

The Influence of Pad Class on the Academic Self-efficacy of College Students*

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Abstract—The purpose of this paper is to explore the influence of pad class on college students' academic self-efficacy, and to analyze the differences of different types of students in their changes. **Methods:** the pad class was applied in the personality psychology course. Before and after the course, 62 students of applied psychology were surveyed with academic self-efficacy scale. **Results:** firstly, in the total efficacy and learning behavior, the post-test score was significantly higher than the pre-test. There was no significant difference in the learning ability between the post-test and the pre-test. Secondly, there was no significant difference between the male students and female students in the pre-test. In the post-test, the total efficacy of the male students and their scores in both dimensions were significantly higher than that of the female students; the total efficacy of the male students and their scores of the two dimensions in the post-test were significantly higher than those in the pre-test, and the female students' total efficacy score was significantly higher in the post-test than in the pre-test; thirdly, in the pre-test and post-test, there was no significant difference in the total efficacy between introversion and extroversion or between urban and rural students; the post-test scores of introverted and rural students in learning behavior and total efficacy were significantly higher than those in the pre-test, while the post-test scores of extroverted students in learning ability and total efficacy were significantly higher than those in the pre-test, and there was no significant difference of pre-test and post-test between urban and rural students. **Conclusion:** the pad class helps to improve the academic self-efficacy of college students, and there are different changes in the different categories of gender, personality characteristics and source.

Keywords—pad class; academic self-efficacy; personality psychology

I. INTRODUCTION

The pad class is a new teaching model first proposed by Professor Zhang Xuexin of Fudan University in 2014. It is a localized teaching method based on educational psychology. "Pad" refers to the division of teachers and students in class time allocation, including three processes of lectures, internalization absorption, and discussion [1]. The key innovations are: on one hand, after the teacher's framework

teaching, the internalization of the knowledge expansion and application after the class, and on the other hand, it is different from the discussion in the classroom. Previous studies have shown that the application of sub-classroom is reasonable [1]. Firstly, it enhances the initiative of students' learning; secondly, it realizes the transformation of teachers; thirdly, it increases the interaction between students, teachers and students, and fourthly, it pays attention to the different needs of students and improves the accuracy of assessment, and fifthly, it improves the teaching effect. By combing the previous research, two problems are found. First, the research method needs to be improved. Second, the depth and breadth of the research need to be expanded. For example, there is less discussion about self-change before and after the application of the teaching model.

In recent years, with the popularization of mobile phones, the phenomenon of "phubbing" in the classroom is common and its influence on academics has been paid attention to by all walks of life. The study of academic self-efficacy has also been paid attention to [2]. Academic self-efficacy is students' judgment and confidence in whether they can complete academic tasks [3], which affects academic performance and plays a regulatory role in learning [4]. This study explores the changes in college students' academic self-efficacy before and after the implementation of the teaching model by applying the pad class to Personality Psychology, and analyzes the differences in the changes of different types of students, filling in the blank of its application in this course and providing a practical reference for the effectiveness of the reform of pad class.

II. OBJECTS AND METHODS

A. Objects

In the application psychology of a university, the mode of pad class was implemented in the course of "Personality Psychology", with 62 students participating, and the questionnaire was used before and after the implementation of the class, including 26 males and 36 females. Among them, 33 were in rural areas and 29 in urban areas; 35 were introverted people and 27 were extroverted people.

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B. Academic Self-efficacy Scale [5]

The paper used the scale compiled by Liang Yuzhen and it was divided into two dimensions: learning ability and self-efficacy of learning behavior. Learning ability self-efficacy referred to the judgment and self-confidence of students' ability to achieve good grades and avoid poor academic performance in their studies. The self-efficacy of learning behavior referred to students' judgment and confidence on whether they can use effective learning methods to complete learning tasks. There were 11 topics in each dimension, a total of 22 questions, and grade 5 grading method was adopted. Except for the 14th, 16th, 17th, and 20th questions, the rest of the questions were forward questions. The higher the score is, the higher the sense of efficacy will be. The scale Cronbach's alpha coefficient was 0.82.

C. Data Processing

The collected data was input into SPSS 25.0 for T-test analysis.

III. RESULTS

A. Analysis of the Overall Difference in Academic Self-efficacy

Through the paired sample T test (see "Table I"), in the learning behavioral efficacy and total efficacy, the post-test score was significantly higher than the pre-test, and there was no significant difference between the pre-and post-test scores in the sense of learning ability.

TABLE I. OVERALL DIFFERENCES IN ACADEMIC SELF-EFFICACY BEFORE AND AFTER THE TEST

Variable	Pre-test	Post-test	t
Learning ability	34.94±5.59	36.08±5.49	-1.84
Learning behavior	35.64±4.73	36.81±5.10	-2.23*
Total efficacy	70.58±72.89	8.65±9.32	-3.70***

^a. *p<0.05, **p<0.01, ***p<0.001, the same below.

