ISSN 2522-6398 Vol. 6, Issue 30: 11-19, DOI: 10.25236/FER.2023.063002

The Application of Lean Management Thinking to Career Planning—Research on Chinese Local University

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Abstract: *Career planning of university students has always been an important social issue, which is not only an important part of connecting each university student from campus to society, but also has a profound impact on the development of social labor talents. It has a profound impact on university students to understand the job market, adapt to the employment environment, enhance employability, establish a correct employment view and seek the desired occupation, and has an important influence on improving the employment competitiveness of students as well as solving the problem of social employment imbalance. From the perspective of lean management thinking, this paper discusses the influence of lean management thinking on assisting university students' career planning, and analyzes the influence level of lean management thinking through a questionnaire survey and feedback from students in related majors, so as to prove it can play a guiding role in career planning education.*

Keywords: *university students, career planning, lean management thinking*

1. Introduction

In the context of the post-epidemic era, job hunting is not only a huge challenge for students, but also for society, solving the employment problem of academicians is critical to social employment issues. Therefore, it is very important for college students to plan their careers in advance and make good career planning for their graduation transition and finding a job. Since Professor Frank Parson founded the world's first career guidance agency in 1908, career planning has had a history of more than 100 years. From Parsons' *person-organization fit* at the beginning of the 20th century to Super's *career development theory* in the 1970s, career planning theory has been continuously updated and upgraded with the development of the times. People have explored educational models that are more in line with students ' needs, and have also continuously tried to combine management-related principles with career planning to seek career planning models that are more suitable for students' development.

Nowadays, career planning as a discipline has been relatively mature. Especially after Super's career development theory was put forward. It has been used as the core in practice all over the world. However, in university teaching, it is difficult for students to understand the importance of career planning to life development by incorporating theory as a knowledge point into the scope of the course and assessing it in the form of homework, examinations and so on. It is also difficult for students to apply abstract theory to practice and lack practical guidance for employment. At the same time, although Super puts forward the theory of career development with lifelong planning as the core, there can still be better control methods to assist students in achieving their goals in short-term goal management at each stage, so that students can truly feel the importance of career planning for life development, and increase the systemic, feasibility and stability of career planning. [1][2][6]

Lean management is a kind of production management theory, which emphasizes the maximum profit output with the minimum resource input. It has the advantages of eliminating waste, rapid response and circular improvement in the planning process, which is of great help to both mass and small-scale production. The core content of introducing lean thinking into career planning is to introduce lean management mode, treat the staged planning of a career as a short-term production plan, and objectively evaluate various internal and external environmental factors of career planning with lean thinking, so as to formulate a scientific and feasible career plan, and optimize it with time development and condition changes to make career planning meet personal conditions and needs, thus increasing the feasibility of short-term goals of career planning and assisting the realization of long-term career planning. Based on

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the theory of Super et al., this paper introduces lean thinking in production planning into career planning, compares the feasibility of the two, and applies the lean management model to career planning education. It aims to provide a guiding method for college career planning education, assist students in understanding the meaning and significance of career planning, and provide a feasible goal management method for them to formulate and achieve goals. Help them formulate objective, scientific and feasible career planning and achieve goals.[4]

2. Case Background

2.1 Career Planning

Everyone has a different life career. It is the continuous evolution direction of various tenses in life as well as the sum of experience and life roles in different time stages of life, which shows the unique self-development form of different individuals. Apparently, People in different stages also have different career characteristics, and university students are in the stage of exploration of their lives, It is particularly important how to understand a career, get career in perspective, and plan for the future career. Rational career planning is the key to helping university students clear life direction, start a promising career, and cultivate correct values for university students, clearly understand the social environment, and help university students change from student psychology to candidate psychology, adapt to the job market, set goals for their career and find out the steps they need to take to achieve the goals. At the same time, it can also help provide the necessary skilled labor force for the society and maintain the stable development of the society.[3]

