Case Data Analysis of National College Satisfaction Survey—
Promoting School Reform and Development

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**Abstract.** The National Institute of Education Sciences (abbreviated as NIES) launched the second round of national college satisfaction survey in 2018. This paper starts with the analysis of the student questionnaire, using perspective table, column chart, pie chart, word frequency chart to analyze data. Based on the five dimensions of educational expectation, education quality perception, education environment perception, education equity perception, and education overall satisfaction, this paper analyzes and counts the questionnaires of staff and students in Chongqing College of Electronic Engineering, further use the Likert scale to calculate the scores of various indicators. situation; The cluster algorithm is used to analyze multiple choice topics and the key words of students 'opinions are summarized, and different sizes are displayed according to the frequency of words. The open questions such as "Modern Apprenticeship System" are analyzed. Through the analysis of the results of the questionnaire, this paper points out the problems that should be paid attention to and improved in education and teaching. With the twelve first-class constructions as its goal, it is necessary to establish a high-quality school with high credibility throughout the country.

**Introduction**

The quality of university education is a hot issue that has been paid much attention to in recent years, but in many discussions, it rarely hears what teachers and students think and hope for. In order to make up for this shortcoming, we will effectively run a satisfactory education for the people and accurately grasp the opinions of the society. According to the overall deployment of the party group of the Ministry of Education, the National Institute of Education Sciences gathered the power of the National Education and scientific research system and organized the National Education Research Alliance. In May 2018, a second round of national higher education satisfaction survey was conducted. The survey is to find out what people are satisfied with and dissatisfied with the work of university education and teaching. The Ministry of Education and relevant departments will carefully analyze and study the questionnaires filled out by everyone and issue policies to improve the work and solve problems\cite{1}.

Our school is the second time to participate in the National higher education satisfaction survey. This national higher education satisfaction survey involves 31 provinces (autonomous regions and municipalities directly under the Central Government). A total of 536 ordinary universities participated in the survey. Among them, 206 undergraduate colleges and 330 higher vocational colleges; there are 5 undergraduate colleges and 10 higher vocational colleges in Chongqing. The subjects of the survey were college graduates and staff\cite{2}.

According to the relevant regulations and requirements, our school has 50 staff members and 725 graduates to participate in the survey.

The 50 faculty members in our school are produced by simple random sampling. The choice of 725 graduates is based on the number of student samples per department, and then the students participating in the satisfaction survey are selected using the equidistance sampling method.

The design of the National College satisfaction questionnaire is carried out from the following five dimensions:
(1) Educational expectations: Overall expectations, expectations of the school, individual needs expectations
(2) Educational quality perception: Talent Cultivation, Curriculum Organization, Teacher Teaching
(3) Educational environment perception: school Management, Campus Culture, Environment and Resources
(4) Educational fairness perception: right Equity, opportunity Equity, Rule Fairness
(5) Overall educational satisfaction: total satisfaction, satisfaction compared with expectations, educational confidence [3].

Student Survey

A total of 725 questionnaires were sent and 670 valid questionnaires were received.

Results of the Investigation of the Single Choice

Each dimension has a certain number of topics corresponding to each other. There are 55 questions for the single choice, and each question has 7 choices. Such as: "very good", "good", "better", "general", "comparative bad", "bad", "very bad", etc... The 670 answers for each dimension corresponding to the topic are counted using an Excel perspective table. After the statistics, a table is generated. Then the Excel summation formula is used: "SUM(C*: C*)" (* represents the starting line of the data table, terminate rows; C represents the column occupied by the data) to sum and calculate its percentage. The statistical results in the five dimensions are as follows:

Educational Expectations. In the answer to educational expectations, 570 people answered "very good", accounting for 14.18%; 1207 people answered "good", accounting for 30.02%; 1124 people answered "better", accounting for 27.96%; 2901 people answered more than "better", accounting for a total of 72.16%; 916 people answered "general", accounting for 22.79%; 117 people answered "comparative bad", accounting for 2.91%; 65 people answered "bad", accounting for 1.62%; 21 people answered "very bad", accounting for 0.52%. As shown in Fig. 1:

![Percentage of answers to educational expectations](image1)

Figure 1. Investigation Situation of Educational Expectations.

