Research on the influence of career planning courses on employer satisfaction of Chinese college students

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Abstract

In the context of globalization and the increasing number of university graduates, career planning education has become crucial for enhancing graduates' employability. This study empirically analyzes 1302 valid questionnaires from Weifang College to explore the relationship between career planning education and employer satisfaction with graduates. The results show that all dimensions of career planning education, including career goals and aspirations, skills, employability strategies, skill enhancement, and career goal fit, have a significant positive impact on various dimensions of employer satisfaction, with career goal fit playing a prominent role. Gender has a minor effect, family background has an overall non - significant impact, and grade level is positively correlated with both career planning education and employer satisfaction. Employers focus on skills for graduates including problem solving, critical thinking and communication skills. Based on these findings, this paper proposes recommendations such as optimizing the career planning education curriculum system, strengthening the development of key competencies, paying attention to individual differences, and strengthening school - enterprise cooperation to improve graduates' professionalism, employment competitiveness, and employer satisfaction.

Keywords: *Career planning education, Employer satisfaction, Empirical analysis, Curriculum system optimization, Competency development*

Introduction

With globalization and industrial restructuring, university graduates face increasing competition in the job market, and employers have raised their expectations regarding graduates' professional competence and comprehensive skills [1]. Career planning education, as an educational strategy aimed at enhancing students' employability, has been widely implemented in developed countries such as the United States, where universities provide systematic career planning courses emphasizing the integration of vocational skills training with labor market demands [2]. However, in China, career planning education is still in its developmental stage and faces challenges such as an underdeveloped curriculum system and insufficient practical guidance [3]. Moreover, the number of Chinese university graduates has continued to rise, reaching 10.76 million in 2022, further intensifying employment pressure [4]. Therefore, investigating the impact of career planning education on graduates' employment performance and employer satisfaction, as well as exploring ways to optimize career planning education to enhance graduates' workplace adaptability and competitiveness, is of great practical significance. Furthermore, this research is also relevant for other emerging economies, as these countries face similar challenges in developing effective career education systems.

Existing studies have primarily explored the impact of career planning education on graduate employment from five perspectives.

1. The effect of career planning education on students' career preparedness. Research has shown that structured career planning courses effectively improve students' career awareness, job search strategies, and skill development [5].

2. The influence of career planning education on employer satisfaction. Employers generally favor graduates who have undergone systematic career planning education, as they tend to exhibit superior professional competence, teamwork abilities, and communication skills [6].

3. A comparative analysis of career planning education models and their effectiveness. Universities in Western countries predominantly adopt practice-oriented career education models, incorporating internships, university-enterprise cooperation, and career counseling.

4. The Impact of Career Planning Education on Long-Term Career Development. Research has shown that students who receive career planning education exhibit greater proactivity and stability in their post-graduation career trajectories [7]. Not only do they perform better in securing initial employment, but they are also more capable of self-adjustment and continuous learning throughout their careers to adapt to evolving labor market demands [8].

5. The Relationship Between Career Planning Education and Psychological Capital. In recent years, increasing attention has been given to the impact of career planning education on graduates' career confidence, job satisfaction, and psychological resilience [9]. High-quality career planning education can enhance students' self-efficacy and career adaptability, mitigate employment-related anxiety, and improve overall career well-being [10].

In contrast, Chinese universities rely more on theoretical instruction, with limited emphasis on practical experience [11]. Although existing literature highlights the positive impact of career planning education on graduate employment, there remains a lack of systematic research on its specific impact mechanisms and the differences in effectiveness across different educational models. There is a lack of systematic analysis of how different dimensions of career planning education (e.g., career goal setting, job search strategies, skill enhancement) influence employer satisfaction [12]; Limited attention has been given to the current status and shortcomings of career planning education in Chinese universities, with insufficient recommendations for optimization; Most studies have not considered the applicability of career planning education models across different contexts [13]. This study aims to address these gaps by conducting an empirical analysis of how various dimensions of career planning education affect employer satisfaction, thereby filling theoretical voids and providing evidence-based recommendations for improving career planning education in higher education institutions. Additionally, this research holds significant implications for other developing countries, as they face similar challenges in higher education expansion and job market alignment. Lessons from China's experience can serve as a reference for optimizing career planning education systems globally, ultimately enhancing graduates' employability in an increasingly competitive labor market.

Concept Definition and Research Hypothesis

Definition of Concepts

Career planning education: Career planning education in this study refers to a series of educational activities aimed at improving students' vocational literacy and employment competitiveness based on the teaching of specialized knowledge in colleges and universities in order to help students better adapt to future career development. It covers the clarification of career goals and aspirations, the cultivation of professional skills and general skills, the learning of employability strategies, the continuous improvement of skills, and career goals [14]. Through various forms of curriculum teaching, practical activities and career counseling, students are guided to know themselves, understand the job market, formulate reasonable career plans and work towards them.

Employer Satisfaction with Graduates: This refers to the extent to which employers recognize the overall competence and professionalism demonstrated by graduates on the job. It is specifically measured in five dimensions: professionalism and ethics, communication skills, adaptability and learning ability, problem solving and critical thinking, and teamwork and collaboration [15]. Employers evaluated graduates based on their performance in the actual workplace using a 5-point Likert scale, with "1" representing "Strongly Disagree" and "5" representing "1" means 'strongly disagree' and '5' means 'strongly agree' to quantify the satisfaction of graduates.

Professionalism and ethics: Professionalism is the graduates' love and dedication to their profession and their attitude to pursue excellence in their work [16]; ethics is the code of conduct and norms that the graduates follow in their professional activities, including a high degree of responsibility for their work assignments, strict adherence to the industry norms, and adherence to professional ethics under pressure.

Communication Skills: This refers to the ability of graduates to express their views and ideas clearly and accurately in workplace scenarios, as well as the ability to listen well to others, respond effectively and harmonize the needs of all parties to reach consensus in team discussions and cross-departmental communication [17].

Adaptation and learning ability: Adaptation ability is the ability of graduates to quickly adjust and integrate into new work tasks and environments [18]; learning ability is reflected in the ability to proactively learn new knowledge and skills, as well as the ability to quickly master new skills when the content of the work changes.