As early as the 1950s, the famous career planning master Donald Super put forward the theory of career development, replacing the career guidance model with the concept of career development, emphasizing the lifelong development of life rather than just career choice. In addition to work, he innovatively put forward the concept of career development in the breadth of life and living space. The change in this concept has greatly expanded the scope of career planning. It highly emphasizes the characteristics of people and advocates the integration of people's preferences and emotions into career choices so as to balance work and life, which sublimates the concept of career planning and makes career planning truly integrate into people's lives. The core of Donald Super's career development theory can be summarized as five steps, which are the development of self-concept, "try-out" through classes, entry-level skill building, continual adjustment process, and reduced output. In Super's self-concept, 15-25 years old is summarized as the exploration stage. During this period, people should focus on choosing a career and setting life goals. Make a life plan; establish a good image; keep learning. This also reflects the dual character of a university career. On the one hand, as students, the main task of university life is still learning. Therefore, how to plan university life and complete learning tasks is still the principal contradiction, and the university period is also a period of transition from student identity to practitioner identity. Therefore, the career planning of university students should include employment-oriented academic career planning and post-graduation employment career planning.[7]

For career planning, its purpose is to plan internal and external careers, find their own Career Anchors, and break down potential inherent and external obstacles in future careers. Nevillemi Keloch Betty pointed out that careers have three positive purposes: breaking through obstacles, developing potential and self-realization. It sets goals for us, provides us with the intrinsic motivation to fight on, and ultimately achieves our goals. For obstacles, they can be divided into internal obstacles and external obstacles. Among them, internal obstacles refer to a lack of security and self-confidence due to a lack of understanding of themselves and a lack of conscious cognition. Through career planning, university students can establish a comprehensive understanding of themselves and break down internal obstacles. External obstacles refer to the external environment of employment, which is subject to employment policy shifts, changes in the employment market, fluctuations in economic development, and changes in the social environment. External obstacles often have the characteristics of complexity and variability. As the pace of scientific and technological revolution continues to advance, the pace of innovation accelerates. The evolution of the vocation is more complicated. According to the International Standard Classification of Occupation formulated by the International Labor Organization, the world's occupational categories have changed from 10 categories, 28 middle categories, 116 small categories and 390 fine categories in 1988 to 10 categories, 43 middle classes, 125 small classes, 436 fine classes in 2008. At the same time, the current world situation is changing rapidly, affected by the tense world situation and geopolitics, the economic recession in the post-epidemic era is inevitable, the unstable factors of the world environment are greatly increased, and the world is also in a critical period of

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industrial adjustment. The changes in the form and scale of production have caused labor surplus and shortage in some regions at the same time, forming structural unemployment. Therefore, we should comprehensively consider both internal and external factors, combined with self-choice at the same time, a comprehensive consideration of social factors, so as to develop career planning in line with personal ideals and social reality.[8]

2.2 Definition and Application of Lean Management Thinking

The idea of lean management was born in Japan in the 1960s. It was proposed by Toyota president Taiichi Ohno and was also called a lean improvement tool later. Since then, enterprises in Europe, the United States and other countries have been affected one after another. At the beginning of this century, enterprises in China began to be widely influenced by lean thinking. In the production process, they began to widely use and attach importance to lean management. Lean management thought can be widely summarized as five principles, namely ' value, value stream, flow, pull, perfection '. The detailed process is shown in the Figure 1. This also corresponds to the five steps in the production operation and how lean management benefits the enterprise. Lean management starts from the original definition of value, which requires the whole process of production as the starting point, considers the production process from beginning to end, defines value according to the whole product rather than the traditional way of value definition, creates products through the perspective of the final customers, and takes product design, product flow and the whole process of production as the observation target to find the real value created by the product, and always carries out the production and operation activities of the enterprise around the core value, and finally, carries out production of the whole process, assists the enterprise to supervise the reasonable operation of each step in the production process, and avoids the possible waste for the enterprise production according to the determined target cost.[5]

The second step of lean management is to find the value stream in production. The value stream is everywhere in the process of production, transportation and sales, including the task of solving problems in the whole process from envisaging concepts, through detailed design and engineering, to production. The task of information management in the whole process from receiving orders to formulating detailed progress to delivery; in the task of converting materials from raw materials into final products, sent to the user's hands. Among these steps, it is clear that creating value, not creating value but can not be ignored, and not creating value and can be ignored are divided into three kinds of steps, that is, value creation, type 1 waste and type 2 waste. What production managers should do when using lean management ideas is to identify three different ways of activities along the value stream, so as to prepare for the following steps.

