

A Study on the Value-added Effect of Teacher Characteristics on Learning Self-efficacy of Higher Vocational College Students in Shandong Province, China

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Abstract:

Learning efficacy is an individual's self-judgment of the success of their learning behavior, and its level directly affects the occurrence of individual learning behavior. As a key element in the teaching process of higher vocational education, teachers' characteristics have a significant impact on students' learning efficacy. Teacher characteristics are the personal qualities that teachers show in the teaching ability, personality charm, and role model of students in the teaching process. Based on the basic concepts of teacher traits and students' learning efficacy, this study explores the differences in teacher traits and learning efficacy among students of different genders, places of origin, majors, and school types, and analyzes the value-added effect of teacher traits on students' learning efficacy. This study can provide a reference for improving the learning efficacy of higher vocational students and promoting the high-quality development of higher vocational education.

Keywords:

Teacher characteristics
Vocational college students
Learning effectiveness

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1. Introduction

In recent years, the problem of students' learning efficacy in higher vocational colleges has attracted the attention of education experts, scholars, and individuals from all walks of life. Studies have shown that individual learning behavior is affected by many dimensional factors, among which learning efficacy is an important variable.

Learning efficacy refers to the individual's self-judgment on the success of their learning behavior, which is not only an important dimension of individual behavioral motivation but also an important factor affecting their choice of learning behavior, learning effort, and learning effect. On this basis, the value-added effect of teachers' characteristics on students' learning effectiveness has

become a topic that people pay attention to, and the research on this has practical significance.

2. Problem of learning efficacy

2.1. Research progress of learning efficacy

Chinese scholars have begun to pay attention to the problem of learning efficacy for a long time, but because of the late start, there is a big gap compared with foreign research. With the deepening of education reform in China, more and more attention has been paid to the problem of learning efficacy in the field of education. At present, domestic research on learning efficacy mainly focuses on the definition of the concept, influencing factors, and influencing effects. Based on previous studies, this study further defines the concept of learning efficacy. From the aspects of gender, student origin, major, and school type, the factors affecting students' learning efficacy are discussed. The influence of teachers' characteristics on students' learning efficacy is analyzed. The study also discusses the value-added effect of teacher traits on students' learning efficacy^[1-3].

2.2. Progress of research on the characteristics of teachers in higher vocational colleges

Teacher trait refers to the personality characteristic with relatively stable psychological characteristics in the teacher's career, which includes the teacher's professional experience, teaching style, and teaching method^[4].

From the perspective of personal factors, some scholars put forward a theoretical model of vocational college teachers' traits, which includes three dimensions: personality quality, educational skills, and professional spirit. Some scholars divide the characteristics of teachers in higher vocational colleges into three dimensions, namely "teaching skills", "teaching style" and "professional spirit", and further put forward four types of teacher trait models in higher vocational colleges^[5-7]. According to the existing research results, most scholars mainly start with the two dimensions of personality characteristics and educational skills, while the research on the characteristics of teachers in higher vocational colleges focuses on the two dimensions of teaching style and professionalism. In general, the research on the characteristics of teachers in higher vocational colleges is

still in its infancy^[8].

3. Concept definition

3.1. Learning efficacy

Learning efficacy refers to an individual's estimation of their ability when completing a certain learning task. Learning efficacy is an important source of students' learning motivation and is directly related to students' academic achievement. This study adopts the concept of "learning efficacy" proposed by Wu et al., that is, individuals' self-judgment on the success of their learning behavior, which directly affects the occurrence of individual learning behavior. Because each person's judgment of their learning behavior is different, so "learning efficacy" has a great difference, this difference directly affects the individual's mental activity state when completing a certain task. Therefore, this study adopts the concept of "learning efficacy" proposed by Wu et al. Teacher trait is the personal quality shown by teachers in the process of education and teaching, which mainly includes the personal quality shown by teachers in the process of education and teaching ability, personality charm, and role model. Among them, the ability of education and teaching is mainly reflected in the ability of teachers to guide and help students correctly. The charm of personality is mainly embodied in the charm that teachers show to students in personality quality; The role of example is mainly reflected in the ability of teachers to model students. Therefore, this study uses the concept of "teacher traits" to describe the personal qualities of teachers in higher vocational colleges. Students' sense of learning efficacy refers to students' self-judgment on the success of their learning behavior, which is formed by a series of psychological processes and behavioral activities such as self-management, self-regulation, self-evaluation, and self-education^[9-10].