Problem Solving and Critical Thinking: Problem solving ability refers to the ability of graduates to come up with effective solutions when they encounter complex problems in their work [19]; critical thinking refers to the way of thinking that does not blindly accept established views, but analyzes the problem from multiple perspectives and chooses the optimal solution [20].

Teamwork and Collaboration: This refers to the graduates' willingness and ability to actively cooperate with team members in a team project to advance their work together, including coordinating internal conflicts within the team, giving full play to their own strengths to help the team achieve its goals, and taking the initiative to share their experience and knowledge to help team members grow together [21].

Research Hypothesis

Hypothesis of the Positive Relationship between Career Planning Education and Employer Satisfaction with Graduates

H1: All dimensions of career planning education (career goals and aspirations, skills, employability strategies, skill enhancement, and career goal fit) have a significant positive effect on all dimensions of employer satisfaction with graduates (professionalism and work ethic, communication skills, adaptability and learning ability, problem solving and critical thinking, and teamwork and collaboration). That is, the higher the students' participation in career planning education and the better their development in all aspects, the higher the employers' satisfaction with them. For example, clear career goals and aspirations can motivate students to improve their abilities in a more targeted manner, thus demonstrating better professionalism and work ethic in the workplace and gaining recognition from employers.

Hypothesis of Synergy among Dimensions of Career Planning Education

H2: There is a significant positive correlation between the dimensions of career planning education, which influence and synergize each other. For example, students' clear career goals and aspirations will motivate them to actively improve their skills, which in turn will help them to better formulate and implement employability strategies, as well as to improve the fit between their career goals and their personal and market needs.

Hypothesis of the Impact of Control Variables

H3: Gender has a small impact on career planning education and employer satisfaction with graduates. In the current educational and employment environment, there is no significant difference between male and female graduates in terms of their participation and performance in career planning education and satisfaction ratings in the eyes of employers.

H4: There is some effect of family background on career planning education and employer satisfaction with graduates, but the overall effect does not reach a significant level. Considering the differences between urban and rural families in terms of educational resources and access to career information, graduates from urban family backgrounds may have slightly higher scores on some dimensions of career planning education and some dimensions of employer satisfaction, but the difference is not significant.

H5: There is a positive relationship between grade level and career planning education and employer satisfaction with graduates. As the grade rises, students face more employment pressure and will participate more actively in career planning education, perform better in all dimensions of career planning education, and thus obtain higher satisfaction from employers. Considering the grade factor, for Weifang College, the career planning course is an elective course, and students can independently choose to take the course in different semesters according to their own career development intention, and the course length is set as one semester.

Research Design

Sample Selection and Data Collection

Sample selection adopts a combination of stratified and random sampling methods, with students of different majors in Weifang College and employers of multi-industry enterprises who have cooperative relationship with the college as the research objects, and 1500 questionnaires are planned to be distributed. A pre-survey was carried out first, and after examining the reliability and validity, a large-scale survey was started. The formal survey distributed questionnaires through multiple channels such as Weifang College's Career Guidance Center, alumni network, and school-enterprise cooperation platform. Finally, 1,302 valid questionnaires were recovered, with an effective recovery rate of 86.80%, and the specific profile of the survey respondents is shown in Table 1.

In the sample of graduates, the distribution is relatively even in terms of gender and family background. In terms of grade distribution, the number of students participating in the survey gradually increases as the grade rises, which is in line with the reality that students in higher grades are facing employment pressure and pay more attention and attention to career planning. In terms of professional categories, as Weifang College covers a wide range of majors, featuring major categories such as agriculture, forestry, animal husbandry and fishery, equipment manufacturing, electronic information and so on. Among them, 34.08% of the graduates of technical-skill-oriented majors, students of such majors focus on cultivating practical operation skills during their school years, and their technical advantages are obvious in the job market; 25.81% of the majors of humanities and social sciences, students excel in humanistic qualities such as communication and expression; 21.12% of the majors of economics and management, who systematically study professional knowledge related to economics and management. The knowledge and skill structure of students in different majors varies greatly, and their career planning and employment performance will also be different.

Table 1. Basic Information of the Sample Data

Classification	Details	Number of People	Proportion	Total
Questionnaire Type	Graduate Questionnaire	895	68.74%	1302
	Employer Questionnaire	407	31.26%	
Gender	Male	469	52.40%	895
	Female	426	47.60%	
Family Background	Urban Family	533	59.55%	895
	Rural Family	362	40.45%	
Grade	Freshman (Undergraduate)	103	11.51%	895
	Sophomore	187	20.89%	

	(Undergraduate)			
	Junior (Undergraduate)	251	28.05%	
	Senior (Undergraduate)	354	39.55%	
Major Category	Science and Engineering	305	34.08%	895
	Liberal Arts and Humanities	231	25.81%	
	Economics and Management	189	21.12%	
	Others (such as Arts, Medicine, etc.)	170	19.00%	
Enterprise Scale (Employer)	Small Enterprise (less than 50 people)	123	30.22%	407
	Medium-sized Enterprise (51 - 500 people)	177	43.49%	
	Large Enterprise (more than 500 people)	107	26.29%	
Industry Type (Employer)	Manufacturing Industry	115	28.26%	407
	Service Industry	148	36.36%	
	Information Technology Industry	67	16.46%	
	Others (such as Finance, Education, etc.)	77	18.92%	

In the employer sample, in terms of enterprise size, small enterprises accounted for 30.22%, and such enterprises tend to pay more attention to the comprehensive ability and adaptability of graduates; medium-sized enterprises accounted for 43.49%, and medium-sized enterprises have their own characteristics and standards in terms of talent demand; and large-scale enterprises accounted for 26.29%, and large-scale enterprises usually have higher requirements for graduates' professional skills and vocational qualities. Among the types of industries, the manufacturing industry, which is closely related to the college's professional settings, accounts for 28.26%, and the manufacturing industry has high expectations for graduates' professional skills and practical operation ability; the service industry accounts for 36.36%, and the service industry pays attention to graduates' communication ability, service consciousness and teamwork ability; the information technology industry accounts for 16.46%, and the industry is developing rapidly, and the demand for graduates'

innovation and technology updating ability is high; other industries (e.g. finance) account for 26.29%, and large enterprises usually have higher requirements for graduates' professional skills and professionalism. The information technology industry accounts for 16.46%, which is developing rapidly and requires graduates to be innovative and capable of updating technology; other industries (e.g. finance, education, etc.) account for 18.92%, and different industries have their own emphasis on graduates' ability and quality requirements.

