

## **A Research of Perceived Academic Self-efficacy of Students Majoring in Environment Design**

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**Abstract:** A total of 397 students majoring in environment design were investigated by questionnaire method to study their perceived academic self-efficacy. The academic self-efficacy scale compiled by Liang Yusong (2000) by referring to the research conducted by Pintrch and DeGroot was adopted. The reliability and validity of the scale was 0.834, and the Alpha coefficient was between 0.8 and 0.9, indicating that the reliability is acceptable. The research results showed that the overall academic self-efficacy of students majoring in environment design is on the high side, which is significantly correlated with serving as class leader and the grade; no significant difference was found in gender, student origin and being the only child. The investigation of perceived academic self-efficacy is helpful to predict the good learning behavior of students majoring in environment design.

Self-efficacy is a concept proposed by Bandura, an American psychologist, which represents individuals' self-confident degree in the ability to successfully complete an activity. It can be divided into general self-efficacy, domain self-efficacy and specific task self-efficacy. Thereinto, general self-efficacy refers to individuals' overall self-confidence in coping with different environment challenges or facing new things. Some experts have interpreted self-efficacy as the subjective judgment made by people on whether they can successfully obtain a certain achievement or execute a behavior. General self-efficacy can affect the thinking model, thereby affecting the acquisition and performance of behaviors. For example, people with high perceived self-efficacy have high self-expectations and are able to optimistically meet opportunities and challenges, they will not exaggerate difficulties or give up on themselves, they keep calm when problems come up and can allow full play to their wisdom and skills; while people with low perceived self-efficacy can easily become sentimental, panic and bashful, which can interfere with the execution of knowledge and skills. In order to learn the level of general self-efficacy of students majoring in environment design, at different grades and of different genders, to formulate targeted training and educational methods, and to promote the healthy growth of college students, this research investigated college students by using academic self-efficacy scale, which is reported as follows.

### **1. Research Hypotheses**

The overall level of academic self-efficacy of students majoring in environment design is high, and differences were found in gender, major, grade, student origin, whether only child or not and whether serve as class leader or not.

#### **1.1 Research Objects**

In this research, students majoring in environment design of Tianjin Agricultural College were taken as the objects, and the questionnaire adopted group testing with class as the unit. The copies of questionnaire were issued to 397 students, and 387 were valid. The effective pass rate reached 97.48%.

The valid questionnaire copies cover 116 boy students and 271 girl students, thereinto, 77 were

freshmen, 109 were sophomores, 105 were juniors and 96 were seniors; 115 of the students came from rural areas, 100 from the county and 172 from urban areas; 208 belong to the only-child generation, 179 were non-only children; 155 were class leaders, and 231 were non-class leaders. Hence, a total of 387 students were included as the research objects. See Table 1 for the current situation, characteristics and mutual relation between two variables.

Table 1 Basic information of the research objects

|                                     |                | Number of Objects |
|-------------------------------------|----------------|-------------------|
| Gender                              | Male           | 116               |
|                                     | Female         | 271               |
| Major                               | Arts           | 106               |
|                                     | Science        | 281               |
| Grade                               | Fresh year     | 77                |
|                                     | Sophomore year | 109               |
|                                     | Junior year    | 105               |
|                                     | Senior year    | 96                |
| Student Origin                      | Rural areas    | 115               |
|                                     | County/Town    | 100               |
|                                     | Urban areas    | 172               |
| Only child                          | Yes            | 208               |
|                                     | No             | 179               |
| Serve as student/association leader | Yes            | 155               |
|                                     | No             | 231               |
| Total                               |                | 387               |

## 1.2. Research tools

The academic self-efficacy scale compiled by Liang Yusong (2000) by referring to the research conducted by Pintrch and DeGroot was adopted. The scale divides academic self-efficacy into two dimensions of learning ability self-efficacy and learning behavior self-efficacy, each dimension has 11 questions, with a total of 22 questions. The five-grade marking system was adopted as the marking method. The higher the score is, the higher the perceived self-efficacy will be. The reliability and validity was 0.834, and the Alpha coefficient was between 0.8 and 0.9, indicating that the reliability is acceptable.

## 2. Research Status and Analysis

### 2.1. Integral analysis of perceived academic self-efficacy of students majoring in environment design

In order to investigate the overall situation of perceived academic self-efficacy of students majoring in environment design, this research conducted descriptive statistics on the dimensions and total points of the academic self-efficacy scale of the major, as shown in Table 2 below.