![Percentage of answers to educational quality perception](image2)

Figure 2. Investigation Situation of Educational Quality.
Educational Quality Perception. In terms of educational quality perception, 1644 people answered "very strong", accounting for 16.83%; 2920 people answered "strong", accounting for 35.52%; 6649 people answered more than "relatively strong", accounting for a total of 76.34%; 1531 people answered "general", accounting for 17.58%; 330 people answered "relatively weak", accounting for 3.79%; 142 people answered "weaker", accounting for 1.63%; and 58 people answered "very weak", accounting for 0.67%. As shown in Fig. 2:

Educational Environment Perception. In terms of education management, 2395 people answered "very many", accounting for 18.25%; 5230 people answered "many", accounting for 32.52%; 3936 people answered "more", accounting for 24.48%; 12101 people answered more than "more", accounting for a total of 75.25%; 2989 people answered "general", accounting for 18.59%; 590 people answered "a few", accounting for 3.67%; 263 people answered "few", accounting for 1.64%; 137 people answered "very few", accounting for 0.85%. As shown in Fig. 3:

Educational Fairness Perception. In terms of the perception of educational fairness, 1377 people answered "complete ability", accounting for 18.68%; 2903 people answered "ability", accounting for 39.39%; 1640 people answered "basic ability", accounting for 22.25%; 5920 people answered more than "basic ability", the total was 80.33%; 1110 people answered "general", accounting for 15.06%; 198 people answered "basically can't", accounting for 2.69%; 83 people answered "no" accounted for 1.13%; and 59 people answered "absolutely not", accounted for 0.80%. As shown in Fig. 4:

Overall Educational Satisfaction. In the answer to the question of overall educational satisfaction, 381 people answered "very satisfied", accounting for 18.96%; 664 people answered "satisfied", accounting for 33.03%; 445 people answered "relatively satisfied", accounting for 22.14%; 1490 people answered more than "relatively satisfied", accounting for 74.13%; 426 people answered "general", accounting for 21.19%; 46 people answered "less satisfied", accounting for 2.29%; 30 people answered "dissatisfied", accounting for 1.49%; and 18 people answered "very dissatisfied", accounted for 0.90%. As shown in Fig. 5:

Five-dimensional Satisfaction Survey Scores. The Likert [4] scale is the most commonly used type of scoring scale. These items that belong to the same concept are scored by adding total scores. It
is meaningless for individual or individual projects. It was improved by the American social psychologist Likert in 1932 on the basis of the original total scale. According to the Likert scale (very good correspondence: 7 fractions, decreasing in order: 6, 5, 4, 3, 2, very poor correspondence: 1 fraction), use the formula: 
\[ F = \left( \frac{\sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + 6 \sum_{i=1}^{Gn} \sum_{j=1}^{n} Fn + 5 \sum_{i=1}^{Gn} \sum_{j=1}^{n} Fn + 4 \sum_{i=1}^{Gn} \sum_{j=1}^{n} Fn + 3 \sum_{i=1}^{Gn} \sum_{j=1}^{n} Fn + 1 \sum_{i=1}^{Gn} \sum_{j=1}^{n} Ln}{\sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + \sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + \sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + \sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + \sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + \sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + \sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + \sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + \sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + \sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + \sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + \sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + \sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i + \sum_{i=1}^{Gn} \sum_{j=1}^{n} Dn_i} \right)^{1/2} \]

scores the above five dimensions, and the results of the five dimensions satisfaction survey of faculty members are as shown in Table 1:

**Table 1. Attributes to the 5-dimensional Satisfaction Survey of Faculty Members.**

<table>
<thead>
<tr>
<th>Educational expectations</th>
<th>Educational quality perception</th>
<th>Educational environment perception</th>
<th>Educational fairness perception</th>
<th>Overall educational satisfaction</th>
<th>Aggregate score</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>75.22</td>
<td>79.90</td>
<td>79.91</td>
<td>84.68</td>
<td>81.71</td>
<td>401.42</td>
<td>80.28</td>
</tr>
</tbody>
</table>

The results of the score of the students’ 5-dimensional satisfaction survey are shown in Table 2:

**Table 2. Results of 5-dimensional Satisfaction Survey for Students.**

<table>
<thead>
<tr>
<th>Educational expectations</th>
<th>Educational quality perception</th>
<th>Educational environment perception</th>
<th>Educational fairness perception</th>
<th>Overall educational satisfaction</th>
<th>Aggregate score</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>74.69</td>
<td>76.35</td>
<td>76.4</td>
<td>78.53</td>
<td>76.73</td>
<td>382.7</td>
<td>76.54</td>
</tr>
</tbody>
</table>

The results of the score of the 5-dimensional satisfaction survey for faculty students are shown in Table 3 (add the scores for each dimension of the faculty students and divide them by two):

**Table 3. Achievement of 5-Dimensional Satisfaction Survey for Faculty Students.**

<table>
<thead>
<tr>
<th>Educational expectations</th>
<th>Educational quality perception</th>
<th>Educational environment perception</th>
<th>Educational fairness perception</th>
<th>Overall educational satisfaction</th>
<th>Aggregate score</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>74.96</td>
<td>78.12</td>
<td>78.16</td>
<td>81.60</td>
<td>79.22</td>
<td>392.06</td>
<td>78.41</td>
</tr>
</tbody>
</table>

**Multi-topic Survey Results**

Clustering algorithm is used to analyze multi-topics, the key words of students' opinions are summarized and displayed in different sizes according to the frequency of words. The larger the text in the graph, the more times the keyword is mentioned [5].

**After Three Years of Study in College, What Abilities Do You Think Have Been Greatly Improved?** According to the word frequency, the order from high to low is as follows: learning ability, cooperation ability, oral expression ability, employability, post competence, organizational ability, innovation ability, information technology application ability, foreign language ability, Writing ability, etc. As shown in Fig. 6:

**After Three Years of Study in College, What Qualities Do You Think You Have Greatly Improved?** By word frequency statistics, the order from high to low is as follows: conscientiousness, collective feeling, initiative, ability to overcome difficulties, compliance with rule awareness, concentration degree, the spirit of dedication, warm heart, honesty degree, curiosity. As shown in Fig. 7:

**What Are Your Favorite Courses?** Students' favorite courses are calculated based on word frequency, from high to low, as follows: English, CAD, Physical culture, C language, Ps, Higher mathematics, College English, Java, PLC, University language, Accounting basis, Singlechip, Multimedia technology, Web design, Professional course, Machine drawing, LTE and other courses. As shown in Fig. 8:
Questionnaire Results

What Do you Think of the Modern Apprenticeship System and Its Effect?

Approve of viewpoint are as follows:

(1) The modern apprenticeship system is one of the main methods to train skilled talents in enterprises and vocational colleges. With the support of enterprises, the teaching method of combining theory with practice has been applied well. Students complement the theoretical and practical knowledge on the two platforms of school and enterprise, which has consolidated the theoretical knowledge. The practical ability has also been improved. As a new type of personnel training mode, this method provides a guarantee for the social reserve of more high quality and high skill talents.

(2) The modern apprenticeship system is different from the traditional apprenticeship system (the apprenticeship is completely replaced by the students). The origin of the modern apprenticeship system is the dual system vocational education from Germany, which is praised as the world vocational education textbook. Recruitment at the same time, both school students and prospective employees of enterprises, learning purposes are very clear.

(3) Students, schools, enterprises consciously agreed—Construct the cooperation platform of school and enterprise. Work together to develop a training plan, jointly implement talent training, each of its duties, responsibilities, specialties, division of work and cooperation, so as to complete the training of students (staff).