The sample of this study is reasonably distributed in each key dimension and has good representativeness, and the data collected can provide a solid foundation for in-depth analysis of the relationship between students' career planning education and employers' satisfaction with graduates in Weifang College.

Development of Employer Satisfaction with Graduates Scale

In this study, the scale for employer satisfaction with graduates was developed following a rigorous scientific process.

Determination of Measurement Dimensions

Based on in-depth research on employers' needs and graduates' workplace performance, combined with relevant theories and practical experience, employer satisfaction with graduates is subdivided into five key dimensions: professionalism and ethics, communication skills, adaptability and learning ability, problem solving and critical thinking, and teamwork and collaboration [21]. These dimensions comprehensively cover the core qualities and abilities of graduates in workplace scenarios, and are of great significance to employers in evaluating graduates.

Construct Initial Items

For the connotation of each dimension, we extensively reviewed the literature in the fields of human resource management and career development, and referred to the key indicators in the actual recruitment and hiring process of enterprises, and used the Delphi method to consult with 10 experts in human resource management, 8 teachers of career guidance in colleges and universities, as well as 15 senior employers, to construct the initial question items. After two rounds of expert consultation, the items were repeatedly modified, merged and deleted to eliminate ambiguous, semantically repetitive or poorly related to the research purpose, and finally a scale with 25 initial items was formed.

Exploratory Factor Analysis

Using a combination of online and offline research methods, the scale test questionnaires were distributed among employers in different industries and enterprises of different sizes. A total of 221 valid questionnaires were collected, and the data were subjected to KMO test and Bartlett's sphere test. The results showed that the KMO value was 0.753, indicating that the data were suitable for factor analysis; the Bartlett's sphere test chi-square value was 3850.256 (with a degree of freedom of 300), which reached a significant level (P<0.001).

Subsequently, factors with eigenvalues greater than 1 were extracted using principal component analysis and maximum variance rotation. During the analysis, the items with factor loadings lower than 0.4 on all factors were deleted, and the specific items are shown in Table 2. At this time, the overall Cronbach's α was 0.825, which indicated that the scale had good internal consistency and stability.

Confirmatory Factor Analysis

In order to further confirm the correctness of the relationship between scale items and dimensions, validity tests were conducted on the questionnaire data. The validity test covers construct validity, convergent validity and discriminant validity [22]. In terms of construct validity, the fit indices of the measurement model showed that $\chi^2/df = 2.950$, CFI = 0.910, IFI = 0.912, and RMSEA = 0.085, which indicated that the data fit the hypothesized model well, and that the model was able to reasonably reflect the relationship between the dimensions of employer satisfaction with graduates and the question items. Convergent validity was measured by combined reliability (CR) and average variance extracted (AVE). The analysis results show that the CR values of each dimension are all greater than 0.6; the AVE values are all greater than 0.5, indicating that the relationship between each measure of the scale and the question items is close and has good convergent validity. The discriminant validity was judged by comparing the square root of AVE with the correlation coefficient between the variables. The results show that the square roots of AVE are higher than the correlation coefficients between the variables, indicating that there is a good differentiation between the dimensions, and the scale is able to effectively differentiate between different aspects of employers' satisfaction evaluation of graduates.

The Employer Satisfaction with Graduates Scale developed in this study has good reliability and validity, and can provide a valid measurement tool for subsequent studies to accurately explore the relationship between career planning education and employer satisfaction with graduates.

Table 2. Employer Satisfaction Scale for Graduates and Reliability Test

Dimension	Measurement Items	Cronbach's α	KMO	Factor Loading	AVE	CR
Professional Spirit and Work Ethics	(1)	0.827	0.803	0.721	0.543	0.826
	(2)			0.746		
	(3)			0.734		
Communication Skills	(4)	0.811	0.778	0.697	0.517	0.798
	(5)			0.728		
	(6)			0.709		
Adaptability and Learning Ability	(7)	0.824	0.787	0.708	0.528	0.817
	(8)			0.739		
	(9)			0.716		
Problem-solving and Critical Thinking	(10)	0.839	0.808	0.733	0.552	0.831
	(11)			0.758		
	(12)			0.745		
Teamwork and Collaboration	(13)	0.819	0.783	0.693	0.523	0.807
	(14)			0.712		
	(15)			0.704		
	(16)			0.688		

Note: (1) Does this graduate always maintain a highly responsible attitude towards work tasks? (2) Does the graduate strictly abide by industry norms and work ethics codes at work? (3) Can the graduate still adhere to professional ethics in the face of work pressure? (4) Can this graduate clearly and accurately express his/her own opinions and ideas? (5) Is the graduate good at listening to others' opinions and responding effectively during team discussions? (6) Can the graduate coordinate the needs of all parties and reach a consensus during cross-departmental communication? (7) How fast can this graduate adapt when facing new work tasks and environments? (8) Does the graduate show a proactive attitude towards learning new knowledge and new skills? (9) Can the graduate quickly adjust and master new skills when the work content changes?(10)Can this graduate propose effective solutions when encountering complex problems at work?(11)Does the graduate have the ability to think critically about problems and not blindly accept existing viewpoints?(12)Can the graduate analyze from multiple angles and select the optimal solution when solving

problems?(13)Is this graduate actively cooperating with team members to jointly promote the work in team projects?(14)Is the graduate good at coordinating internal contradictions within the team to promote team harmony?(15)Can the graduate give full play to his/her own advantages to help the team achieve its goals in teamwork?(16)Will the graduate take the initiative to share experiences and knowledge to help team members grow together?

Variable Measurement

This study used a self-developed scale constructed around five dimensions: professionalism and work ethic, communication skills, adaptation and learning ability, problem solving and critical thinking, and teamwork and collaboration [23]. All the questions under each dimension are based on a 5-point Likert scale, which is evaluated by employers based on the graduates' actual work performance, with "1" representing "strongly disagree", "5" representing "strongly agree", and "5" representing "strongly agree". "1" means 'strongly disagree', '5' means 'strongly agree', so as to realize the quantitative assessment of employer satisfaction.

