An Evaluation of the Research on Analytic Hierarchy Process, AHP, on Competency

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Abstract — **The main purpose of higher education is to cultivate the talented person who can meet the requirements of the enterprise and promote the development of society. With the enrollment expansion of colleges which has made the number of college graduates increasing rapidly, the employment problem gets the attention of more and more social people from all walks of life. In this paper, combining the employment of college graduates in recent years in China with the cultivated college students with the various abilities, we can make an analysis of Analytic Hierarchy Process, AHP. As well known currently, our country universities cultivate the college students who cannot meet the needs of enterprises and society in the college classroom. Although the class began to pay attention to students' team cooperation ability, social ability, and innovation ability and so on, universities cultivate more employment ability training far more than business needs. The university students' employment becomes such a difficult problem that it has not been solved. We make a detailed analysis of the first fifty of China 500 companies and understand their needs for University graduates ability. In this way can we provide some rationalization proposal for classroom teaching in colleges. Based on this, we hope that more college students meet the social needs. Also, more college students can get a suitable job when they leave the campus.**

Keywords - AHP ability training university education

I. INTRODUCTION

In today's world, the main competition between countries is Talent competition. Talent becomes increasingly the basis and guarantee of competitive advantage between the two countries. If you want to be able to surprise in the fierce competition, you need to pay attention to the cultivation of high quality talents. And colleges and universities is to provide high-quality personnel for all sectors. Scientific education method and the advanced method can guide the cultivation of high-quality talent. At the same time, colleges and universities should develop a comprehensive and effective evaluation mechanism to motivate students. Design and development of rational university classroom teaching both cultivate comprehensive ability of students, but also for business and social output of high-quality talent.

Western countries have an earlier study of college students' employment ability. In 1990 they began to pay attention to the training of comprehensive ability of college students in the classroom, and began to seek effective ways to improve the employ ability of students. Because the employment pressure which college students are faced with is more and grimmer, the training of comprehensive ability of college students' classroom education begins to have drawn the attention of the social people from all walks of life. The aim is that graduate college students can have a strong employ ability. Vertical eye view of much domestic and international research. They stuck in the theoretical stage basically and lack empirical research obviously, which leads to the phenomenon that employ ability is still not significantly improved.

Whether individuals or organizations in colleges, in order to meet the business needs of the post, the ability that should have and need to strengthen for college students is not clearly defined in university classroom in the current. Our university classroom lack career-oriented education, which leads to college students who are lack of capacity and have a difficulty of employment. At this time of college graduates, it can be imagined that their capabilities can't meet the employer and market demand far away. In such a case, each of contemporary college students should have employment needs of enterprises. Only in way can we ease the current situation of unemployment upon graduation. Classroom teaching should reflect on their own teaching structure in universities, and change the existing mode of teaching, so the key point is how to change the existing teaching structure which makes us very necessary to study the employ ability of college students.

Watching the four-year university classroom, it not only teaches the students that they should have the necessary professional and cultural knowledge. What is more, we should pay more attention to the improving of comprehensive ability and quality of university students. Improving the employment ability of graduates to adapt to the needs of enterprises can cultivate high-quality and needed personnel for business and society.

II. MODELING

In recent years, the college students enrolled in college and the number of graduates is both increasing. The decreased level of ratio of employment and the total number of students is so large, which can be shown in figure 1 for the

university students' employment statistics figure. In the figure, the number of graduates continues to increase, but the employment rate of university graduates is decline. Facing such a serious problem, this paper aims to study the key factors which influence the employment problem. We link to the college students' employment ability and efficient classroom teaching.

Based on the status of today's students, in this paper, we study the classroom teaching structure in college and of college the mathematical model of AHP, making a depth discussed about the factors which affect students' employment ability. AHP divides factors that associated with the decision-making level of the program into objectives, guidelines, etc., and combine qualitative and quantitative judgment as a means. The determined weights of multi-objective optimization is a systematic approach to decision-making.