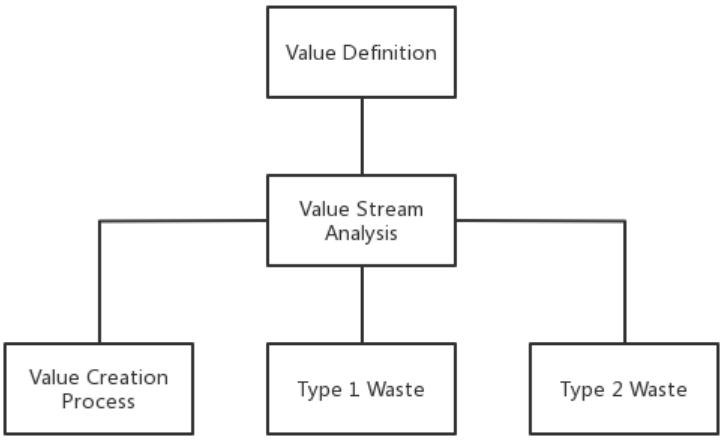

Figure 1: Lean management thinking value and value stream analysis logic diagram.

In the process of creating flow, the flowing enterprise operation mode can eliminate the disadvantages of enterprise development, find the most efficient production patterns, and make employees active. In the production operation, the flowing method can help enterprises manage the production process in real-time, it is easy to find the cause of the slowness and disruptions in workflow in the management process, and reduce waste and consumption by modifying the process; the flowing method can also speed up the

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turnaround of products, keep products continuous turnover from design, production to transportation, sales; accelerate the production cycle of products, prompting enterprises to reduce unnecessary intermediate links, eliminate waste, reduce costs; in terms of enterprise management, flowing method can re-examine the truly valuable departments, improve the traditional organizational structure from independent departments, redefine the functions of each department, make it a large team cooperation, and encourage members to make positive contributions to the overall value.

The fourth principle of lean management is using a pull system, which requires enterprises to flexibly use the huge cost saved in the process of flow effectively. Enterprises should carry out pull-production activities according to the feedback of the market, rather than the traditional market-forecasting mode. This transformation greatly ensures that the production of products is firmly in line with the market demand, and grasps the ' three timely ' production mode. After the market puts forward the demand, it puts forward the requirements of step-by-step production along the industrial chain, thus realizing the pulling production mode, reducing the waste and cost of enterprises, improving the market response ability of enterprises, and making enterprises profit from it.

In the end, through the idea of pursuing perfection, the above four principles interact with each other, so that the speed of value flow is significantly accelerated, so as to make a continuous cycle improvement, making the whole production process perfect and users can obtain maximum value, and enterprises can gain the maximum benefit.

3. The Specific Application of Lean Management Thinking in Career Planning

After introducing the concepts and definitions of career planning and lean thinking as Figure 2 depicted, it is not difficult for us to find that the two have great similarities and complementarity. On the one hand, career planning is a discipline that relies on the principles of management. It is essentially a target management method. It is the application of the target management method in the career process, so it has great similarity with the lean management originated in production management. At the same time, the current career planning education lacks practical guidance for employment. A large number of courses are unrealistic, emphasize too much on theory, students can't understand and use them in physical planning, and the teaching mode is single. The abstract idea makes students ignore the guiding role of career planning for talent development. Therefore, the influence of lean management on career planning lies in the practice and guidance of theory. Through lean management thinking, students can intuitively realize the implementation of career planning. By comparing work to production, choosing a job and getting employment is just like lean work before production. Through professional knowledge and theoretical guidance, students can finally achieve career goals and improve their understanding. Moreover, unlike result-oriented career planning education, lean thinking focuses on dynamic programming, that is, through the idea of pursuing perfection, we can constantly improve career planning according to the changes of internal and external conditions, revise the goals in the process of career planning, and take dynamic implementation of career planning, and make the university students career planning sustainable.