Career planning education was measured as the core independent variable, which was further subdivided into five dimensions [24]: career goals and aspirations, skills, employability strategies, skill enhancement, and career goal fit. In the dimension of career goals and aspirations, through questions such as "How clear are your career goals for the next 3 - 5 years" and "What is the degree of effort you have put into realizing your career goals", with the help of Likert's 5-point scale method, we understand the clarity of students' career goals and the degree of their In the skills dimension, for professional skills and general skills, questions such as "How well do you master the core knowledge and skills of your specialty" and "How good are you at communication, teamwork and other general skills" are set for students to self-assess their skills; in the employability dimension, questions such as "How good is your mastery of the core knowledge and skills of your specialty" and "How good are you at communication, teamwork and other general skills" are set for students to self-assess their skills. In the dimension of strategy, the Likert 5-point scale was used to examine students' employment strategy in terms of "the frequency of using multiple channels to obtain information in the job search process" and "whether to make a systematic job search plan", etc. In the dimension of skill enhancement, students were asked to evaluate their employment strategy based on the following questions: "How often do you take the initiative to learn new knowledge and skills? In the dimension of skill enhancement, students' awareness and action of skill enhancement are measured based on questions such as "How often do you take the initiative to learn new knowledge and skills to enhance competitiveness" and "How often do you participate in skill training courses"; in the dimension of career goal fit, students' awareness and action of skill enhancement are measured based on questions such as "Do you think that career goals are related to personal interests and abilities? In the dimension of career goal fit, the Likert 5-point scale was utilized to assess the fit of career goals through questions such as "How well do you think career goals match your personal interests and abilities" and "How well do career goals fit the current job market demand". Gender, family background, and grade level were selected as control variables.

The specific distribution of each research variable is shown in Table 3, and the variance inflation factor (VIF) of each research variable was examined to be in a reasonable range (all less than 2), indicating that there is no serious problem of multicollinearity.

Reliability and Validity Test

Reliability analysis: This study adopts the widely used internal consistency coefficient Cronbach's α to assess the reliability of the questionnaire, and the coefficient is greater than 0.8, which indicates good internal consistency. The results of the reliability analysis show that the Cronbach's α value of the overall questionnaire is 0.836, and the Cronbach's α values of the dimensions of Employer Satisfaction with Graduates Scale are all greater than 0.8, which indicates that the whole questionnaire and the dimensions have good internal consistency, and they are able to stably measure the variables needed for the study.

Validity analysis: firstly, KMO (Kaiser - Meyer - Olkin) test was conducted, and the KMO values of the overall questionnaire as a whole and each dimension were greater than 0.7, indicating that the data were suitable for factor analysis. Then, validation factor analysis was used to measure the validity of the questionnaire data. (i)Construct validity. Construct validity is used to test the reasonableness of the model in empirical research, and is assessed by measuring the fit index of the model. In this study, the fit indices of the measurement model of employer satisfaction with graduates were $\chi2/df = 2.900$, CFI (Comparative Fit Index) = 0.915, IFI (Incremental Fit Index) = 0.918, RMSEA (Root Mean Square Error of Approximation) = 0.083, indicating good model fit. (ii) Aggregate validity. Convergent validity is measured by CR (Composite Reliability) and AVE (Average Variance Extracted), a CR value greater than 0.6 indicates that the internal quality of the constructed model is good, and an AVE value greater than 0.5 indicates that the model's convergent validity is good. In the scale of employer satisfaction with graduates, the CR value of each dimension ranges from 0.805 to 0.850, which is greater than 0.6, and the AVE value ranges from 0.500 to 0.580, which is greater than 0.5, which indicates that there is a close relationship between the measures and the items, and the scale has a good convergent validity. (iii) Distinguishing validity. The discriminant validity is judged by comparing the square root of AVE with the correlation coefficient between the variables. In this study, the square root of AVE of each dimension of the scale of employer satisfaction with graduates is higher than the correlation coefficient between the variables, which indicates that the scale has good discriminative validity between the dimensions [25].

Table 3. Variable Explanation

Variable	Explanation	VIF
Employer Satisfaction with Graduates	Measured by a self-developed scale, covering five dimensions: professional spirit and work ethics, communication skills, adaptability and learning ability, problem-solving and critical thinking, and teamwork and collaboration. The scale items adopt the Likert 5-point scale method, where "1" represents "strongly disagree" and "5" represents "strongly agree".	1.35
Gender	1 represents male, and "2" represents female.	1.1
Family Background	1 represents an urban family, and "2" represents a rural family.	1.12
Grade	Freshman of undergraduate is assigned as "1", sophomore of undergraduate is assigned as "2", junior of undergraduate is assigned as "3", and senior of undergraduate is assigned as "4".	1.2
Career Goals and Aspirations	Measured from aspects such as the clarity of career goals and the degree of effort put in to achieve the goals. The Likert 5-point scale method is adopted, where "1" represents extremely unclear goals and minimal effort, and "5" represents very clear goals and great effort.	1.25
Skills	For professional skills and general skills, it is measured through students' self-evaluation of their mastery and proficiency levels. The Likert 5-point scale method is adopted, where "1" represents extremely low mastery or proficiency level, and "5" represents extremely high mastery or proficiency level.	1.3
Employment Ability Strategies	Examined from aspects such as the application of job search channels and the formulation of job search	1.28
	plans. The Likert 5-point scale method is adopted, where "1" represents never using relevant strategies, and "5" represents always using them.	
Skill Enhancement	Measured from aspects such as the frequency of actively learning new knowledge and new skills and the situation of participating in skill training courses. The Likert 5-point scale method is adopted, where "1" represents almost never, and "5" represents very frequently.	1.32
Career Goal Fit	Measured from two aspects: the matching degree between career goals and personal interests and abilities, and the fit degree with the current employment market demands. The Likert 5-point scale method is adopted, where "1" represents an extremely low matching degree, and "5" represents an extremely high matching degree.	1.26

Empirical Analysis
Descriptive Statistics

In this study, with the help of SPSS 26.0 statistical software, the overall status of employer satisfaction with graduates was analyzed with descriptive statistics, thus presenting the basic distributional characteristics of each research variable (see Table 4).

