

The Exploration and Practice of the Construction Path of Female Engineering Students' Employment Confidence

Xi Zhao

The School of Architecture and Civil Engineering, Huizhou University, Huizhou, China

zhaoxi_0523@163.com

Abstract. In order to solve the employment pressure and psychological dilemma faced by female engineering students, based on the theory of Nel Noddings care circle, following the spiraling upwards curve law, this paper explores the construction path of employment confidence for female engineering students in practice on the four levels of Individual, interpersonal, academic and achievement confidence. Following the logic approach of knowledge, emotion, intention and action, help engineering girls break through multiple self-limitations, gradually build up appropriate employment confidence and cognition. The practices of collaborative innovation of employment guidance, professional teaching and psychological education in universities with systematic thinking can further implement the goal of moral education.

Keywords: female engineering students; employment confidence; the theory of Nel Noddings circle.

1. Introduction

According to a report titled "The new power of women in science and technology" in 2016, 76% of Chinese female students aged 15 to 19 study science and engineering, ranking first in the Asia-Pacific region [1]. From the perspective of time span, this group of female students overlaps with a high proportion of female engineering university students who are currently facing employment difficulties. It cannot be denied that this special group, which is not a minority, are bearing more heavy employment pressure than other students at the same age. The sources of pressure are multiple. If social, legal, traditional stereotypes are defined as external stress, the work of this paper is carried out from the inside out under the scope of the ability of ordinary educators. Starting from the internal psychological conflict of these engineering girls, we help them on the four levels of individual, interpersonal, academic and achievement confidence in daily student work, according to the logic of the unity of knowledge, emotion, intention and action, to establish a positive and developmental cognition, breakthrough multiple self-limitations, and gradually establish appropriate employment confidence. It can be said that this is a psychological path to open up their 'last kilometer' of career development.

2. Care Circle theory : the foundation of the path

The caring circle theory was put forward by American educator Nel Noddings, which fully considers the thinking way of women based on emotional experience, and believes that a field of concern should be established first, taking oneself as the starting point, and then expanding to other persons, nature, society, knowledge, ideals and other broader categories to form a larger circle. [2-4] It can be expressed by the formula as follows :

$$A = [(A_1, B), (A_2, C), (A_3, D), (A_4, E), (A_5, F), \dots]$$

In this formula, Letter A represents the ego before a certain moment, and letter B, C, D, E, F, etc., represent various other things. The formula shows that self is the starting point and component of relationships, and the growth occurs in the continuous encounter between the individual and others. Specific to students, this is a process of gradually cultivating on their self-identity, happiness, and ultimately overall development. This is similar to our exploration in terms of research objects and objectives, which can also play an important reference role on research methods.

Literally, the word "circles" reveals the shape maintained by the research object due to centripetal force, and then the characteristics of hierarchical differentiation. Fei Xiaotong, a famous Chinese sociologist, put forward a similar concept on the pattern of difference sequence. [5] He believed that the presentation of Chinese social relations is also based on oneself as a center, like water ripples, which is pushed farther and farther away, producing different circles according to the changes of space-time environment. In addition, some scholars believe that the volatility of the circle structure makes it constantly superimpose and improve the overall level in the process of expansion, and finally reach the "circle coupling" [6]. All the theories and researches above would have guiding value for the construction of employment confidence.

3. Spiral rise : the trajectory of the path

The establishment process of engineering female college students' employment confidence is divided into four circles: individual, interpersonal, academic and achievement confidence according to the continuity of our goals. Starting from self-cognition, they will gradually establish good interpersonal relationships, objective professional cognition and high value sense of serving the society, which will help them break through barriers, expand psychological comfort zones, and then stimulate employment confidence and potential.

