# Study on the Relationship Between College Students' Self-Leadership and Career Preparation from the Perspective of Problem-Solving Skills

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**Abstract:** Based on the measurement of problem-solving skills, self-leadership, and career preparation, this paper collects 251 questionnaires from college students through online questionnaire survey. Through the analysis of the questionnaire results, this paper aims to clarify the relationship between college students' self-leadership and career preparation from the perspective of problem-solving skills, in order to provide ideas for college students' future career path and development. The results showed that from the perspective of problem-solving skills, there is a positive correlation between self-leadership and career preparation, and self-leadership has a positive impact on career preparation.

**Keywords:** Problem-solving skills; Self-leadership; Career preparation

## 1. Introduction

With the rapid development of economic globalization and knowledge economy, competition in the workplace is gradually increasing, which leads to higher requirements for college students' career preparation and development. Self-leadership and problem-solving skills are critical skills in the modern workplace that help college students to successfully adapt to the workplace and achieve career success. Therefore, studying the relationship between college students' self-leadership and career preparation from the perspective of problem-solving skills is significant to improve college students' career competitiveness and future career development.

## 2. Problem-solving skills, self-leadership, and career preparation
### 2.1. Problem-solving skills

Problem-solving is an important skill that individuals must have in life and work. It refers to the ability to use effective methods and strategies to find a reasonable solution when facing a problem [1]. Problem-solving skills mainly cover five aspects. The first aspect is the ability to analyze problems. It refers to the ability to clearly identify problems, grasp the crux and root causes of problems, analyze various aspects and factors of problems,

and understand the background and reasons of problems [2]. Secondly, problem-solving skills include the ability to think about solutions. It refers to the ability to actively explore solutions to problems by flexibly using existing knowledge and experience, try different solutions and methods, and find innovative solutions. The third aspect is practical skills. It refers to the ability to put solutions into practice, implement specific work plans and strategies, master relevant skills and tools, and effectively solve problems [3]. Another aspect of problem-solving skills is the ability to solve problems. This refers to the ability to overcome various difficulties and challenges, find fundamental solutions to problems, and solve complex and urgent problems. Self-reflection is the last aspect of problem-solving skills. It refers to the ability to self-reflect and evaluate one's own problem-solving process and results, sum up experience and lessons, and constantly improve one's problem-solving skills [4].

Problem-solving skills are essential for college students since they are the backbone of the country and society. Improving the problem-solving skills of college students can improve their learning efficiency and innovation skills, and to lay a solid foundation for their future development and contribution. By studying the problem-solving skills of college students, the different needs of various industries and positions for problem-solving skills can be understood, and targeted support and suggestions for college students' employment and career development can be provided. By understanding college students' own level of problem-solving skills, they can choose a career and development plan that suits them, and simultaneously adapt to the working environment and complete tasks faster after being hired.

## 2.2. Self-leadership

Self-leadership refers to the ability of individuals in self-management and self-improvement, which is a behavioral process of self-assessment and self-influence [5]. It specifically includes six aspects of competencies. The first aspect is self-awareness, which means that individuals can clearly understand their own strengths, weaknesses, interests, and values, etc., and understand their career goals and path. In the 1980s, American scholar Manz proposed that the core of self-leadership is self-cognition [6]. Self-management is another aspect in self-leadership. It refers to the ability of individuals to effectively manage their own time and emotions, balance their work and rest time, and maintain a positive attitude and work efficiency. Next, self-motivation is the ability of individuals to self-motivate and stimulate their potentials, overcome difficulties and challenges, and maintain motivation and confidence. Another competency is communication skills. It refers to the ability of an individual to communicate and cooperate well with others. Individuals with good communication skills are good at expressing their ideas and opinions, understanding the needs and opinions of others, and establishing good interpersonal relationships. The fifth aspect is decision-making skills. It refers to the ability of individuals to make reasonable decisions, recognize opportunities and risks, and achieve their own goals and values according to their situation and conditions. The last aspect is teamwork. It refers to the ability of an individual to cooperate with team members to complete tasks and achieve goals collaboratively. Individuals with good teamwork are good at communication, coordination, and problem-solving, thereby promoting team cohesion and centripetal force.

Cultivating college students' self-leadership has a profound impact on their personal development. It can improve the all-round quality of college students and lay a solid foundation for future career and personal development. In today's highly competitive society, college students with self-leadership are more competitive. Self-leadership enables college students to manage and improve their career development, and make wise decisions and plans. At the same time, they can communicate and cooperate well with others, establish good interpersonal relationships, and gain more advantages in employment and career development. In addition, self-leadership can help college students to manage and improve their career development, in order to achieve

their career goals and values. Through self-awareness and skills improvement, college students can better adapt to the professional environment and task requirements. Their work efficiency and performance can also be improved, thereby providing support for their career development and promotion [7].