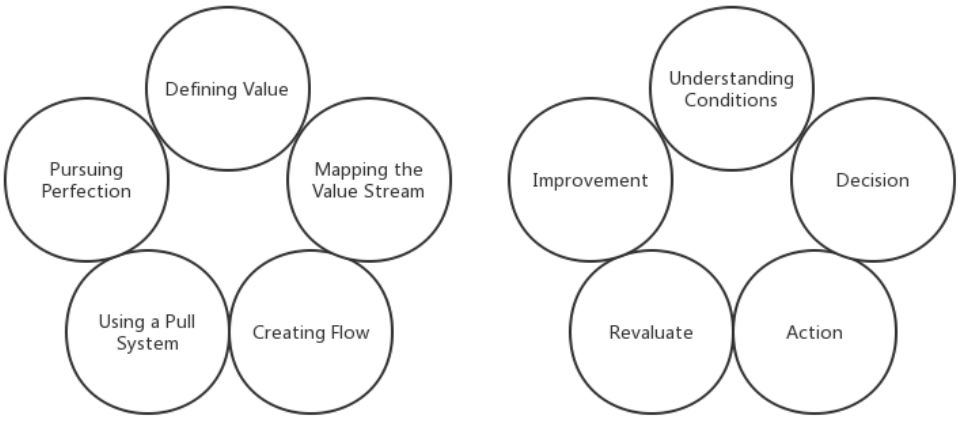

Figure 2: Comparison of Lean Management Principles and Career Planning Steps.

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3.1 Using Lean Management to Define the Professional Value

In the process of career planning, many industries and occupations that can be engaged in will make it difficult for students to choose. Many factors, such as their own skills, quality literacy, academic qualifications, and external factors such as economic level, industry development, and policy support, will have a decisive impact on career choice, so that students will always remain in a state of difficult choice, unable to seize the key issues and start planning. How to objectively evaluate the various elements in the job search process has become an important preparatory work before career planning. Only by fully understanding their own career demands, the objectivity and stability of planning can be guaranteed which can truly assist us to determine career direction.

When choosing a career, in addition to using the traditional CASVE analysis method and SWOT analysis method, we can introduce the value definition analysis in lean management. Career planners can think about career choices from the aspects of economic benefits, leisure time, work achievements, etc., and then compare and rank various elements. After weighing the pros and cons, it can effectively help students find the focus in the job search process and choose the work they like according to the value definition. At the same time, we should always pay attention to the needs of society, that is, the social value of the post. We should comprehensively consider the development trend of industry and the trend of world technological innovation. Combining the above two points with their own skills, quality and other internal factors, so students can obtain a better career choice.

3.2 Using Value Stream to Analyse Professional Life

After clarifying the goal, we should introduce the definition of the value stream to further analyze the target occupation. In this step, we encourage planners to evaluate the whole process of work, take more factors into account, such as occupational needs, employment cost, organizational structure, human resources assessment and other factors, how to select ' high mobility ' work, how to make individuals spend the energy more effectively on work, and how to give full play to their maximum value and enhance their work enthusiasm, which has become an important step in career planning, to promote more accurate assessment of career planning and clarify the demands in job hunting.

Super's career development concept of living space emphasizes the integration of work and life by adding people's preferences and emotions to career choices. Therefore, while thinking about the work process, we should think about both working life and daily life. Making a people-centered career choice, and doing a good job in the interaction between work and life is also an important part of career planning. While considering career choices, we should fully consider factors such as commuting time, working environment, working atmosphere, and office facilities, so as to achieve a balance between work and life as much as possible, make a balance between work and life, integrate career planning into life, and reduce unnecessary wasting time, money and energy in life. Only by integrating whole life into career planning, can really enhance the practicality and guiding role of university students ' career planning.

3.3 Improve the Problem in the Flow Process

After the preliminary career planning, we encourage students to carry out early practical activities, understand the deficiencies in the planning during the internship process, and make immediate adjustments to the planning to make it meet our expectations and career needs. We use the flowing method in lean management thinking. In this step, we define the value and value stream in the practice planning, finding the facts that are inconsistent with our subjective cognition in the process of flowing operation and seeking improvement, reducing the waste in the work, and improving the steps of creating value. For example, we choose enterprises with short commuting time, simple organizational frameworks and relatively flat management. Trying to increase the steps of creating value in the process of work, reduce type 1 waste and type 2 waste, reduce unnecessary intermediate links between work and life transformation, and change the previous model of career planning to avoid the separation in life, so as to increase the proportion of time between life and work. It greatly improves the work efficiency and enthusiasm of planners and also improves the quality of life of planners. It organically combines work and life to achieve scientific, comprehensive and feasible career planning.