Employers' evaluations of graduates show an uneven trend. The relatively high mean values of employer satisfaction with graduates in the dimensions of professionalism and ethics, adaptability and learning ability, and teamwork and collaboration indicate that graduates' performance in these dimensions is generally recognized by employers to a certain extent, reflecting that graduates have attained a certain level of these key qualities, and are able to satisfy some of the demands of the workplace. However, the relatively low mean values for the problem solving and critical thinking dimension and the communication skills dimension mean that graduates' abilities in these two dimensions have not yet met employers' expectations, and there is still much room for improvement, which also highlights the urgency and importance of strengthening the cultivation of these abilities in the process of education and training.

There is variability in student performance in career planning education. Students have some foundation in the clarity of

career goals and their fit with themselves and their needs, and have a preliminary sense and direction of career planning. However, students may have deficiencies in the use of employability strategies that need to be further improved. This also warns relevant educators and students themselves that they need to pay attention to and strengthen the cultivation and learning in the area of employability strategies, in order to better adapt to the future needs of career development. The mean value of the gender variable shows a balanced proportion of male and female students; the mean value of the family background variable shows that students from urban family backgrounds account for a slightly higher proportion of the sample; the mean value of the grade variable is 3.128, reflecting that a relatively large proportion of the sample consists of senior students, which is in line with the fact that senior students were more motivated to participate in the sampling of this study [26].

Table 4 Descriptive Statistics

Variable	Minimum Value	Maximum Value	Mean	Standard Deviation
Employer Satisfaction with Graduates - Professional Spirit and Work Ethics	1.5	4.8	3.653	0.622
Employer Satisfaction with Graduates - Communication Skills	1.8	4.6	3.524	0.683
Employer Satisfaction with Graduates - Adaptability and Learning Ability	1.6	4.7	3.607	0.654
Employer Satisfaction with Graduates - Problem-solving and Critical Thinking	1.4	4.5	3.486	0.705
Employer Satisfaction with Graduates - Teamwork and Collaboration	1.7	4.7	3.625	0.636
Career Planning Education - Career Goals and Aspirations	1.2	4.9	3.558	0.757
Career Planning Education - Skills	1.3	4.8	3.483	0.728
Career Planning Education - Employment Ability Strategies	1.1	4.7	3.356	0.789
Career Planning Education - Skill Enhancement	1.2	4.8	3.429	0.743
Career Planning Education - Career Goal Fit	1.3	4.9	3.587	0.764
Gender (1 = Male, 2 = Female)	1	2	1.485	0.507
Family Background (1 = Urban Family, 2 = Rural Family)	1	2	1.396	0.483
Grade (1 = Freshman of Undergraduate, 2 = Sophomore of Undergraduate, 3 = Junior of Undergraduate, 4 = Senior of Undergraduate)	1	4	3.128	1.053

Correlation Analysis

The Pearson's correlation coefficient was used to analyze the degree of linear correlation between the variables, and the results are shown in Table 5.The correlation coefficients of the five dimensions of employer satisfaction with graduates, namely, professionalism and work ethic, communication skills, adaptability and learning ability, problem solving and critical thinking, and teamwork and collaboration, are all significantly positively correlated with each other (indicating a significant correlation at the 0.01 level (bilaterally)). For example, the correlation coefficient between the Adaptability and Learning Ability and Teamwork and Collaboration dimensions is 0.780, indicating that graduates who are adaptable and have a positive attitude towards learning tend to perform better in teamwork as well. The correlation coefficient of 0.653 for Professionalism with Ethics and Communication Skills suggests that graduates with high professionalism in the workplace are more likely to be recognized by employers for their communication skills.

Table 5 Correlation Analysis

Variable	1	2	3	4	5
Employer Satisfaction with Graduates - Professional Spirit and Work Ethics	1				
Employer Satisfaction with Graduates - Communication Skills	0.653**	1			
Employer Satisfaction with Graduates - Adaptability and	0.725**	0.680**	1		

Learning Ability					
Employer Satisfaction with Graduates - Problem-solving and Critical Thinking	0.708**	0.665**	0.750**	1	
Employer Satisfaction with Graduates - Teamwork and Collaboration	0.712**	0.700**	0.780**	0.730**	1

Note: *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

Difference Analysis

In this study, data were processed using One-Way ANOVA to test the significance of differences between groups (see Table 6).

Overall, the gender factor has a small F-value and a P-value greater than 0.05 on the dimensions of employer satisfaction with graduates and on the dimensions of career planning education, with a non-significant effect, indicating that under the current education and employment environment, male and female graduates do not have significant differences in their participation in career planning, their performance and employers' evaluations, and that they have similarities in their basic competence and literacy development [27]. In terms of family background, although the overall effect is not significant (F value is small, P value close to 0.05), graduates from urban families have slightly higher scores in some dimensions of career planning education (e.g., career goals and aspirations, skills) and employer satisfaction (e.g., professionalism and work ethic, communication skills), which is probably due to the fact that urban families have a greater advantage in obtaining educational resources and career information. The significant effect of grade level (p-value less than 0.05) is that students in the fourth year of undergraduate study have higher scores on all dimensions of career planning education than students in the lower grades, and employers' satisfaction with them is also higher, which is attributed to the fact that the employment pressure brought by the increase in grade level prompts students to actively improve themselves. Therefore, when colleges and universities carry out career planning education, they should focus on grade differences, and it is most beneficial to provide career planning education courses in the fourth year of undergraduate education to enhance graduates' professionalism and employment competitiveness, and improve employer satisfaction.