A. The establishment of the analytic AHP structure model

This paper studies the teaching problems of college classroom. The main purpose of the college students in colleges and universities is to cultivate a number of highly qualified personnel, to the construction of the motherland. According to previous research and selected a us-funded enterprises in China to employees the basic requirements of selecting the following six factors to establish analytic hierarchy plan,

For College Classroom Teaching Problems of this study, the main purpose of universities is to cultivate a number of highly qualified personal. Only in this way can we construct our country better. According to the previous studies to Five hundred companies and their basic requirements for employee, we establish AHP program by the following six factors.

AHP of Analytic as shown in figure:

By establishing the relationship between the various levels of each index system, in other words, which is starting from the target layer, the above elements as a reference. So we will make comparison between the lower and the upper-related elements in the establishment of judgment matrix after contrast. In this paper, we take the relationship between the target layer and guidelines layer B as an example. It can describe the judgment matrix as follows:

TABLE I.   TABLE I THE JUDGMENT MATRIX

A	B_1	B_2	$\cdots$	B_m
B_1	B_{11}	B_{12}	$\cdots$	B_{1m}
B_2	B_1	B_1	$\cdots$	B_{2m}
$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$
B_m	B_{m1}	B_{m2}	$\cdots$	B_{mm}

Where B_{ij} represents the proportional scale that among so many principles, which principle is relatively important to the object. Currently, the widely used is 1-9 scaling method, see the table I.
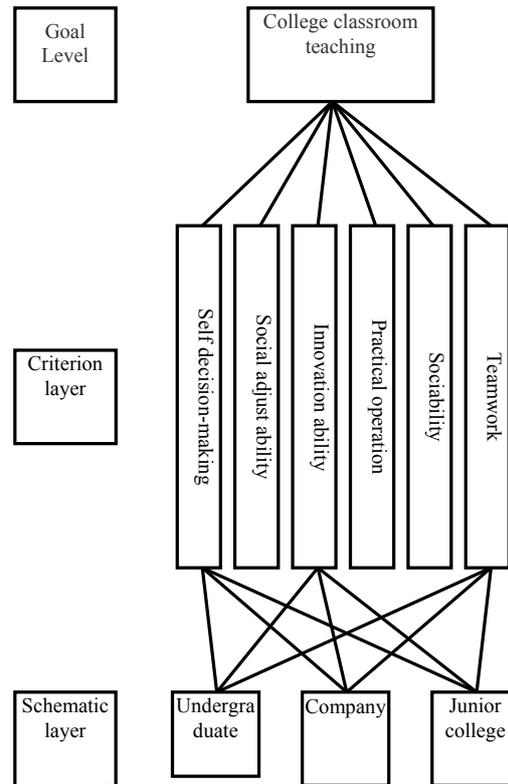

Figure 1. Figure. 1 college classroom teaching ability of structure.

In the real solution, because is obtained by the makers and the professors according to their own knowledge and experiences, it possible has inconsistency in constructed maxim . Therefore, it should test the consistency to the judgment matrix.

According to theory of matrices, when judgment matrix has totally quality of consistency, its biggest characteristic root equals the order number judgment matrix, that is , The rest of the characteristic root is equal to zero . When judgment matrix does not has totally quality of consistency, , then, taking the difference of maximum characteristic root and judgment matrix of order m, and make the ratio between the and the difference as the indicator to judge whether maxim has deviated from the consistency. That is, to use to test the consistency of maxim B. when , , it represents it completely has the quality of consistency; if value deviates from 0 far away , it shows that the consistency of judgment matrix is bad.

TABLE II.   TABLE II 1-9 SCALING METHOD

1	i and j has the same important
3	i and j are minor important
5	i and j are obviously important
7	i and j are strongly important
9	i and j are extremely important
2,4,6,8	Among $\{1,3,5,7,9\}$
1/3	i is not minor important than j
1/5	i is not obviously important than j
1/7	i is not strongly important than j
1/9	i is not extremely important than j
1/2,1/4,1/6,1/8	Among $\{1,1/3,1/5,1/7,1/9\}$
B_{ij} assign	Meaning
1	i and j has the same important
3	i and j are minor important
5	i and j are obviously important
7	i and j are strongly important
9	i and j are extremely important
2,4,6,8	Among $\{1,3,5,7,9\}$

