.

[3] Chen Yi-Hong; The Application of Micro-blogging in Ideological and Political Education of College Students[J]. Journal of Wuhan Institute of Technology, **12(2)**, 113-116 **(2013)**.

[4] Guo Hongming, Wang Yongcan; The Micro-blog

Interactive Mode of Ideological and Political Education in Colleges and Universities[J]. Journal of higher Education Management, **6**, 106-110 **(2013)**.

[5] Yang Ying; Constructing the Micro Mode of College Students' Ideological and Political Education[J]. Journal of Ningbo Institute of Education, **4**, 20-22 **(2012)**.

[6] Fan Hui-Ying; College Students, Internet Ideological and Political Education Interaction[J]. Journal of Jimei University, **11(4)**, 79-83 **(2010)**.

[7] Hu Lijun; Research on the ideological and political education for the college students under the inOuence of micro blog[J]. Journal of Nanjing Radio & Television University, **3**, 31-34 **(2012)**.

[8] Du Cheng-Yu; The ideological and political education of college students under the background of the rising of micro-blog[J]. Journal of Nanchang College of Education, **9**, 25-26 **(2012)**.

[9] Guo Yu-Wei; Study on the Interactive Relationship between College Student, Career Planning Education and Ideological and Political Education[J]. Liaoning Higher Vocational Technical Institute Journal, **8**, 85-86 **(2013)**.