As shown in Figure 1, this self-developing path as a whole constitutes a well-like shape, which is extended and reinforced, presenting a more open space at the exit. The spiral upwards curve vividly depicts the process of jumping out from the 'wells' of gender stereotypes and self-limiting, expanding the perspective of self-cognition and building employment confidence. Frederick Engels described spiral rise as a form of development caused by contradiction or negation of negation, [7] reflecting the unity of progress and twists in the development of things. The contradiction here is mainly between the self-limitation and self-realization of engineering girls. The progressiveness is reflected that in each stage of "individual, interpersonal, academic and achievement confidence", we constructs these girls' employment confidence on a new level. The twists are reflected in the process of psychological education, which will inevitably exist temporary pause or regression. For example, in the discussion on professional identity, some deviations of self-cognition may be touched again, and the relationship between 'I and myself' may be dealt with in a backward way. It seems to be a backward step, but in fact it is another sublation and qualitative change, which can make this forward track more clear and solid.

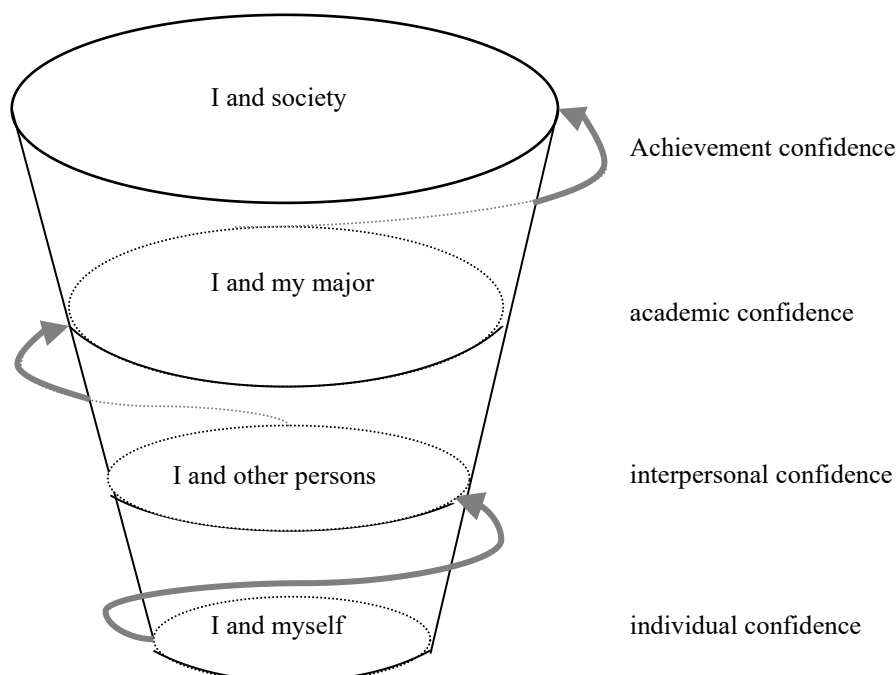


Fig.1 The construction track of employment confidence

4. Stepwise compaction : the structure of the path

Self-confidence is a very complex psychological system, which is not only a stable personality trait, but also affected by specific situations. The four aspects in this paper are interrelated and transformed as a whole. Just for the expression convenience, the discussion is separate as follows.

4.1 Individual confidence

The relationship between persons and themselves is very important in everyone's life, which is located at the bottom of the construction trajectory. The better the relationship at this level is established, the more inner harmony people have, the greater self-driving force is, thus the greater the speed and intensity of the upward and outward expansion of the trajectory.