## 2.3. Career preparation

Career preparation is an individual's preparation for career development, which can help individuals to better adapt to the requirements of career development, improve career competitiveness, and achieve a virtuous circle of career and personal development [8]. There are six aspects of career preparation. The first aspect is self-awareness, which is the basis of career preparation. It includes an in-depth understanding of one's own personality, interests, values, skills, and advantages. Through self-awareness, individuals can choose a career that suits them and determine their career goals [9]. Career preparation also requires skills improvement. Skills are the key to career development. Individuals need to continuously improve their skills through learning and practice, and master career-related skills and tools. Skill improvement also includes continuous learning and adapting to new technologies and industry development trends, and keeping knowledge and skills up-to-date. Academic education is another aspect of career preparation. Education is the foundation of career development. Individuals need to obtain corresponding academic qualifications, such as degrees, certificates, diplomas, etc., to improve their professional level and competitiveness. Additionally, social networking is also important in career preparation. Social networking acts as an important resource for career development. Individuals need to establish extensive personal connections and contacts with peers, industry experts, and professionals. This can help them to seek more resources and expand their career opportunities. Besides, career planning is the key to career development. Individuals need to formulate long-term career plans, determine career goals and development paths, and formulate implementation plans. At the same time, individuals need to constantly adapt to changes and challenges in career development. Lastly, mental health is fundamental to professional development. Individuals need to maintain a positive attitude and a healthy lifestyle, in order to deal with work pressure and career setbacks, and face work challenges in a healthy state.

As an important part of career planning, career preparation can help individuals to plan and manage their careers in order to achieve career goals. First of all, career preparation helps individuals to better understand their interests, skills, and values, so as to determine their career path and avoid detours in their careers. Secondly, career preparation can improve their professional quality and skills, and enhance their professional competitiveness. Moreover, career preparation enables individuals to understand their own strengths and potentials, thereby enhancing self-confidence when facing challenges in their careers. Lastly, through career preparation, individuals can find a suitable career, thereby improving career satisfaction and achieving long-term career development.

## 3. Research samples and methods

### 3.1. Research samples

This study selected college students from 5 four-year colleges and universities in mainland China. Through an online questionnaire survey, 300 questionnaires were distributed. Among them, items that did not meet the research purpose or without response were eliminated. A total of 251 valid questionnaires were included in the analysis, and the questionnaire response rate was 83.7%. Among the 251 respondents, there were 113 males and 138 females. Th number of respondents in first, second, third, and fourth grades were 123, 58, 43, and 27, respectively.

## 3.2. Research model

The research model in this study is shown in **Figure 1**. Problem-solving skills play a mediating role between self-leadership and career preparation.



**Figure 1.** Research model

## 3.3. Research tools

### 3.3.1. Problem-solving skills

To measure the problem-solving skills of Chinese college students, this study adopted the international academic assessment project PISA (Program for International Student Assessment) [10] developed by Andreas Schleicher in 2000 and modified by Nurfadilla *et al.* [11]. The scales include 3 aspects, namely problem-solving attitude, problem-solving method, and problem-solving quality. It adopts a 5-point scoring form, 1 means strongly disagree, 2 means disagree, 3 means uncertain, 4 means agree, and 5 means strongly agree. PISA provides a comprehensive index that reflects students' problem-solving skills. At the same time, PISA also provides data on the international comparison of students' abilities through cross-country and regional samples with different socioeconomic background, which is important to understand the pros and cons of different education systems and improve education policies.

### 3.3.2. Self-leadership

For the measurement of self-leadership level of college students, this study adopted the self-leadership measurement tool SLQ (Self-Leadership Questionnaire) first developed by Manz in 1998, and rewritten by Jin Minting in 2007. The scales include behavioral strategies and cognitive strategies. It also adopts a 5-point scoring form, 1 means strongly disagree, 2 means disagree, 3 means uncertain, 4 means agree, and 5 means strongly agree. By answering the questions in SLQ, individuals can understand their own strengths and areas for improvement in self-leadership, which provide guidelines to further develop self-leadership. At the same time, SLQ can also provide enterprises and organizations with guidelines on employee development and leadership training.

### 3.3.3. Career preparation

This study adopted the scale developed by Kim Bong-hwan in 1997 [12] and modified by Lim Eun-mi and Lee Myung-sook [13] to measure career preparation. The scale includes three dimensions, which are information collection, preparation of necessary tools, and practical preparation. A 5-point scale is used, with 1 representing strongly disagree, 2 representing disagree, 3 representing uncertain, 4 representing agree, and 5 representing strongly agree. This tool can help individuals to understand their strengths and weaknesses in career preparation and provide guidelines on improving career preparation.