B. Analysis of Differences in Academic Self-efficacy Among Different Categories of Students

1) Analysis of gender differences in academic self-efficacy: The T test found (see "Table II") that there was no significant difference between male and female students in the pre-test. In the post-test, the total efficacy of the male students and their scores in both dimensions were significantly higher than those of the female students; the post-test scores of male students in total efficacy and their two dimensions were significantly higher than those of pre-tests. Female students only had higher post-test scores of total efficacy than total pre-test.

TABLE II. DIFFERENCES BETWEEN MALE AND FEMALE STUDENTS IN ACADEMIC SELF-EFFICACY

		Male (n=26)	Female (n=36)	t
Learning ability	Pre-test	37.45±3.73	34.29±5.84	1.70
	Post-test	40.27±5.66	34.98±4.95	3.07**
	t	-2.82*	-0.96	
Learning behavior	Pre-test	37.64±5.66	35.12±4.38	1.60
	Post-test	39.55±5.68	36.10±4.75	2.06*
	t	-2.86*	-1.53	
Total efficacy	Pre-test	75.09±8.28	69.40±8.45	2.00
	Post-test	79.82±9.39	71.07±8.50	2.97**
	t	-3.67**	-2.44*	

2) Analysis of differences in personality characteristics in academic self-efficacy: The T test found (see "Table III") that there was no significant difference in the efficacy between the internal and external students in the pre- and post-test; the post-test scores of introverted students on learning behavior and total efficacy were significantly higher than those in the pre-test, while the post-test scores of extroverted students on learning ability and total efficacy were significantly higher than those in the pre-test.

TABLE III. THE PRE-TEST AND POST-TEST DIFFERENCES BETWEEN THE INTROVERTED STUDENTS AND EXTROVERTED STUDENTS' ACADEMIC SELF-EFFICACY

		Introvert (n=35)	Extrovert (n=27)	t
Learning ability	Pre-test	35.53±5.98	33.89±4.78	1.02
	Post-test	35.91±6.26	36.37±3.88	-0.29
	t	-0.46	-3.03**	
Learning behavior	Pre-test	35.53±4.59	35.84±5.08	-0.23
	Post-test	36.91±4.87	36.63±5.61	0.19
	t	-2.14*	-0.87	
Total efficacy	Pre-test	71.06±8.94	69.74±8.28	0.53
	Post-test	72.82±9.74	73.00±8.76	-0.07
	t	-2.23*	-3.27**	

3) Analysis of the difference in academic self-efficacy in the student source: The T test found (see "Table IV") that there was no significant difference in the efficacy of urban and rural students between the pre- and post-tests; the post-test scores of rural students in learning behavior and total efficacy were significantly higher than those in the pre-test, and there was no significant difference of pre- and post-test between urban and rural students.

TABLE IV. PRE-TEST AND POST-TEST DIFFERENCES BETWEEN ACADEMIC AND SELF-EFFICACY OF URBAN AND RURAL COLLEGE STUDENTS

		Urban (n=29)	Rural (n=33)	t
<i>Learning ability</i>	<i>Pre-test</i>	34.89±5.60	35.00±5.69	-0.07
	<i>Post-test</i>	35.33±4.54	36.85±6.33	-1.00
	<i>t</i>	-0.55	-1.98	
<i>Learning behavior</i>	<i>Pre-test</i>	35.26±4.78	36.04±4.73	-0.60
	<i>Post-test</i>	35.96±4.97	37.69±5.17	-1.24
	<i>t</i>	-0.95	-2.23*	
<i>Total efficacy</i>	<i>Pre-test</i>	70.15±8.29	71.04±9.15	-0.37
	<i>Post-test</i>	71.30±8.55	74.54±9.94	-1.27
	<i>t</i>	-1.58	-3.57***	

IV. DISCUSSION

A. The Role of Pad Class in Improving Academic Self-efficacy

Through the application of the pad class, students' awareness of learning behavioral efficacy and total efficacy is significantly improved, which is consistent with previous research results [6], indicating that the pad class has been widely recognized by male and female students. The "teaching a man to fish" teaching mode increases the interest of students in learning. Students are willing to pay time and energy for the course, overcome the difficulties and key points of learning, and gradually form the habit of actively researching and finding new knowledge. The pad class emphasizes the internalization absorption after the class and the interaction and discussion between the students, teachers and students, which inevitably promotes the students' learning behavior. They will actively find effective learning methods that meet the task requirements. In the process of teaching, absorption and discussion, the degree of understanding of knowledge has been deepened, and good learning results have been obtained, which has increased students' confidence and judgment in completing their academic tasks. The study also showed that students did not significantly improve their ability to learn. This may be due to the improvement of learning ability can't be accomplished in an action. The students' understanding of their learning ability has not improved significantly with the increase of learning behavior and such changes in beliefs may take longer.