In order to measure different order of judgment matrix whether has the satisfied consistency or not, this paper introduces the consistency ratio CR, and the $CR = \dfrac{CI}{RI}$. The 1 to 10 RI value of the judgment matrix can be expressed as follows:

TABLE III.   TABLE III THE 1 TO 10 RI VALUE OF THE JUDGMENT MATRIX

n	1	2	3	4	5
RI	0	0	0.5	0.90	1.12
6	7	8	9	10	11
1.24	1.32	1.4	1.4	1.49	1.51

In this paper, we select in the top fifty of Five hundred companies and take their requirements for employee as a reference. What's more, we can statistics frequency of data and establish judgment matrix. The top fifty Chinese company's requirement for staff are shown.

Then, it gets the final judgment matrix of enterprise

$$B_2 = \begin{bmatrix} 1 & 1/3 & 1/5 & 1/5 & 1/7 & 1/9 \\ 3 & 1 & 1/3 & 1/3 & 1/5 & 1/7 \\ 5 & 3 & 1 & 1 & 1/3 & 1/5 \\ 5 & 3 & 1 & 1 & 1/3 & 1/5 \\ 7 & 5 & 5 & 3 & 1 & 1/3 \\ 9 & 7 & 5 & 5 & 3 & 1 \end{bmatrix}$$

Through consistency test, at last, the paper obtains $CR = 0.0642 < 0.1$, and we can get

$$w_2 = (0.0270, 0.0496, 0.1049, \\ 0.1049, 0.2639, 0.4498)$$

An undergraduate college student not only need a reasonable knowledge structure, but also should have ability to solve practical problems and correct decision-making ability, besides they can adapt and withstand all kinds of career under pressure. Bachelor degree of classroom teaching is to develop horizontal relationship between disciplines, but also between disciplines the deep development of undergraduate course. Teaching should pay attention to developing the students' ability of cooperation between team members, innovation ability and social skills, such as comprehensive ability, thus get the undergraduate course to cultivate students ability of judgment matrix.

$$B_1 = \begin{bmatrix} 1 & 1/3 & 1/5 & 1/3 & 1/7 & 1/9 \\ 3 & 1 & 3 & 5 & 1/3 & 1/9 \\ 5 & 1/3 & 1 & 1/3 & 1/7 & 1/3 \\ 3 & 1/5 & 3 & 1 & 1/3 & 1/7 \\ 1/7 & 3 & 7 & 3 & 1 & 1/9 \\ 1 & 3 & 3 & 7 & 3 & 1 \end{bmatrix}$$

Through consistency test, at last, the paper obtains $CR = 0.0743 < 0.1$, and we can get

$$w_1 = (0.0327, 0.1653, 0.0757, \\ 0.0907, 0.2461, 0.3894)$$

Junior college focus mainly on professional study of the college students. The students expertise as the basis for the teaching model is very different from academic research. Therefore, according to college classroom training program, we can get the college students' ability of judgment matrix

$$B_3 = \begin{bmatrix} 1 & 1/5 & 1/3 & 1/7 & 1/7 & 1/3 \\ 5 & 1 & 3 & 1/5 & 1/3 & 3 \\ 3 & 1/3 & 1 & 1/7 & 1/5 & 1/3 \\ 7 & 5 & 7 & 1 & 3 & 5 \\ 7 & 3 & 5 & 1/3 & 1 & 5 \\ 3 & 1/3 & 3 & 1/5 & 1/5 & 1 \end{bmatrix}$$

Through consistency test, at last, the paper obtains $CR = 0.0720 < 0.1$, and we can get
$$w_3 = (0.0313, 0.1330, 0.0514,$$
$$0.4443, 0.2605, 0.0795)$$

For The next step this paper adopts MATLAB to calculate the characteristic root of the judgment matrix and its correspondingly feature vector, the invoking format to be: $[V, D] = eig(B)$, in it, V represents the new maxim constituted by the feature vector of maxim B, D represents the new maxim constituted by the characteristic root of maxim B. In D, the characteristic root is the element of cater-corner, other elements to be 0. It can obtain the correspondingly element weight after the normalization of the biggest characteristic root of D which reflect in the feature vector of v.