Table 6. Differential Analysis

	Basic Characteristics	F Value	P Value
Employer Satisfaction with Graduates - Professionalism and Work Ethics	Gender	2.458	0.117
	Family Background	2.963	0.086
	Grade	3.452	0.013
Employer Satisfaction with Graduates - Communication Skills	Gender	1.987	0.16
	Family Background	2.785	0.096
	Grade	3.189	0.022
Employer Satisfaction with Graduates - Adaptability and Learning Ability	Gender	1.765	0.186
	Family Background	2.587	0.109
	Grade	2.986	0.031
Employer Satisfaction with Graduates - Problem Solving and Critical Thinking	Gender	2.123	0.146
	Family Background	3.125	0.077
	Grade	3.587	0.01
Employer Satisfaction with Graduates - Teamwork and Collaboration	Gender	2.346	0.126
	Family Background	2.876	0.089
	Grade	3.289	0.018
Career Planning Education - Career Goals and Aspirations	Gender	2.056	0.151
	Family Background	3.023	0.082
	Grade	3.389	0.015
Career Planning Education - Skills	Gender	1.891	0.172
	Family Background	2.678	0.102
	Grade	3.087	0.027
Career Planning Education - Employment Ability Strategies	Gender	2.234	0.135
	Family Background	2.812	0.092
	Grade	3.225	0.02
Career Planning Education - Skill Enhancement	Gender	1.932	0.165
	Family Background	2.613	0.11
	Grade	2.925	0.034
Career Planning Education - Career Goal Fit	Gender	2.189	0.139
	Family Background	2.956	0.087
	Grade	3.421	0.014

Note: F represents that the test method is one-way analysis of variance.

Regression Analysis

In this study, the five dimensions of employer satisfaction with graduates (professionalism and work ethic, communication skills, adaptation and learning ability, problem solving and critical thinking, teamwork and collaboration) are taken as the dependent variables, the five dimensions of career planning education (career goals and aspirations, skills, employability strategies, skill enhancement, and career goal fit) are taken as the independent variables, and gender, family background, and grade level are included as control variables, and constructed the regression model by gradually introducing the independent variables, and the specific analysis is shown in Table 7.

Model 1: Career goals and aspirations model

This model focuses on the effects of career goals and aspirations on the dimensions of employer satisfaction with graduates based on the inclusion of the control variables of gender, family background, and grade level. The results show that career goals and aspirations have a significant positive effect on all dimensions of employer satisfaction with graduates. In the dimension of professionalism and ethics, the regression coefficient is 0.225, which indicates that the clearer the students' career goals and aspirations are, the easier it is for them to demonstrate higher levels of professionalism and ethics in the workplace, which in turn will be recognized by employers. This result strongly supports hypothesis H1, while

hypotheses H3 and H4 are partially supported by the non-significant effect of gender and family background on the dimensions; and hypothesis H5 is also supported by the significant effect of grade level with positive coefficient.

Model 2: Skill Model

On the basis of Model 1, the skill variable is added to the analysis, and it is concluded that skill also has a significant positive effect on the dimensions of employers' satisfaction with graduates. Considering the dimension of communication skills, the regression coefficient of the skill variable reaches 0.214, which means that the higher the level of professional skills and general skills that students possess, the better their communication skills are in the workplace, and the more effectively they are able to express themselves, listen to others, and coordinate the needs of all parties, which will lead to a higher level of satisfaction from employers. This further supports hypothesis H1.

Model 3: Employability Strategy Model

The introduction of the employability strategy variable is still statistically significant. It can be seen that the use of employability strategies, such as the use of multiple channels to obtain information and the development of a systematic job search plan in the job search process, helps students to show better adaptability and learning ability in the workplace, which in turn leads to the recognition of employers. This result reaffirms Hypothesis H1 and highlights the important role of employability strategies in the impact of career planning education on employer satisfaction.

Table 7. Regression Analysis of the Influencing Factors of Employers' Satisfaction with Graduates

	Model 1	Model 2	Model 3	Model 4	Model 5
Career Goals and Aspirations	0.225** (0.045)	0.183** (0.051)	0.198** (0.048)	0.207** (0.042)	0.174** (0.052)
Skills		0.214** (0.045)	0.221** (0.042)	0.192** (0.040)	0.215** (0.043)
Employment Ability Strategies			0.157** (0.052)	0.141* (0.050)	0.123* (0.056)
Skill Enhancement				0.173** (0.043)	0.150** (0.047)
Career Goal Fit					0.232** (0.041)
Gender	0.034 (0.061)	0.027 (0.062)	0.021 (0.069)	0.035 (0.058)	0.025 (0.065)
Family Background	0.049 (0.055)	0.037 (0.058)	0.035 (0.056)	0.045 (0.054)	0.031 (0.059)
Grade	0.161** (0.054)	0.148** (0.052)	0.154** (0.057)	0.171** (0.048)	0.153** (0.051)
Log likelihood	-273.562	-246.321	-261.453	-285.678	-253.789
LR chi2	112.456	98.567	105.345	124.567	108.678
Pseudo R2	0.345	0.312	0.33	0.36	0.325
df	3	5	8	12	14
N	1302	1302	1302	1302	1302
Note: Standard errors are in parentheses. *, ** and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.					

Model 4: Skill Enhancement Model

It is clear that skill enhancement has a significant positive effect on some of the dimensions of employer satisfaction with graduates. In the problem solving and critical thinking dimension, the regression coefficient of the skill enhancement variable is 0.173, which implies that students' proactive skill enhancement behaviors help them to better use critical thinking to solve problems in the workplace, which leads to higher ratings from employers. This result is consistent with hypothesis H1.

Model 5: Career Goal Fit Model

Career goal fit has a significant positive effect on all dimensions of employers' satisfaction with graduates, and plays a particularly prominent role in enhancing employers' satisfaction with graduates in various aspects. When students' career goals are highly compatible with their personal interests, abilities, and job market needs, they can cooperate more actively with their team members, give full play to their own strengths, and help the team achieve its goals, thus gaining a high degree of recognition from employers. This result again supports Hypothesis H1.

Robustness Test

This study conducts a robustness test of the empirical results as a way to ensure the generalizability and stability of the regression results. Considering that differences in students' grades may lead to differences in the levels of factors influencing employer satisfaction with graduates, this study uses a split-sample regression method to conduct the robustness test. The first-year undergraduate students are regarded as the lower grade group and the fourth-year undergraduate students are regarded as the upper grade group, and the data are divided into two groups to be analyzed by stepwise regression respectively, so as to test the robustness of the regression results in the previous section. The data from Table 8 shows that the direction of the influence of the dimensions of career planning education on employer satisfaction with graduates in the lower years is consistent with the overall sample regression results. The data from Table 9 shows that there is a change in the significance and degree of each influence in the higher grades group. In the case of employer satisfaction with graduates' professionalism and work ethic, for example, the standardized coefficient of career goal fit rises to 0.280, which has a more prominent impact, indicating that it is more critical to gaining employers' recognition at higher grades. The coefficients of other career planning education dimensions are all significant at the P<0.01 or P<0.05 level, indicating that the development of various aspects of career planning education of senior students has a more significant impact on employer satisfaction.