## 3.4. Statistical methods

SPSS (Statistical Package for the Social Sciences) 25.0 was used for data analysis. The mean difference among various factors was analyzed by $t$-test. The analysis of each factor based on grade difference was analyzed by $F$-test. The correlation between various factors was obtained by calculating the Pearson correlation coefficient.

# 4. Results

## 4.1. Demographic characteristics

The demographic characteristics of the research samples are shown in **Table 1**.

**Table 1.** Frequency analysis of demographic characteristics

| Items | | Number of people | Percentage (%) |
|---|---|---|---|
| Gender | Male | 113 | 45 |
| | Female | 138 | 55 |
| Total | | 251 | 100 |
| Grade | First grade | 123 | 49 |
| | Second grade | 58 | 23.1 |
| | Third grade | 43 | 17.1 |
| | Fourth grade | 27 | 10.8 |
| Total | | 251 | 100 |

## 4.2. Analysis based on gender differences

Through the analysis of gender differences in **Table 2**, this study showed that there is no statistical difference in self-leadership, problem-solving skills, and career preparation actions ($P > 0.05$).

**Table 2.** Analysis based on gender differences

| Items | | Gender | Average (M) | Standard Deviation (SD) | $t$ | $P$ |
|---|---|---|---|---|---|---|
| Self-leadership | Behavioral strategies | Male | 3.819 | 0.548 | -0.421 | 0.674 |
| | | Female | 3.849 | 0.559 | | |
| | Cognitive strategies | Male | 3.755 | 0.510 | 1.353 | 0.177 |
| | | Female | 3.666 | 0.533 | | |
| | Total | Male | 3.780 | 0.491 | 0.691 | 0.49 |
| | | Female | 3.737 | 0.491 | | |

**Table 2** (continued)

| Items | | Gender | Average (M) | Standard Deviation (SD) | t | P |
|---|---|---|---|---|---|---|
| Problem-solving skills | Problem-solving attitude | Male | 3.715 | 0.588 | 1.652 | 0.1 |
| | | Female | 3.596 | 0.554 | | |
| | Problem-solving method | Male | 3.660 | 0.655 | 0.272 | 0.786 |
| | | Female | 3.639 | 0.572 | | |
| | Problem-solving quality | Male | 3.612 | 0.594 | -0.131 | 0.896 |
| | | Female | 3.622 | 0.535 | | |
| | Total | Male | 3.663 | 0.506 | 0.707 | 0.48 |
| | | Female | 3.619 | 0.472 | | |
| Career preparation | Information collection | Male | 3.599 | 0.792 | 0.740 | 0.46 |
| | | Female | 3.527 | 0.750 | | |
| | Tools preparation | Male | 3.504 | 0.846 | 0.390 | 0.697 |
| | | Female | 3.464 | 0.801 | | |
| | Practical preparation | Male | 3.379 | 0.716 | -0.399 | 0.69 |
| | | Female | 3.414 | 0.679 | | |
| | Total | Male | 3.462 | 0.606 | 0.102 | 0.919 |
| | | Female | 3.454 | 0.613 | | |

## 4.3. Analysis based on grade differences

The analysis findings in **Table 3** showed a significant grade-level difference in students' self-leadership, problem-solving skills, and career preparation. Overall, students in fourth grade have the highest average in self-leadership, problem-solving skills, and career preparation.

**Table 3.** Analysis based on grade differences

| Item | | | Average (M) | Standard Deviation (SD) | F |
|---|---|---|---|---|---|
| Self-leadership | Behavioral strategies | First grade (a) | 3.773 | 0.535 | 1.989 |
| | | Second grade (b) | 3.828 | 0.592 | |
| | | Third grade (c) | 3.892 | 0.539 | |
| | | Fourth Grade (d) | 4.045 | 0.537 | |
| | Cognitive strategies | First grade (a) | 3.683 | 0.477 | 1.406 |
| | | Second grade (b) | 3.713 | 0.545 | |
| | | Third grade (c) | 3.646 | 0.627 | |
| | | Fourth grade (d) | 3.892 | 0.487 | |
| | Total | First grade (a) | 3.718 | 0.451 | 1.701 |
| | | Second grade (b) | 3.758 | 0.525 | |
| | | Third grade (c) | 3.742 | 0.538 | |
| | | Fourth grade (d) | 3.952 | 0.491 | |