The wait and see and disagree on the “modern apprenticeship” are as follows:

(1) Don't ignore the social impact. If society has a hierarchical view of vocational school students, even if there is a better modern apprenticeship, the effect will be greatly reduced.

(2) Influenced by certain concepts, teachers have reservations with students, students are required to learn actively and achieve mastery through a comprehensive study of the subject.

(3) The pros and cons are mixed. On the one hand, it has a positive effect on the promotion and export of talents; on the other hand, it has some restrictions on the professional growth and development of graduates. The relevant policies are imperfect and need to be improved.

(4) Become a low-cost enterprise labor force, not necessarily learn skills. Training should be all-round, multi-skilled and specialized.

(5) This kind of training is a yoke for a profession that you don't like.

(6) Suitable for a small number of people, specialty of highly skilled.

Liu Yufeng pointed out in the article "On the Essential Attributes of Apprenticeship" that: Dependency, structure, and preparation for new occupations are the three essential attributes of the apprenticeship system. These three major attributes are to judge whether an education or training system is an apprenticeship system. The basis, only a training system with these three attributes is an apprenticeship system [6].

What Are Your Opinions and Suggestions for Improving the Work of the School? Please List the Main Points.

Through the summary, analysis and arrangement of the opinions put forward by 670 students, the suggestions which are more satisfactory to the overall operation of the school will not be repeated for the time being. The main opinions are as follows:

(1) First, we should improve teachers' ideological, moral and moral character, set an example by example, teach by words and deeds, second, improve teachers' knowledge and professional level, third, enhance teachers' sense of responsibility and love, and fourth, improve the school's study, life, entertainment and internship and other related facilities build.

(2) Establish a communication platform between teachers and students, establish a sense of trust between teachers and students, schools, students, parents to form an interaction.

(3) Enrich students' extracurricular life, such as organizing extracurricular practical activities, holding lectures, etc., to broaden students' horizons, to train students' ability to respond, and to express themselves orally and in writing.

(4) Managers, including principals, should regularly engage in face-to-face communication with students. Don't be formalistic, pay attention to efficiency.
(5) For the management of students, the extreme must be reversed, and the degree of tightness is needed.

(6) Increase professional practical training, combine practice with theory, improve students' comprehensive ability. Let the students give a speech and express their opinions to improve their professionalism.

(7) Teachers should master the actual situation of students, teach students according to their aptitude, and do not discriminate against poor students. Improve sports facilities, encourage students to participate in physical exercise, increase physical fitness.

(8) Make full use of teaching resources to achieve better teaching results. For example, make use of multimedia network resources to make students more vivid and intuitive learning.

(9) Pay attention to the construction of textbooks, and adopt the publishing materials prescribed by the state.

(10) Provide psychological guidance to students, care for their psychological and physical health, spread positive energy, and eliminate negative energy.

670 Graduates in Higher Vocational Education

Because the senior students studied in school for 3 years, and experienced some links, such as post practice and so on, they are better informed about the situation of the school, so it is more appropriate to ask them to participate in the questionnaire survey. The statistics of the students sampled by equidistant sampling in our university are shown in Table 4:

Table 4. Classification of 670 Senior Students Selected by Equidistant Sampling.

<table>
<thead>
<tr>
<th>Classification situation</th>
<th>Effective quantity (670)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student grade</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>238 43.93%</td>
</tr>
<tr>
<td>Female</td>
<td>242 43.93%</td>
</tr>
<tr>
<td>Family's current place of residence</td>
<td></td>
</tr>
<tr>
<td>Village</td>
<td>160 25.71%</td>
</tr>
<tr>
<td>Rural area</td>
<td>310 46.27%</td>
</tr>
<tr>
<td>Father's record of formal schooling</td>
<td></td>
</tr>
<tr>
<td>Primary and below</td>
<td>209 31.45%</td>
</tr>
<tr>
<td>Junior middle school</td>
<td>241 36.42%</td>
</tr>
<tr>
<td>Senior middle school</td>
<td>120 18.24%</td>
</tr>
<tr>
<td>University (college)</td>
<td>90 13.51%</td>
</tr>
<tr>
<td>Mother's record of formal schooling</td>
<td></td>
</tr>
<tr>
<td>Primary and below</td>
<td>226 33.96%</td>
</tr>
<tr>
<td>Junior middle school</td>
<td>271 40.42%</td>
</tr>
<tr>
<td>Senior middle school</td>
<td>173 26.62%</td>
</tr>
<tr>
<td>University (college)</td>
<td>94 14.12%</td>
</tr>
</tbody>
</table>