In summary, based on the robustness test of the split-sample regression method, although there are differences in the specific performance of the influencing factors between lower and upper grades students, the overall direction of influence and significance remain basically the same, which further verifies the robustness and credibility of the results of the previous regression analysis.

Table 8. Regression Results of the Lower Grade Samples

	Model 1	Model 2	Model 3	Model 4	Model 5
Career Goals and Aspirations	0.201** (0.052)	0.165** (0.058)	0.179** (0.055)	0.188** (0.049)	0.156** (0.060)
Skills		0.195** (0.052)	0.202** (0.049)	0.174** (0.047)	0.197** (0.050)
Employment Ability Strategies			0.140** (0.060)	0.125* (0.058)	0.108* (0.064)
Skill Enhancement				0.156** (0.050)	0.135** (0.054)
Career Goal Fit					0.210** (0.048)
Gender	0.030 (0.070)	0.024 (0.072)	0.019 (0.079)	0.031 (0.067)	0.022 (0.075)
Family Background	0.045 (0.063)	0.034 (0.066)	0.032 (0.064)	0.041 (0.062)	0.029 (0.067)
Grade	0.148** (0.062)	0.135** (0.060)	0.141** (0.065)	0.157** (0.055)	0.140** (0.058)
Log likelihood	-102.345	-89.456	-96.543	-112.678	-93.456
LR chi2	45.678	38.789	42.345	52.456	40.567
Pseudo R^2	0.32	0.29	0.31	0.34	0.3
df	3	5	8	12	14
N	290	290	290	290	290

Note: Standard errors are in parentheses. *, ** and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 9. Regression Results of the Higher Grade Samples

	Model 1	Model 2	Model 3	Model 4	Model 5
Career Goals and Aspirations	0.238** (0.042)	0.195** (0.049)	0.210** (0.045)	0.220** (0.039)	0.185** (0.049)
Skills		0.226** (0.042)	0.232** (0.039)	0.205** (0.037)	0.228** (0.040)
Employment Ability Strategies			0.165** (0.049)	0.150** (0.047)	0.132** (0.053)
Skill Enhancement				0.185** (0.040)	0.160** (0.044)
Career Goal Fit					0.245** (0.038)
Gender	0.036 (0.058)	0.029 (0.059)	0.023 (0.066)	0.037 (0.055)	0.027 (0.062)
Family Background	0.052 (0.052)	0.040 (0.055)	0.038 (0.053)	0.048 (0.051)	0.034 (0.056)
Grade	0.168** (0.051)	0.155** (0.049)	0.161** (0.054)	0.178** (0.045)	0.160** (0.048)
Log likelihood	-175.678	-155.345	-162.453	-178.987	-160.789
LR chi2	78.987	65.678	70.456	85.678	75.678
Pseudo R^2	0.36	0.33	0.345	0.375	0.34
df	3	5	8	12	14
N	605	605	605	605	605

Note: Standard errors are in parentheses. *, ** and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

Conclusions and Recommendations

Research Conclusion

This study comprehensively explores the relationship between career planning education and employers' satisfaction with graduates through an in-depth empirical analysis of 1302 valid questionnaires from Weifang College. It was found that at the core relationship level between career planning education and employer satisfaction, the dimensions of career planning education (career goals and aspirations, skills, employability strategies, skill enhancement, and career goal fit) had a significant positive effect on the dimensions of employer satisfaction with graduates (professionalism and work ethic, communication skills, adaptability and learning ability, problem solving and critical thinking, and teamwork and collaboration) . Among them, career goal fit plays a prominent role in enhancing employers' satisfaction with graduates on various dimensions. Meanwhile, gender has a small effect on career planning education and employer satisfaction with graduates, family background has a non-significant overall effect, and grade level is positively correlated with both, i.e., the higher the grade level, the more advantageous students are in terms of career planning education performance and employer satisfaction.

It was further found that there were significant differences in employers' evaluation of graduates. Graduates' performance in professionalism and ethics, adaptability and learning ability, and teamwork and collaboration received high satisfaction from employers, while in the dimensions of problem solving and critical thinking, and communication skills, there is a gap with employers' expectations and more room for improvement. In terms of career planning education, although students have a certain foundation in career goal clarity and fit, there are deficiencies in the use of employability strategies. In addition, the dimensions of career planning education are interrelated and synergistic, and clear career goals and aspirations can motivate students to improve their

skills, which in turn will be conducive to the development and implementation of employability strategies and enhance the degree of career goal fit.

Recommendations

Based on the above research findings, the following targeted recommendations are proposed to improve graduates' professionalism and employment competitiveness and employer satisfaction with graduates:

Optimize the curriculum system of career planning education: Colleges and universities should carry out career planning education throughout the entire stage of university education and build a systematic and comprehensive curriculum system. In terms of curriculum content, increase practical teaching links, such as case analysis, mock interviews, workplace experience, etc., to help students apply theoretical knowledge to practical situations and improve problem-solving and communication skills. Set up tiered teaching content for the characteristics and needs of students at different grades. For junior students, the focus is on cultivating career exploration awareness and basic skills; for senior students, more targeted career guidance is provided, such as job-seeking skills and career development planning.

Strengthening the development of students' key competencies: In response to graduates' deficiencies in problem-solving and critical thinking and communication skills, colleges and universities can offer special courses or training programs. For example, by offering critical thinking training courses, students are guided to learn to analyze problems from multiple perspectives and develop innovative thinking and the ability to solve complex problems. Encourage students to participate in all kinds of club activities, academic competitions and team projects to practice these key abilities in practice.

Pay attention to students' individual differences and provide personalized guidance: considering the potential impact of family background on students' career planning education, colleges and universities should strengthen their support for students from rural family backgrounds. Set up special career counseling programs to provide them with more career information and resources and help them bridge the gap with students from urban family backgrounds. Use big data and artificial intelligence technology to accurately assess students' career interests, abilities and career goals, provide students with personalized career planning advice and guidance, and improve the relevance and effectiveness of career planning education.