Table 2 Overall situation of perceived academic self-efficacy of students majoring in fine arts

|        | Learning Behaviors | Learning Ability | Total Points of Perceived Self-efficacy |
|--------|--------------------|------------------|---|
| M ± SD | 35.215 ± 4.765     | 38.863 ± 5.950   | 74.076 ± 9.526                          |

Since the academic self-efficacy scale adopts a five-level scoring system, the total points of academic self-efficacy range from 22 to 110. When students choose "strongly disagree" and "comparatively disagree", the total points of their academic self-efficacy are between 22 and 44, which is regarded as low-level of self-efficacy; when students choose "difficult to determine", the total points is between 44 and 66, which is regarded as medium level of self-efficacy; when students choose "comparatively agree" and "totally agree", the total points is between 66 and 110, which is

defined as high level of self-efficacy. It can be seen from Table 2 that the perceived self-efficacy of students majoring in environment design is in the high level.

Meanwhile, selecting "strongly disagree" and "comparatively disagree" in the dimension of learning behavior is defined as weak learning and behavior ability; selecting "difficult to determine" is defined as medium learning and behavior ability; selecting "comparatively agree" and "totally agree" is defined as strong learning and behavior ability. In the dimension of learning attitude, selecting "strongly disagree" and "comparatively disagree" is defined as negative learning attitude; selecting "difficult to determine" is defined as moderate learning attitude; selecting "comparatively agree" and "totally agree" is defined as positive learning attitude.

## 2.2. The difference of perceived academic self-efficacy between environment design students in terms of whether serve as class leaders or not

Table 3 provides the differences in the mean value and standard deviation of environmental design students in various dimensions, total points of self-efficacy and whether serve as class leader.

Table 3 The differences of academic self-efficacy between environment design students in terms of whether serve as class leaders or not

| Dimension                     | Serve as Class Leader | N   | M      | SD    | t      |
|-------------------------------|-----------------------|-----|--------|-------|--------|
| Learning ability              | Yes                   | 155 | 39.613 | 6.393 | 1.963* |
|                               | No                    | 231 | 38.372 | 5.604 |        |
| Learning behavior             | Yes                   | 155 | 35.251 | 4.787 | 0.171  |
|                               | No                    | 231 | 35.173 | 4.766 |        |
| Total Points of Self-efficacy | Yes                   | 155 | 74.871 | 9.792 | 1.340  |
|                               | No                    | 231 | 73.546 | 9.378 |        |

Note: \* represents  $p < 0.05$ , \*\*represents  $p < 0.01$ , two-sided test

It can be seen from Table 3 that for the student group majoring in environment design, learning ability has a significant difference in whether serve as class leader or not. Compared with those students who are not class leaders, class leaders have positive learning ability. In terms of learning behavior, there is no significant difference in whether serve as class leader or not. In terms of the total points of perceived academic self-efficacy, no significant difference was found in whether serve as class leader.

## 2.3. The difference of perceived academic self-efficacy between environment design students in terms of grade

Given that previous researchers found that academic self-efficacy shows differences in grade, the present research made a comparative analysis of grade difference. The analysis results are shown in Table 4.

It can be seen from Table 4 that there are significant differences in the total points of academic self-efficacy and learning ability of environmental design students in terms of grade. In terms of the total points of academic self-efficacy, senior students scored significantly lower than students in other grades, and the same is true for learning ability. Thus it can be concluded that the perceived academic self-efficacy of senior students is relatively low.

The data analysis by using SPSS 17.0 showed that in addition to grade and whether serve as class leader or not, the academic self-efficacy of environmental design students has no significant difference in gender, major, student origin and whether only child or not.

Table 4 The difference in academic self-efficacy of Environmental design students in terms of grade

|   | Grade          | N   | Mean value | Standard deviation | f       | Post hoc test |
|---|----------------|-----|------------|--------------------|---------|---------------|
| Learning ability                        | Fresh year     | 77  | 39.649     | 5.907              | 4.232** | ①>④           |
|   | Sophomore year | 109 | 39.229     | 5.352              |         | ②>④           |
|   | Junior year    | 105 | 39.581     | 5.378              |         | ③>④           |
|   | Senior year    | 96  | 37.031     | 6.863              |         |               |
| Learning behavior                       | Fresh year     | 77  | 35.312     | 4.846              | 0.745   |               |
|   | Sophomore year | 109 | 35.257     | 4.088              |         |               |
|   | Junior year    | 105 | 35.629     | 5.221              |         |               |
|   | Senior year    | 96  | 34.635     | 4.908              |         |               |
| Total points of perceived self-efficacy | Fresh year     | 77  | 74.961     | 9.238              | 2.873*  | ①>④           |
|   | Sophomore year | 109 | 74.486     | 8.318              |         | ②>④           |
|   | Junior year    | 105 | 75.210     | 9.482              |         | ③>④           |
|   | Senior year    | 96  | 71.667     | 10.735             |         |               |

Note: \* represents  $p < 0.05$ , \*\*represents  $p < 0.01$ , two-sided test

### 3. Discussion

#### 3.1. Integral analysis of perceived academic self-efficacy of environment design students

It can be seen from the integral analysis of perceived academic self-efficacy that academic self-efficacy can be divided into "high academic self-efficacy", "moderate academic self-efficacy" and "low academic self-efficacy". The overall perceived academic self-efficacy of environmental design students is high, and the score in two dimensions of learning ability and learning behavior is high as well. The learning ability of environment design students is superior to their learning behavior, indicating that the students' academic self-efficacy is high on the whole.