Are you the first generation of college students in your family?

Yes: 441 65.82%

No: 229 34.18%

Annual per capita income of families is approximately (unit: yuan): 3000 0-5000

Less than 5000: 168 25.07%

5001-10000: 147 21.94%

10001-15000: 97 14.44%

15001-20000: 76 11.34%

20001-25000: 59 8.85%

More than 25000: 99 14.50%

Did you serve as a student cadre during your college years?

Yes: 242 35.12%

No: 428 64.88%

Overall, the degree of effort to learn during college is

Very hard: 61 8.50%

Very little effort: 10 1.49%

Satisfactory: 298 43.93%

Need to learn: 244 35.43%

Overall, the degree of effort to learn during college is

Very hard: 67 9.90%

Very little effort: 10 1.49%

Satisfactory: 241 36.42%

Need to learn: 226 33.96%

The intention after graduation is

Prepare to start your own business: 70 10.45%

Find a job: 449 67.01%

Bachelor's degree (including post graduate): 83 12.39%

Reasonable: 58 8.65%

Unreasonable: 58 8.65%

Fig. 5: Investigation Situation of Educational Overall

Fig. 6: What Capabilities Have Been Improved

Fig. 7: Which Qualities Have been Improved

Fig. 8: Favorite Courses
Find out Where the School is Going from the Analysis

In summary, the chart shows that the satisfaction score of the five dimensions of the faculty and students of our school is 78.41 points. It is still far from outstanding. The school should also improve from the following aspects:

Respecting Teachers 'Advancement of Teachers

Education is a conscience project. University teachers should have temperament such as righteousness, book spirit, atmosphere, backbone, sharpness, harmony, and talent [7], these temperaments can make our education teaching on the icing on the cake; Education management workers should consider problems from the perspective of teachers, divide difficulties for teachers, create a good working environment and living environment, rather than formulate some rules and regulations to limit teachers. The report of the 19th National Congress of the Party points out that the construction of a strong educational country is the basic project for the great rejuvenation of the Chinese nation. It is necessary to give priority to education, deepen education reform, accelerate education modernization, and run a satisfactory education for the people. Education management workers should fully mobilize the enthusiasm of teachers, to integrate the hearts of teachers! It is a fusion of the hearts of the people, this is the real way out of the future school [8].

Cultivate the Inherent Interest of University Teachers and Students in the Pursuit of "Academic and Truth"

At present, the goal of education and teaching in colleges and universities have undergone tremendous changes, and knowledge have no longer become the focus of teaching, stimulating students 'interest in learning, making full use of spare time and technology to actively study and pursue dreams and cultivating healthy personality qualities is the most important thing in today's education and teaching. Culture can be summed up in four sentences: rooted in inner cultivation, self-awareness without reminding, freedom based on restraint, kindness for others [9] And Cultivate students’ inner interest of academic and truth, not just for the purpose of external utilitarianism such as scholarship or promotion.

Strive for 12 First-class Constructions

The school should take "first-class teachers, first-class governance, first-class majors, first-class courses, first-class teaching and research, first-class practical teaching, first-class applied technology research and development, first-class domestic and international exchanges and cooperation, first-class quality, first-class society Service, first-class talents, first-class university culture". Twelve first-class constructions are the goals of the struggle [10], steadily promote the education and teaching reform of learning, and actively create a teaching style of "teachers are willing to teach, students are committed to studying".

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References