B.   Analysis of Result

 It is seen from the results obtained, Universities' Classroom Teaching the students to cultivate the ability to index up to the required standard within a enterprise. This also resulted in the needs of talent for companies, but it is difficult to obtain for their companies to develop talent. Students need to find a job but can not do the job. It is one of the main reasons that this may lead to an increased unemployment rate of students. In such an embarrassing situation, teaching should promptly change their model, develop the enterprise with socially useful talents.

From the results obtained it shows that the efficiency of classroom teaches students to cultivate the ability to index up to the required standard within a business, which also resulted in the needed talent for companies. But it is difficult to obtain for their own development of the company's personnel. College students needs to find a job but can not do the job, which may result in the increasing of the main university student unemployment rate. In such an embarrassing situation, teaching should promptly change their model, develop the enterprise, socially useful talents.
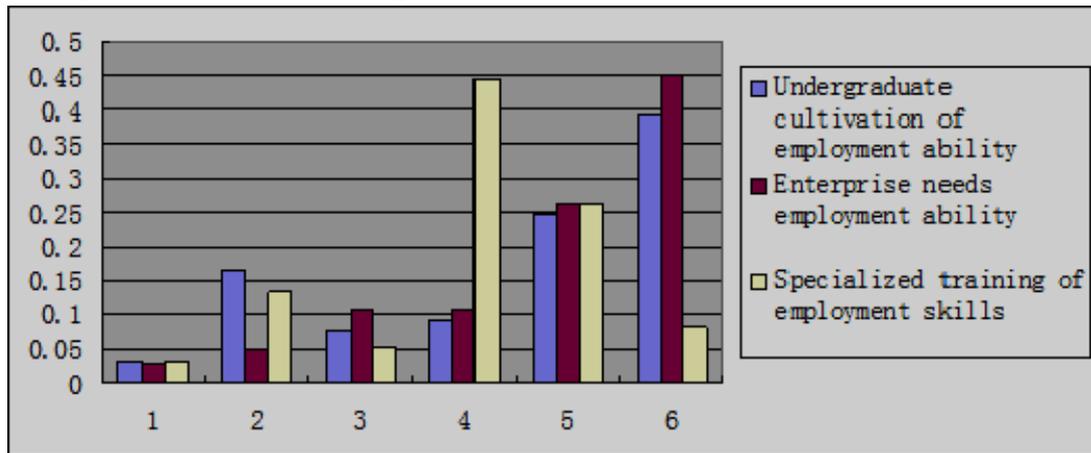

Figure 2 contrast figure college culture and enterprise demand.

As shown in Figure 2, it is obtained at universities and enterprises the ability to pay attention to the ability of the size of the, we can clearly find undergraduate, specialist and corporate decision-making is not much difference in self-respect and social skills. These two aspects can indeed reflect Student Societies, Students rich university community makes very good social platforms. At the same time, to make up for the school's one-child family status of today, making schools spend too much time on the training of children to adapt to society. On the culture of innovation and teamwork abilities, focusing on the classroom level is still somewhat lacking, in Team collaboration. As the family and social environment, the students themselves will lead to a lack of team spirit. Plus the school is insufficient; these students teamwork capacity can not meet the needs of enterprises. For college students, the main focus of college should be on the practical ability of students, but the ability of companies to practice requirements are not particularly high. This is because each firm has to recruit employee's internship period of time, which can make up for lack of practical ability. Through analysis, higher education should be done by a focus on targeted education, cultivate a high-quality, to meet the eligibility requirements of undergraduate business

College Classroom gives some suggestions for a four-year university teaching schedule, hoping to improve the comprehensive ability of college students.

III. CONCLUSION

Through this study, we can find the cause of the employment rate of university graduates is not high, largely due to the fact that training at a high class teaching education can not meet the requirements of the employees of employ ability. So universities should be in accordance with the needs of society and business, a reasonable arrangement

university courses, neither waste time on a class too much. We cannot fail to pay attention to cultivate ability. In this way we can make the limited time at university to receive the greatest benefits to after graduation to train high-quality personnel for the country's building blocks, and can open his career a broad platform that enables businesses and individuals are able to win.

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