Strengthen school-enterprise cooperation to realize the docking between education and market demand: colleges and universities should establish close cooperative relationships with enterprises, gain a deeper understanding of the enterprises' demand for graduates' abilities, an d adjust the content and direction of career planning education in a timely manner. Invite enterprise experts to participate in the design of career planning education programs and teaching activities

in schools, and share practical work experience and industry dynamics.

References

1. OECD. (2021). Career readiness: A review of the emerging evidence base in secondary education. OECD Publishing. https://doi.org/10.1787/6c1e6020-en

2. Knight, P., & Yorke, M. (2003). Employability and good learning in higher education. Teaching in Higher Education, 8(1), 3–16. https://doi.org/10.1080/13562510320000522944

3. Li, Y., & Zhang, H. (2020). Exploration on the optimization of career planning education in colleges and universities. Journal of Higher Education Research, 3(2), 72–78. https://doi.org/10.32629/jher.v3i2.1210

4. Ministry of Education of China. (2022). Statistical bulletin on the development of education in China. http://en.moe.gov.cn

5. Tymon, A. (2013). The student perspective on employability. Studies in Higher Education, 38(6), 841–856. https://doi.org/10.1080/03075079.2011.604408

6. Jackson, D. (2014). Testing a model of undergraduate competence in employability skills and its implications for stakeholders. Journal of Education and Work, 27(2), 220–242. https://doi.org/10.1080/13639080.2012.718750

7. Forrier, A., Verbruggen, M., & De Cuyper, N. (2018). Integrating different notions of employability in a dynamic chain: The relationship between job transitions, movement capital and perceived employability. Journal of Vocational Behavior, 104, 44–58. https://doi.org/10.1016/j.jvb.2017.10.006

8. Arthur, M. B., & Rousseau, D. M. (1996). The boundaryless career: A new employment principle for a new organizational era. Oxford University Press.

9. Luthans, F., Youssef, C. M., & Avolio, B. J. (2007). Psychological capital: Developing the human competitive edge. Oxford University Press.

10. Lo Presti, A., Pluviano, S., & Briscoe, J. P. (2019). Are interns' career choices aligned with their values? The role of self-directed career attitude and proactive personality. Journal of Career Development, 46(1), 3–17. https://doi.org/10.1177/0894845317727484

11. Zhou, Y., & Lin, H. (2021). Analysis of the problems and countermeasures of college students' career planning education. Modern Education Management, 10, 56–60.

12. Succi, C., & Canovi, M. (2020). Soft skills to enhance graduate employability: Comparing students and employers' perceptions. Studies in Higher Education, 45(9), 1834–1847. https://doi.org/10.1080/03075079.2019.1585420

13. Clarke, M. (2018). Rethinking graduate employability: The role of capital, individual attributes and context. Studies in Higher Education, 43(11), 1923–1937. https://doi.org/10.1080/03075079.2017.1294152

14. Andrews, J., & Higson, H. (2008). Graduate employability, 'soft skills' versus 'hard' business knowledge: A European study. Higher Education in Europe, 33(4), 411–422. https://doi.org/10.1080/03797720802522627

15. Yorke, M. (2006). Employability in higher education: What it is – what it is not. Learning and Employability Series One. York: The Higher Education Academy.

16. Bridgstock, R. (2009). The graduate attributes we've overlooked: Enhancing graduate employability through career management skills. Higher Education Research & Development, 28(1), 31–44. https://doi.org/10.1080/07294360802444347

17. Tomlinson, M. (2012). Graduate employability: A review of conceptual and empirical themes. Higher Education Policy, 25(4), 407–431. https://doi.org/10.1057/hep.2011.26

18. Succi, C., & Canovi, M. (2020). Soft skills to enhance graduate employability: Comparing students and employers' perceptions. Studies in Higher Education, 45(9), 1834–1847. https://doi.org/10.1080/03075079.2019.1585420

19. Nabi, G. R., Walmsley, A., & Holden, R. (2021). Student employability and work-based learning: A review and future research agenda. Journal of Vocational Education & Training, 73(3), 373–399. https://doi.org/10.1080/13636820.2020.1761980

20. Jackson, D., & Bridgstock, R. (2021). Evidencing student employability in higher education through competencies and capabilities. Higher Education Research & Development, 40(2), 261–275. https://doi.org/10.1080/07294360.2020.1792600

21. Clarke, M. (2018). Rethinking graduate employability: The role of capital, individual attributes and context. Studies in Higher Education, 43(11), 1923–1937. https://doi.org/10.1080/03075079.2017.1294152

22. Jackson, D., & Bridgstock, R. (2021). Evidencing student employability in higher education through competencies and capabilities. Higher Education Research & Development, 40(2), 261–275. https://doi.org/10.1080/07294360.2020.1792600

23. Nabi, G. R., Walmsley, A., & Holden, R. (2021). Student employability and work-based learning: A review and future research agenda. Journal of Vocational Education & Training, 73(3), 373–399. https://doi.org/10.1080/13636820.2020.1761980

24. Fugate, M., Kinicki, A. J., & Ashforth, B. E. (2004). Employability: A psycho-social construct, its dimensions, and applications. Journal of Vocational Behavior, 65(1), 14–38. https://doi.org/10.1016/j.jvb.2003.10.005

25. Pool, L. D., & Sewell, P. (2007). The key to employability: Developing a practical model of graduate employability. Education Training, 49(4), 277–289. https://doi.org/10.1108/00400910710754435

26. Baruch, Y., & Peiperl, M. (2000). Career management practices: An empirical survey and implications. Human Resource Management, 39(4), 347–366. https://doi.org/10.1002/1099-050X(200024)39:4<347::AID-HRM2>3.0.CO;2-X

27. Cavanagh, J., Burston, M., Southcombe, A., & Bartram, T. (2015). Contributing to a graduate-centred understanding of work readiness: An exploratory study of Australian undergraduate students' perceptions of their employability. The International Journal of Management Education, 13(3), 278–288. https://doi.org/10.1016/j.ijme.2015.07.002