The work of individual confidences start with self-cognition, which release the imprisoned self of engineering girls and awaken their self-consciousness. It especially emphasizes the positive cognition of their own gender, as well as the evaluation and emotional experience of one's own ability and value resulting from it. "I'm a... ", which was a discussion activity in the steering group, inviting female engineering students to describe themselves in terms of roles, tendencies and traits. Obviously, the words such as "passive", "quiet", "undetermined" and so on became high-frequency words in their "self story". As Simone de Beauvoir said, "Women are not born, but made" [8]. To a large extent, these solidified self-understanding is implanted into women's thinking in order to meet some social needs. These descriptions almost become a definition based on which girls build their self-image. We further discuss that when a person is equivalent to a fixed conceptualized ego, it is difficult to see alternatives. The relational framework here seems to be "I = conceptualized ego" and its derivative, "changing conceptualized ego = eliminating me" [9]. People always tend to protect the conceptualized ego, and the events that may threaten or change the conceptualized ego will stimulate strong emotions, lead to a high degree of empirical avoidance, and make people more resistant to change, thus creating a kind of imprisonment. For example, if a female engineering student believes that she is passive, it will be difficult for her to objectively evaluate her occasional active behaviors. If she thinks she is incompetent, she has little chance to face up to her strengths. Therefore, what we need to do is to ease the boundaries of the ego, collapse the rigid and narrow psychological response mode, and support higher-dimensional and more flexible ego cognition for engineering girls along with the continuous change environment (time, space and object). This process can be shown in Figure 2. We believe that having good self-relationships is an ability that can be learned just like muscles. And the first point is to learn knowing yourself in thinking, so that you can pursue your goals more clearly and bravely, and further create different possibilities. It should be pointed out that self-cognition is a continuous process, and not an end-point thing. In Figure 2, we use the dotted line to indicate this ever-expanding psychological boundary.

