



Studies on Professional Identity of Female University Students of Science and Engineering

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Abstract: Relevant studies indicate that the proportion of female students of science and engineering is gradually increasing in some universities in China. Gender positionality, especially students majoring in science and engineering, will affect their attitude towards professional identity to a certain extent. With investigation and analysis regarding their professional identities of female undergraduates of science and engineering, this article could be useful in providing some suggestions for studying social development in China.

Keywords: Science and Engineering; Higher Education; Professional Identity; Major Issues

1. Introduction

Nowadays, the level of science and technology has been increasing with the development of times. Meanwhile, many industries are also in processes of transform and upgrade with increasing demands for science and engineering professionals. In order to meet the needs of social development, colleges and universities in China are expanding their enrollment in science and engineering. Many high school students are more inclined to apply for science and engineering majors.

2. Current proportion of male and female undergraduates of science and engineering

With the continuous development in China, lots of traditional concepts regarding women are abandoned and there is increasing number of female receiving higher education in a higher level. Currently, the proportion of male and female undergraduates of science and engineering is gradually getting to balance as much more female students choose to study relevant majors. Research data indicate that this change is very astonishing that the number of female students enrolled in science has reached 45.39%, and 36.11% in engineering in 2020.

3. Social development prospect of science and engineering specialty in the current and future

Recently, great achievements have been made in technology and construction in China, which requires the effort and support from massive high-level professionals. Therefore, science specialties, compared with art specialties, would generally have much broader social development prospect as well as jobs opportunities for the higher employment demands. The followings are analysis of three popular majors.

3.1 Aeronautics and astronautics

This major covers study of performance, structure and motion of aircrafts to meet the urgent need for high-quality professionals due to the fast development in aeronautics and astronautics in China. Moreover, professionals are also needed in many other industries such as ships, transportation, civil aviation, information, energy. Because knowledge in this major is highly specialized, which cannot be replaced by other specialties, this major has a promising employment

prospects, and there are no limitation on women.

3.2 Software engineering

It is of high requirements for professionals majoring in software engineering, as the development of the Internet, big data and artificial intelligence in China. Graduates of software engineering could be engaged in software development, design and application in higher education, software companies, research institutes, and enterprises, etc. Generally, they will receive ideal salary and high promotion potential.

3.3 Information and communication engineering

This major covers studying knowledge related to satellite, Internet communications, optical and mobile communications and etc. Equipment operators, suppliers, enterprises and institutions, network service companies and so on, for example, need a large number of professionals who are mainly responsible for network construction and operation and maintenance, communication technology support and other work. This major includes a wide range with relatively fast technology renewal, which means the employment prospect is good.

4. Current professional identity of female undergraduates of science and engineering

In order to have deep analyses of current professional identity of female undergraduates of science and engineering, the authors conducted a survey by means of interviews and questionnaires[1]. The results indicate that female students recognize their professional identity in average level and they are generally not interested in studying and spending their time in science and engineering. Among them, 34% students have low recognition of their specialty and around 41% students are in average level. For those female students who have low agreement hold that learning interests, employment pressure and interpersonal relationships are the main factors affecting their professional identity. Being critical subjective mentality, high-level recognition of professional identity could offer great support in helping students improve their enthusiasm, initiative and learning effect.

5. Factors affecting professional identity of female undergraduates of science and engineering

(1) Some female undergraduates have low interest in their specialties.

Generally, most male students choose majoring in science because their thinking mode trends to be rational. While females tends to choose liberal arts courses because they are more sensible and perceptual. However, some female students can only be forced to choose a science and engineering major that they are not interested in due to the influence of factors, such as employment pressure, social demand, people's recommendation. Interest is the most critical driving force of learning. Once students are not interested in chosen majors, learning process becomes extremely boring, which could greatly decrease student's professional identity.

(2) Nowadays, female has quite high social pressure, which limits the future development of female students in science and engineering.

Modern education brings more female step into every aspect of social construction development. However, career development is still in disadvantages and has barriers in some industries for women, due to the Chinese traditional concepts, gender culture and failure to take their gender advantages after working. Besides, because of the physiological characteristics of female, their learning ability and speed is lower than that of male. Society, however, does not put up with girls. For female undergraduates of science and engineering, studying the same subjects could put them in greater psychological pressure, reducing their professional identity^[2].

(3) Some female undergraduates choose less popular majors, and the future employment is not idea.

Currently, lots of college students cannot choose their majors by only considering their own interest. For most times, they need to take comprehensive social demands and employment situation into consideration. Although there

is increasing high demands for professionals of science and engineering, it is still hard, or has higher employment threshold for those less popular majors. Some students choose these unusual specialties out of interest, but they still worry about further prospective, which has a negative impact on professional identity to some extent.

6. Strategies to improve professional identity of female undergraduates

6.1 Enhance higher education reform in country-level

Plenty of female high school students who have little knowledge of learning content of specialties, and they only make their decisions based on the name of majors, which is quite blindness. Professional identity could be highly decreased once they made the wrong judgments. Therefore, it is hoped that high schools can organize special voluntary consultation and explanation activities for students before they fill in volunteers, including listening to and answering their questions and helping students choose the way of life in the future. Besides, colleges and universities should relax limits of changing majors. For students who have just entered colleges and universities, everything is vague and fresh. They will only know what major is really suitable after spending a period of time understanding and learning. Professional identity can be effectively enhanced through open and reasonable major exchanges, for female college students of science and engineering^[3].

6.2 Provide students with professional psychological education guidance

Some female undergraduates could feel uncomfortable toward the way of college study. Some may have poor psychology because of a series of reasons, major's adjustment for example, and affect their own learning process, or even reduce their professional identity. In view of this problem, universities should set up psychological counseling rooms and employ professional psychological counselors to provide educational guidance for female college students to help them set up a good learning attitude and enhance their professional identity.

6.3 Put professional knowledge to use and meet the needs of female undergraduates of science and engineering

Colleges and universities should give full play to teacher's specialty when setting up science and engineering courses to attract the interest of students. In addition, teachers need to optimize and adjust their teaching methods, so that they can be more easily accepted and understood by female students, and teachers need to understand the learning needs and characteristics of female students to greatly improve the professional identity of female college students of science and technology.

7. Conclusion

Conclusions can be drawn based on the above analysis that the current employment prospect for students majoring in science and engineering is very promising in China, and there are increasing students choosing science major, among which, female students, generally speaking, due to various factors, have different attitudes toward their professional identity. In order to encourage female students of science and engineering to be better involved in their studies, universities should make a series of improvements and provide much more support from comprehensive aspects, and help enhancing student's professional identity and making achievements in studies.

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