3.2. Characteristics of teachers

Traits refer to stable psychological characteristics that distinguish a person from others, including personality, abilities, attitudes, and values. For example, some scholars believe that "teacher personality trait refers to the stable psychological characteristics shown by teachers in their professional activities, which mainly includes

teacher personality tendencies, such as professional belief, work attitude, work emotion, and work drive; Teachers' behavior habits, such as teaching methods, teaching behaviors, work norms, and education methods; Teacher ability characteristics, such as professional knowledge, professional ability, professional knowledge structure, and professional skills; Teachers' professional attitude, such as professionalism, responsibility, and so on; Teachers' social roles, such as social status, social expectations, and so on”^[11-12].

In addition, some scholars put forward the professional values of teachers, that is, “as a teacher for the people, they should establish correct educational concepts and consciously put teaching and educating people in the first place.” At the same time, they must firmly establish the idea of education serving students and keep the growth of students in mind. Only in this way can they truly teach people. Therefore, this study takes “teaching ability”, “personality charm”, and “role model” as the main contents of teachers' characteristics.

3.3. Value-added effect

Value-added effect refers to the phenomenon of “value-added” in the process of teachers' traits affecting students' learning efficacy, due to the interaction between variables, students' self-perception in learning will change. The influence of teacher traits on students' learning efficacy can be explained from two aspects. On the one hand, teacher traits can have an impact on students' learning behavior through their own personality charm and role models, which will show a value-added effect on students' learning behavior. On the other hand, the influence of teacher traits on students' sense of learning efficacy will also have a value-added effect. This value-added effect means that under the influence of teacher traits, students will have a value-added effect in learning due to changes in their self-feeling and self-judgment. From the perspective of external factors, this value-added effect is mainly caused by the external environment in which students live. From the perspective of internal factors, this value-added effect is mainly caused by teachers' own teaching ability, personality charm, and role models^[13-15].

4. Research design

Taking Shandong Province as an example, this study conducted a questionnaire survey on vocational college students in Shandong Province to study the differences in teacher traits and learning efficacy among students of different genders, places of origin, majors, and types of schools to analyze the value-added effect of teacher traits on students' learning efficacy. The study is expected to provide a reference for improving students' sense of learning efficacy and promoting the high-quality development of higher vocational education.

4.1. Basic information

In this study, 329 students were randomly selected from 6 higher vocational colleges in Shandong Province by stratified sampling method. SPSS 26.0 statistical software was used for descriptive statistical analysis, one-way analysis of variance, and regression analysis of the survey data. The main variables of the study are shown in **Table 1**, and the questionnaire design is shown in **Table 2**.

Table 1. Main variables studied

Dimensionality	Variable
Teacher trait dimension	Character characteristics, personality characteristics, teacher ethics
Dimensions of students' learning efficacy	Learning motivation, learning attitude, learning strategy, self-efficacy
School type dimension	Public and private institutions
Student origin dimension	Urban areas and rural areas

Table 2. Questionnaire design

Problem	Options
Do you think teachers have an impact on your learning effectiveness?	Yes () No ()
Do you think different teachers have different effects on your learning effectiveness?	Yes () No ()
Are teachers' influences all value-added effects?	Yes () No ()

4.2. Data sources

The objects of this study are students in higher vocational colleges in Shandong Province. Six higher vocational

colleges in Shandong Province are taken as sampling units, and three categories of “public”, “private”, and “urban and rural” are taken as sampling levels respectively. In terms of sample selection, a stratified sampling method was adopted to divide the subjects into 6 levels according to the scale of each school. Among them, the subjects in public colleges were divided into two levels according to the scale of the school. The students in public colleges were divided into 5 levels according to the scale of the school, which were public vocational colleges, independent colleges, and junior colleges. The subjects in rural areas were divided into three levels according to the origin of students, namely, higher vocational colleges in rural areas, higher vocational colleges in urban areas, and higher vocational colleges in urban-rural fringe. In the aspect of sample extraction, according to the method and principle of sampling design, the data of each subject are assigned. Lastly, the mean and standard deviation of the subject at different levels are calculated. In the process of investigation, the study adopted a unified standard to issue and collect questionnaires. After eliminating invalid questionnaires, a total of 324 valid questionnaires were collected, as shown in **Table 3**.

Table 3. Details of the questionnaire survey

Source	Quantity	Take up a proportion of
Public institution	148 copies	65.3%
Civilian-run hospital	108 copies	34.3%
Rural-urban fringe vocational colleges	68 copies	15.1%

From the statistical point of view, there is little difference in the gender of the subjects, but there is a significant difference in the grade. There is a great difference in the degree level, with the proportion of junior college students reaching 89.1%; while the Bachelor’s degree or above accounted for 10.1% of the total number of subjects. From the source of students, rural students accounted for 64.1%, followed by 9.6% of students from urban areas. From the perspective of school type, public schools, private schools, independent colleges, and colleges have no significant differences in gender, grade, major, and student origin.