3.4 Using a Pull System to Re-plan University Career

Career planning also includes university academic career planning. According to the needs of the profession, we should set up clear career goals through lean management thinking of pulling, improve

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capacity instantly, and meet the skill requirements put forward by the profession as much as possible. Through the principle of ' pulling ', we can avoid the problem of aimlessness. Combined with the information learned in the planning process and the experience accumulated in the internship process, we can make personal efforts and university career planning close to the target career requirements, avoid deviating from the actual needs, waste limited study energy, and avoid deviating from the actual needs. In this way, the efficiency saved in the "flow" process can be fully applied to self-improvement, enhance environmental adaptability and improve learning efficiency.

3.5 Cycle Improvement and Make Career Planning Perfect

In addition to the above four steps, the idea of pursuing perfection runs through the whole process to promote the interaction among all steps, so that lean management can play a maximum role in career planning. Moreover, after the completion of a process, the whole process can be evaluated again to find out the shortcomings in the planning process and make timely improvements, so that career planning can become a circular improvement planning mode, which makes personal ideals, Personal benefits and social values can be realized to the maximum extent in career planning, and career planning can get the best feedback on efficiency, time, quality, flexibility, continuous improvement, cost, environment and other multi-dimensional factors.

4. Research on the Influence of Lean Management on the Career Planning of Chinese Local University Students

This survey randomly selected 216 students who majored in Industrial Engineering from the University of Shanghai for Science and Technology, 216 questionnaires were actually sent out, 212 valid questionnaires were collected, and the effective rate of the questionnaire was 98.14 %. The questionnaire investigated the influence of lean management thinking on students ' academic planning from five aspects: basic information, personal career planning status, the influence of lean management thinking on career planning, the influence of lean thinking on the cultivation of working ability, and the influence of industrial engineering on students ' academic planning and career planning.

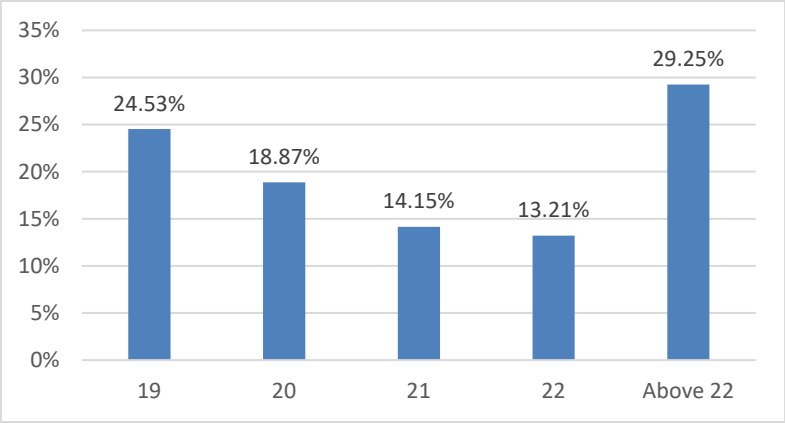

Figure 3: Age distribution map of respondents.

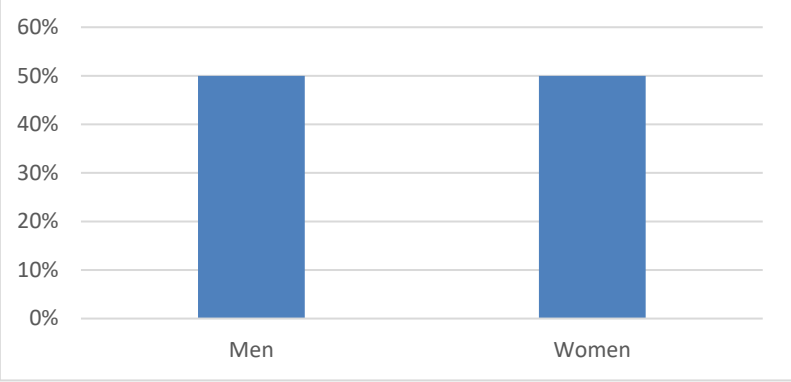

Figure 4: Gender distribution map of respondents.