**Table 3** (continued)

| Item | | | Average (M) | Standard Deviation (SD) | F |
|---|---|---|---|---|---|
| Problem-solving skills | Problem-solving attitude | First grade (a) | 3.585 | 0.578 | 3.458* d>a |
| | | Second grade (b) | 3.645 | 0.574 | |
| | | Third grade (c) | 3.637 | 0.608 | |
| | | Fourth grade (d) | 3.970 | 0.358 | |
| | Problem-solving method | First grade (a) | 3.647 | 0.557 | 0.764 |
| | | Second grade (b) | 3.614 | 0.654 | |
| | | Third grade (c) | 3.600 | 0.710 | |
| | | Fourth grade (d) | 3.807 | 0.572 | |
| | Problem-solving quality | First grade (a) | 3.569 | 0.549 | 3.336* d>a |
| | | Second grade (b) | 3.628 | 0.581 | |
| | | Third grade (c) | 3.549 | 0.579 | |
| | | Fourth grade (d) | 3.926 | 0.465 | |
| | Total | First grade (a) | 3.601 | 0.465 | 3.064* d>a |
| | | Second grade (b) | 3.629 | 0.510 | |
| | | Third grade (c) | 3.595 | 0.548 | |
| | | Fourth grade (d) | 3.901 | 0.359 | |
| Career preparation | Information collection | First grade (a) | 3.472 | 0.751 | 1.186 |
| | | Second grade (b) | 3.644 | 0.728 | |
| | | Third grade (c) | 3.690 | 0.824 | |
| | | Fourth grade (d) | 3.568 | 0.831 | |
| | Tools preparation | First grade (a) | 3.378 | 0.800 | 3.477 |
| | | Second grade (b) | 3.664 | 0.808 | |
| | | Third grade (c) | 3.337 | 0.850 | |
| | | Fourth grade (d) | 3.796 | 0.775 | |
| | Practical preparation | First grade (a) | 3.354 | 0.678 | 2.221 |
| | | Second grade (b) | 3.445 | 0.551 | |
| | | Third grade (c) | 3.283 | 0.831 | |
| | | Fourth grade (d) | 3.685 | 0.763 | |
| | Total | First grade (a) | 3.390 | 0.597 | 2.119 |
| | | Second grade (b) | 3.539 | 0.512 | |
| | | Third grade (c) | 3.404 | 0.714 | |
| | | Fourth grade (d) | 3.673 | 0.636 | |

## 4.4. Correlation analysis of problem-solving skills, self-leadership, and career preparation

Using Pearson correlation coefficient, this study showed that problem-solving skills, self-leadership, and career preparation are statistically correlated ($r < 0.8$). The analysis results are shown in **Table 4**.

There is a positive correlation between self-leadership and career preparation ($r = 0.280–0.445$, $p < 0.01$). Self-leadership behavioral strategies and cognitive strategies ($r = 0.668$), problem-solving attitudes and methods ($r = 0.576$), problem-solving quality ($r = 0.515$), problem-solving methods and quality ($r = 0.568$) were highly statistically correlated. In career preparation, information collection was positively correlated with tools preparation ($r = 0.446$) and practical preparation ($r = 0.439$). Tools preparation was also positively correlated with practical preparation ($r = 0.561$).

**Table 4.** Correlation analysis among various factors

| Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| Self-leadership | 1. Behavioral strategy | 1 | | | | | | | |
| | 2. Cognitive strategies | 0.668 | 1 | | | | | | |
| Problem-solving skills | 3. Attitude | 0.415 | 0.555 | 1 | | | | | |
| | 4. Method | 0.540 | 0.597 | 0.576 | 1 | | | | |
| | 5. Quality | 0.402 | 0.516 | 0.515 | 0.568 | 1 | | | |
| Career preparation | 6. Information collection | 0.366 | 0.445 | 0.378 | 0.505 | 0.433 | 1 | | |
| | 7. Tools preparation | 0.366 | 0.313 | 0.355 | 0.449 | 0.411 | 0.446 | 1 | |
| | 8. Practical preparation | 0.280 | 0.403 | 0.399 | 0.426 | 0.441 | 0.439 | 0.561 | 1 |

# 5. Discussion

The results in this paper showed a positive relationship between self-leadership and career preparation. Self-leadership aids in career goal setting. Individuals can manage their time and tasks better, improve productivity and work quality, and prepare for career growth. Individuals with self-leadership can better develop their own strengths and potentials, and increase their competitiveness in their career and field [14]. Therefore, individuals should emphasize on the cultivation and improvement of self-leadership, so as to fully prepare themselves for future career development. At the same time, enterprises and universities should also focus on cultivating students' self-leadership and provide better support and assistance for their career development.

In addition, there are significant differences in the self-leadership, problem-solving skills, and career preparation of students in different grades. Students in higher grades have better self-leadership and problem-solving skills, and the corresponding career preparation is also more adequate. This also shows that self-leadership, problem-solving skills, and career preparation can all be improved through daily learning and practice [15].

# Disclosure statement

The author declares no conflicts of interest.

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