B. The Difference of Academic Self-efficacy Changes in Various Variables

1) *Differences in gender*: In terms of gender, through the teaching of the pad class, the total efficacy of male and female students is improved. Male students are reflected in learning ability and learning behavior, while female students are not reflected in two dimensions. On the whole, male students have higher academic efficacy than female students. There are two reasons for this. First, the performance of

male students in the pad class is more prominent. The discussion across the class is done in the form of groups. In the grouping, the principle of balance between male and female is followed. Due to the effect of the "heterosexual effect", the male students are very active in the discussion. The leaders of the group are mostly males. The males lead the team to share the learning experience and actively discuss the thinking questions. This requires the male students to listen carefully to the teacher's lectures in the class. In the independent study after the class, they should not only read the reading materials but also consult literature, so that they can express their truthful ideas when discussing. This process invisibly increases their confidence that they can better complete their academic tasks. Cast and Burke's research found that successful self-validation can improve self-efficacy [7]. They actively seek effective learning methods to enable them to complete reading notes and thinking questions efficiently, and their learning ability is continuously improved through benign reinforcement, therefore, the sense of self-efficacy of female students has naturally increased a lot. Second, the evaluation criteria for male and female students' academic self-efficacy are inconsistent. Males are not very concerned about the evaluation and achievements of others. They value the expansion of knowledge and the exercise of their abilities. In their evaluation standards, they are satisfied with their learning ability and learning behavior as long as they are similar to other students. However, female students care about a lot of the evaluation of others, and they pay attention to the results. When they evaluate their self-efficacy, they will be influenced by whether the outside world's attitude towards them is positive or not. A lot of research also confirms that females are more pursuing perfectionism and think that their performance has not yet reached expectations. There will be more dissatisfied answers than males, so when the females perform similarly or better than the males in the course, the females' evaluation of self-efficacy will be relatively low. This is consistent with previous studies showing that males have higher academic self-efficacy than females [5], [6], [7], [8].

2) *Differences in personality characteristics*: In terms of personality characteristics, the overall efficacy of introverted and extroverted students is significantly improved through the teaching of the pad class. Introverted students are reflected in the learning behavior, and extroverted students are reflected in the learning ability. It may be because introverted students are more shy and less social, and they may seem uncomfortable in the discussion. However, in order to complete the group task, they still have to work hard to overcome the idea of retreating and try their best to express their opinions. However, they are often dissatisfied with themselves because they are not good at words. Such dissatisfaction will prompt them to learn more knowledge after class, promote their learning behavior, and thus increase their confidence in expressing their opinions,

which is a positive negative reinforcement. Extroverted students are good at social contact with outgoing personality. They like the group discussion. Whether or not they take the internalization process after the class seriously, they will actively share their opinions. In this kind of discussion like "brainstorming", it is easier to stimulate the inspiration of outgoing students, promote their thinking and innovation ability, and build a personalized knowledge system, which not only increases the fun and confidence of learning, but also improves their learning ability. They believe that they can achieve better grades through pad class.

3) *Differences in the source regions*: In the source regions of students, through the teaching of the pad class, the overall efficacy of rural students is improved, which is reflected in the learning behavior. And the improvement of the efficiency of urban students is not great. The reason may be that the students who grow up in the countryside are mostly exposed to the outside world through television and school media. Unlike the students in the town, they often have the opportunity to participate in summer camps and visit museums. The teaching level of teachers in the countryside is also limited, so the new pad class teaching mode is more likely to arouse the interest of rural students, which will increase their action motivation. Rural students will take the initiative to broaden the breadth and depth of knowledge after class. In the discussion in the class, they will be more actively involved in the group, trying to get the spark of knowledge through intense discussion, inspiring their own difficulties and confusion and further clearly constructing knowledge. The increase in these active behaviors will inevitably increase their reading notes and discussion scores and further strengthen their learning behavior, not only achieving the course objectives, but also improving the ability to solve problems and thinking ability, which can make them more confident to believe that they can complete academic tasks with better academic performance, that is, their sense of self-efficacy will be improved. However, the students living in the towns have superior living conditions. They can contact more new things and there is a wider range of what they see and hear. The charm of the pad class teaching model has not been very attractive to them. Their motivation for change in learning behavior is not strong, and their ability to improve their learning is limited. There is no obvious increase in the academic self-efficacy of urban students in the pad class.

V. CONCLUSION

Through the application of the pad class, students have significantly improved their sense of learning behavior and overall efficacy, and there is no significant improvement in the ability to learn; in gender, the total efficacy of males and females is improved, and male students are reflected in their learning ability and learning behavior, while female students are not reflected in two dimensions. On the whole, male students have higher academic efficacy than female students; in terms of personality characteristics, the total efficacy of

the introverted and extroverted students is significantly improved. Introverted students are reflected in the learning behavior, and extroverted students are reflected in the learning ability; in the student source, the total efficacy of rural students is improved, which is reflected in the learning behavior, and the efficiency of urban students don't improve much.

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