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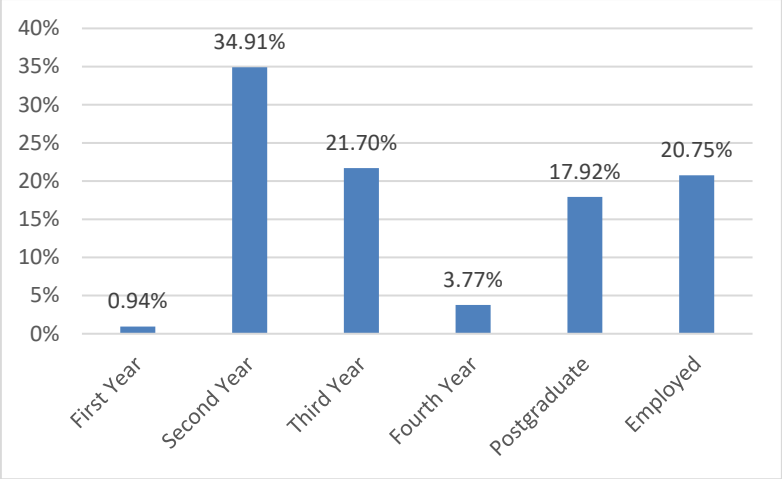

Figure 5: Survey grade and employment status distribution map.

As Figure 3 Figure 4 and Figure 5 show, the questionnaire covers a wide range of students age and gender. Figure 5 shows that 34.91% questionnaire are the second year students, 21.7% are the third year students, 3.77%are the fourth year students, 17.92% are postgraduate and 20.75%are employed. The questionnaire mainly covers sophomores, juniors, and part of the employment group, which has a certain universality and can reflect the career planning ability improvement trend of different age groups, different genders, and different career stages along with lean thinking learning.

Table 1: Whether respondents think lean management (industrial engineering) thinking has a positive impact on career planning.

Options	Subtotal	Proportion
Yes	196	92.45%
No	16	7.55%
Valid number	212	

In Table 1, 196 people, accounting for 92.45%, clearly believe that lean management thinking has an important influence and function on career planning. It is obvious that lean management thinking not only provides students with professional knowledge learning but also provides feasible theoretical methods and a reference basis for career planning.

Table 2: The respondents ' cognition of self-career planning.

Questions\Options	1	2	3	4	5
Can use lean management thinking to analyze the employment market and their own employment advantages	12(5.66%)	34(16.04%)	46(21.7%)	64(30.19%)	58(26.42%)
Have a clear plan for your career	16(7.55%)	20(9.43%)	62(29.25%)	66(31.13%)	48(22.64%)
Have favored Enterprises or positions	26(12.26%)	30(14.15%)	46(21.7%)	52(24.53%)	58(27.36%)
Have a clear understanding of the college students ' employment market	14(6.6%)	34(16.04%)	56(26.42%)	58(27.36%)	50(23.58%)
Have a target employment industry	18(8.49%)	28(13.21%)	38(17.92%)	62(29.25%)	66(31.13%)
Be able to objectively treat their own employment conditions	8(3.77%)	22(10.38%)	48(22.64%)	68(32.08%)	66(31.13%)

As Table 2 shows, 80 % of subjects think that they can clearly explore their own employment advantages, understand the employment market, and have clear ideas in various career planning. This reflects that industrial engineering students have a clearer plan for their future careers after learning lean management thinking. In the learning process, lean management is not only a professional skill with employment competitiveness, but also an advantage for helping students ' career planning, which

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provides support for subsequent research.

Table 3: The respondents ' evaluation of the impact of lean thinking on professional ability.