The reason for this situation may be that the students chose the major they are interested in according to their will. They have strong initiative of learning and few of the students are passive in learning the major. Because the design results of environmental design major have strong subjectivity, every student considers that his or her works are good in terms of finishing study, besides, they have strong self-confidence and think that their academic performance is excellent. In terms of professional features and students' personality, since design requires rich imagination and creativity, environmental design students believe that their personality is strong and they should manifest distinctive characteristics in completing academic works. Thus, those students think that their learning ability is stronger than their learning behavior, and they scored high in two dimensions of academic self-efficacy.

#### 3.2. The relationship between perceived academic self-efficacy of environment design students and whether serve as class leader

This research showed that there were significant differences between the self-efficacy of learning ability of environmental design students in terms of whether serve as class leader, and no significant difference was found between the self-efficacy of learning behavior in terms of whether serve as class leader, and between the total points of students' academic self-efficacy in terms of whether serve as class leader. This is consistent with most research conclusions. The research conducted by

Xing Li (2016) showed that college students serving as class leaders have strong abilities in various aspects than average college students, and their academic record is likewise better.

Some studies have shown that the above situation is related to the students' success-failure experience, vicarious experience and verbal persuasion (Wang Yucheng, 2012). In the process of class management, class leaders achieve the expected effect through their efforts, thus their perceived self-efficacy is enhanced, and they move forward to higher goals. Hence, the real experience of success and failure can produce strong perceived self-efficacy. Bandura (1877) proposed the behaviors of examples, that is, witnessing or observing the successful behaviors of others can enhance the self-confidence and self-efficacy of the observer. Through observation, class leaders can see that students with the same personality as their achieved success and enhanced individual self-efficacy. In terms of verbal persuasion, the teachers communicate more frequently with class leaders. Before fulfilling a new task, class leaders may doubt about their own ability. After verbally persuaded by the teacher, they can generate the confidence in completing the task, and thus their self-efficacy can be enhanced. In this way, a significant difference emerged in self-efficacy of learning ability between class leaders and those who are not.

### **3.3. The relationship between perceived academic self-efficacy of environment design students and grade**

The data analysis showed that there are significant differences in self-efficacy of learning ability in terms of grade. Also, in terms of grade, there are significant differences in total points of academic self-efficacy, but there is no significant difference in self-efficacy of learning behavior.

Thereinto, in terms of self-efficacy of learning ability, senior students scored the lowest and freshmen scored the highest. The self-efficacy of learning ability is ordered from high score to low as follows: freshmen scored higher than junior students, followed by sophomore students, and senior students scored the lowest. The reason is that freshmen' good learning habits in high school are still maintained after the college entrance examination, and when they successfully enter the university, their self-confidence in academic learning rises high. In addition, the course content taught in the freshman year is in the transitional stage from high school basic education to higher education, the students' successful entrance into the university proves their good academic learning ability in high school, so they will produce high perceived learning ability self-efficacy.

The learning ability self-efficacy of sophomore students ranks only second to that of the freshmen. The reason may be that after two years of college life, the students have adapted to the learning habits developed in the university. In addition, the students basically study professional courses in the third year of college. The students majoring in environment design have been very familiar with the features of their major, they have always been interested and confident in mastering professional knowledge, so the self-efficacy of learning ability of sophomore students is second only to that of the freshmen. For senior students, they are about to graduate from the school and enter the workplace, faced with the pressure from writing graduation thesis, work placement and employment, senior students are in a transitional period from school study to work, they will apply the knowledge learned in school to work, and there are too many unknowns, future expectations and realities they have to face in the new work environment; moreover, there are few courses set up in the senior year, and the learning mode changes from the original classroom teaching to social practice. Also, the change of learning mode makes senior students perceive lower learning ability self-efficacy than low grade students.

The total points of academic self-efficacy are the lowest in the senior grade, but junior students scored highest in academic self-efficacy. The total points of academic self-efficacy are ordered a below: junior students scored higher than freshmen, freshmen scored higher than sophomore students, and senior students scored the lowest. After over two years of college life, sophomore students have been accustomed to the campus life and learning style, they have gotten a basic understanding of their major and basically mastered the learning methods of the major. Hence, sophomore students obtained higher total points of academic self-efficacy than students in other grades. In terms of the total points of academic self-efficacy, senior students still scored the lowest,

which is caused by their uncertainty about the future life and the pressure from social practice and employment. In addition, college life is featured by strong autonomy. Some students failed to make rational use of their time and idled away their time, then in the senior year, they suddenly found that they still have a lot of knowledge to learn and realized their gap with the society after social practice and employment interview. Some students even produced anxiety and depressive emotions. This is also one reason for the low academic self-efficacy of senior students.

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