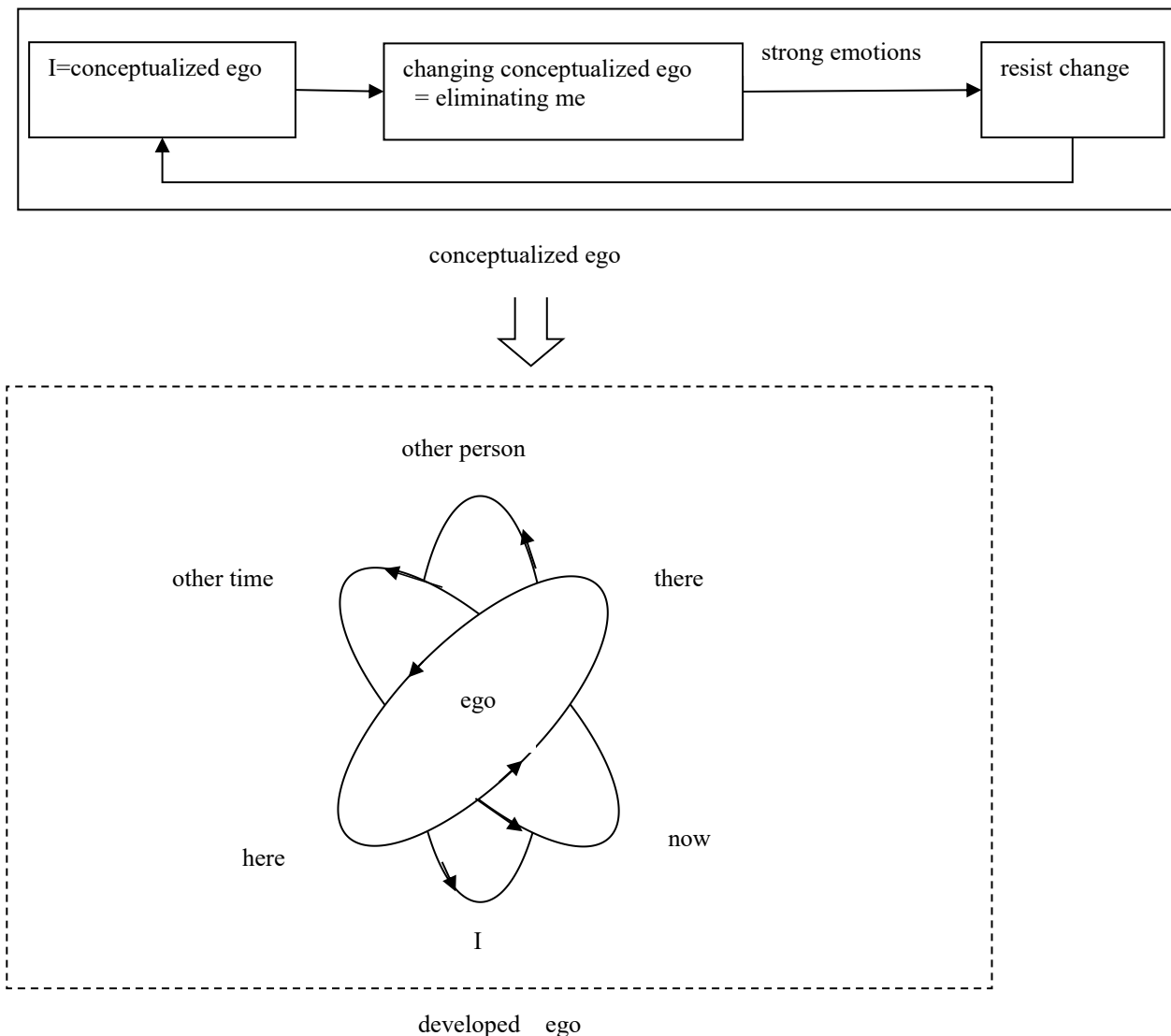


Fig. 2 Transformation of self-cognition

4.2 Interpersonal confidence

"I and other persons" is located in the transition layer of employment confidence construction trajectory, which formed by the appropriate relationship provides many breakthroughs possibilities in life and plays a significant role in promoting the success.

From the perspective of emotion, we set up a peer growth group for female engineering students by combining the psychological counselors, ideological tutors, and peer supervisors in our university. We strive to provide a safe and acceptable environment, tolerate their anxiety, and help these girls to develop a higher level of psychological suitability that is commensurate with their pursuit of excellence on their career. Such work provides a "petri dish" for them to experience the relationship with others, so that they can start from such groups, to take root, grow, explore, and transform, feedback, and constantly strengthen female students' cognition and security in relationship, aiming at expanding them to a wider range of interpersonal categories ultimately.

4.3 Academic confidence

After the construction of relationships as above, our exploration was further upgraded to the level of "I and my major". It can be said that professional confidence is a key content for young people. It is the most closely related to the topic of this paper, which need to be completed with the condensation and construction of professional will quality.

The main problem faced by female engineering students is that they lack the affirmation of their own profession. They believe that women are more suitable for studying liberal arts or teaching majors. These unexamined stereotypes, like a screen, are placed in their minds, filtering the perception of their abilities; and also like a self-starting program, amplification the short board of external environment and their own capabilities. As a result, a considerable number of female engineering students find it difficult to strengthen their career ambition, and their self-efficacy is obviously weaker than that of male students with the same qualifications. Therefore, improving the girls' objective cognition of engineering major and establishing emotional identity are necessary ways to work at this stage. As shown in Figure 3, professional cognition, identity and mastery together form a "stable triangle" of cognition - emotion -behavior result, which describes the three important aspects of human psychological structure, which are penetrate and preconditions to each other, and constitute a closed loop of continuous improvement of professional confidence through self-iterative development. In order to enable this process, we set up an education team composed of professional teachers, ideological tutors and industry mentors. With the help of the platforms such as industry associations, training bases and alumni associations, many professional lectures and seminars are held. For example, in the topic discussion of "I used to be an engineering girl", the girls interviewed some female teachers and alumni of their major to learn about their ordinary, wonderful, challenging and passionate career growth path, and exchanged opinions about their confusion and growth, thus gained encouragement and firm will to pursue their career dreams bravely. "I think architectural design is a kind of beauteousness," " programming code is my most magical magic," "stop labeling every profession by gender." They said at a group event.