Questions\Options	1	2	3	4	5
Planning ability	8(3.77%)	12(5.66%)	28(13.21%)	72(33.96%)	92(43.4%)
Thinking ability	4(1.89%)	8(3.77%)	46(21.7%)	78(36.79%)	76(35.85%)
Communication ability	6(2.83%)	28(13.21%)	48(22.64%)	66(31.13%)	64(30.19%)
Innovation ability	6(2.83%)	18(8.49%)	62(29.25%)	62(29.25%)	64(30.19%)
Coordination ability	4(1.89%)	10(4.72%)	44(20.75%)	76(35.85%)	78(36.79%)
Analysis ability	4(1.89%)	4(1.89%)	34(16.04%)	84(39.62%)	86(40.57%)
Application ability	4(1.89%)	8(3.77%)	46(21.7%)	66(31.13%)	88(41.51%)

As Table 3 shows, more than 90% of the respondents believe that lean thinking has or has a significant role in improving students' planning ability, thinking ability, communication ability, innovation ability, coordination ability, analysis ability and application ability, which shows that lean thinking is of great significance in improving students' work skills and meet the comprehensive thinking, the ability to analyze things and coordination capacity required by career planning which provides the ability improvement and training for career planning and employment.

Table 4: Whether respondents can use lean management thinking to plan in work and study.

Options	Subtotal	Proportion
Yes	164	77.36%
No	48	22.64%
Valid number	212	

For the ability to apply lean thinking planning in work and study, 164 students think that lean thinking has a significant effect, accounting for 77.36 %. It is obvious to find that lean thinking has a significant effect on university students ' academic career planning. It provides a powerful thinking help for university students to clarify their career ideas and prepare for employment. It also reflects that lean thinking is a practical and applied subject, which can become a practical case in university students ' career planning education.

Table 5: Whether respondents can use lean management thinking to optimize learning and work efficiency.

Options	Subtotal	Proportion
Yes	172	81.13%
No	40	18.87%
Valid number	212	

In Table 4 and Table 5, a total of 164 people, 77.36 % and 172 people, 81.13 % believe that lean thinking can be smoothly applied to work and study, improve work efficiency, and have a significant help in the rational planning of daily work. It proves that the use of the five principles of lean thinking can effectively improve learning efficiency and improve the planning ability in learning and work.

Based on the above investigation, we found that lean management thinking can improve students ' learning efficiency, improve students ' comprehensive planning ability, cultivate students ' self-awareness ability and improve the understanding of the employment market so that students ' ability in efficiency, time, flexibility and other dimensions can be comprehensively improved, which is helpful to improve their career planning ability and plays a guiding role in university students' career planning. Most of the subjects think that lean management thinking plays a positive role in their career planning, including the training of professional skills, the comprehensive planning of academic career, the transition planning of career and academic career, as well as in the employment market. They can clearly understand their own employment conditions, and objectively view the employment market, and after learning lean management thinking, the subjects think that they have improved their planning ability, thinking ability, communication ability and so on. At the same time, they have improved their planning ability for learning and work, which has a certain positive impact on career planning.

5. Thinking and Enlightenment

University students ' career planning education is of great significance to university students ' career choice, career planning, academic planning and the creation of talent development. Through the introduction of lean management thinking in the process of education, the five principles of lean

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management thinking ' value, value stream, flow, pull, perfection ' are used to make the abstract and theoretical career planning education concrete, which is convenient for students to understand and provide theoretical guidance for students ' career planning. By comparing the methods and principles of career planning and lean management thinking, this paper puts forward that lean management has a positive impact on goal setting, environmental analysis, problem observation, ability improvement and circular dynamic career planning. According to the research on the University of Shanghai for Science and Technology students, it is concluded that in the learning process of lean management thinking, lean thinking has a positive impact on all aspects of professional ability such as planning ability, thinking ability and communication ability. It has a positive significance for students to improve their learning efficiency and work efficiency in the future, and promotes the improvement of career planning ability. With a more comprehensive understanding of self-cognition and the job market environment, they can objectively understand the employment environmental conditions and provide a prerequisite guarantee for reliable planning. Therefore, this paper believes that the introduction of lean management thinking in career planning education can effectively help students improve their career planning ability and realize the effective planning and implementation of university students' future career development path.

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