4.3. Variable description

In this study, the 5-level Likert scale was mainly used to test the reliability and validity of the scale, where 1 represents very inconsistent and 5 represents very consistent. The specific scale is shown in **Table 1**. The scale reliability and validity test results show that the scale reliability and validity of 1–5 is good, indicating that the data in this study are representative to a certain extent. The questionnaire on the teacher trait dimension mainly includes personality characteristics, personality characteristics, teacher ethics, teacher style, and so on. Some variables are assigned according to the research needs. In this dimension, this study uses 5 factors of the Likert scale to assign values. From the perspective of specific variables, the questionnaire content of learning motivation mainly includes learning motivation, learning attitude, learning strategy, and so on. The questionnaire content of learning attitude mainly includes learning attitude, learning strategy, and so on. The self-efficacy questionnaire mainly includes self-efficacy, self-confidence, and so on. School-type variable questionnaires mainly include public institutions and private institutions. The content of the student origin variable questionnaire mainly includes the student’s origin and whether it is a rural area. In this dimension, this study uses a 5-level Likert scale to assign values, including 1 representing very inconsistent and 5 representing very consistent. The data in the scale were analyzed by SPSS 26.0 statistical software, and the test results showed that the scale had good reliability and validity.

4.4. Survey results

The results of the questionnaire are shown in **Table 4**.

Table 4. Survey results

Do you think teachers have an impact on your learning effectiveness?	Options
Do you think different teachers have different effects on your learning effectiveness?	Yes (311 people) No (13)
Are teachers’ influences all value-added effects?	Yes (157) No (167)
Do you think teachers have an impact on your learning effectiveness?	Yes (287) No (37)

The data of this study was collected from June to

July 2021, and 324 valid questionnaires were collected from several higher vocational colleges in Shandong Province, including 204 males and 120 females. There were 173 non-only children and 151 only children. The professional distribution is art design 89 people, information technology 53 people, mechanical engineering 39 people, project management 81 people, water conservancy and hydropower 62 people. The types of schools are public higher vocational colleges, private higher vocational colleges, and ordinary undergraduate colleges. SPSS 19.0 was used for descriptive statistical analysis and independent sample *t*-test. The results of the independent sample *t*-test show that gender and place of origin have no significant influence on students' learning efficacy. In the dimension of learning efficacy, there are significant differences among students of different majors.

4.5. Descriptive statistical analysis

Students of different school types have significant differences in the mean values of all dimensions of learning efficacy and significant differences in the dimensions of teacher traits and professional types, but no significant differences in other dimensions. From the perspective of gender difference, the learning efficacy of boys is significantly higher than that of girls. In terms of major types, information technology students have the highest sense of learning efficacy, while water conservancy, hydropower, and art design students have a lower sense of learning efficacy. From the distribution of student origin, students from rural areas have the highest sense of learning efficacy, while students from urban areas have the lowest sense of learning efficacy. From the perspective of class size, there was no significant difference in the level of learning efficacy among the three grades. There was no significant difference in the level of learning efficacy among the four grades. There was no significant difference in the level of learning efficacy among the five grades. In other aspects, male

students, major type, student origin, and class size have no significant influence on learning efficacy.

4.6. Independent sample *t*-test

From the perspective of the teacher trait dimension, gender has no significant effect on teacher traits. From the perspective of student origin, female students' learning efficacy is significantly higher than that of male students in rural areas. Among urban students, male students' learning efficacy is significantly higher than that of female students.

From the perspective of learning efficacy, the learning efficacy of art students is significantly higher than that of science and engineering students and management students, and the learning efficacy of non-art students and art students is significantly higher. From the perspective of teacher trait dimensions, there are significant differences among students of different majors in teacher traits dimensions, as art students are significantly higher than science students and management students in teacher trait dimensions of "confidence" and "control." The dimensions of "self-efficacy" of science and management students are significantly higher than those of art students.

5. Conclusion

In summary, this study shows that the professional knowledge and teaching ability of teachers have significant positive effects on the learning efficacy of vocational college students, and the professional knowledge dimension has the most obvious impact. The gender of teachers and the place of origin of students have no significant impact on the learning efficacy, while the major and school type have a significant impact on the learning efficacy. At the same time, the dimensions of teachers' personality charm and example demonstration also have positive effects on students' learning efficacy.

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The authors declare no conflict of interest.

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