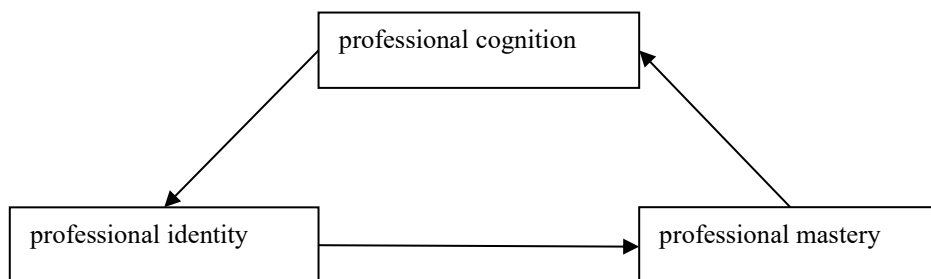


Figure 3. Formation of professional confidence

4.4 Achievement confidence

"I and society" is located in the last layer of students' employment confidence construction trajectory, which is upward radial. It can be said that the work on previous three levels, to a certain extent, clarified the relevant cognition of engineering girls about themselves, relationships and majors. However, if these understandings are not put into practice, not be tested in the real complex work situation, without corresponding exercise and feedback, their value cannot be fully demonstrated. Therefore, on this level, we need to take practice to train engineering girls to jump out of the narrow perspective of students, put themselves in the social ecosystem as social people, transforming confidence into practical action in the broad reality,so as to establish a higher sense of value in serving the society.

So this paper constructs the employment confidence for female engineering students at four levels. For the individual confidence, the main emphasis is on the transformation of self-cognition; In the part of interpersonal confidence, the paper takes the emotional value experience as the basic context; Academic confidence attaches importance to the conciseness of will quality; And in the aspect of achievement confidence, the focus is on the responsibility of action. In the common development of "knowing" and "doing",The paper has a deep grasp of the two important psychological aspects of "feeling" and "meaning", namely, through the unique logical approach of "knowledge, emotion, intention and action ", which complete the narration and witness of the growth of female engineering students.

5. Systematization and networking:the prospect of the path

The employment problem of college students is a systematic project. The special problem of employment of engineering female students is an obvious pain point and an important link in the system. We choose such a starting point and "hyperlink" to place it in a more open system with the collaborative innovation and practice in employment guidance, professional teaching and psychological education. Through such systematic thinking, integrating education resources and bursting into force, we can help young students open up a bright prospect of pursuing their dreams and making contributions for society.

6. Summary

This paper attempts to construct a development path of employment confidence for female engineering students, which is just like building a road in reality. It is necessary to carry out systematic and scientific design and planning of its foundation, route, pavement and road network: On the basis of care circle theory, following the spiral upward trajectory, a solid structure is built step by step in the way of individual-interpersonal-academic-achievement confidence, and this work is integrated into a broader education system by integrating thinking, thus pave a career development road for female engineering students. Further promotes the supply side reform of higher education personnel training, and implements the goal of moral education.

Acknowledgment

The author acknowledges the sponsor of Guangdong provincial department of education for the demonstration class of ideological and political education in undergraduate universities (No.166, 15109220346) and Huizhou university for the student work project " research on the employment psychological dilemma and support path of female university students " (No.9).

References

- [1] The report says China leads the Asia-Pacific in the proportion of female students studying science and engineering [J]. China university students career guide,2017(11):32.
- [2] Nel.Noddings. Educating moral people:a caring alternative to character education[M].New York:Teachers college press,2002:13-58.
- [3] Hou Jingjing.The review and enlightenment of Nel Noddings' caring education theory[D]. Nanjing: Nanjing normal university 2005:34-53.
- [4] Wang Min. The Enlightenment of care theory of Nel Noddings to ideological and political education of college students [J]. Guangdong education. exploration of ideological education in universities,2021 (7):16-21.
- [5] Fei Xiaotong. From the soil—the foundations of Chinese society [M].Chengdu:Tiandi press,2020:37-49
- [6] Xing Wenli, Pei Limei. Circle-Layer cooperative education: a new model of ideological and political education of graduate courses [J]. Education science, 2021,33(9):29-35.
- [7] Frederick Engels. Dialectics of nature [M].Beijing: People's publishing house,2018:28-38.
- [8] Simone de Beauvoir,The second sex[M].Beijing:China book press,1998:309.
- [9] Steven C. Hayes,Kirk D. Strosahl ,Kelly G.Wilson.Acceptance and commitment therapy:the process and practice of mindful change[M].Beijing:Intellectual property publishing house,2016:75-84.