

# An empirical study on the academic level of instructors to improve students' performance in skill competition

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**Abstract:** The effect of instructors on students' performance in skills competition is still unknown. Taking the first Guangdong Fintech Student Vocational Skills Competition in Guangdong Province in 2021 as the research object, this paper empirically tested the influence of the academic level of instructors on students' performance in the competition by using ordinary least squares (OLS). The findings are as follows: First, the academic level of the instructor can significantly improve the performance of the students in the competition. For every 10 units increase in the academic level of the instructor, the performance of the students will be increased by 3.6 units; Second, the academic level of the first instructor can significantly improve students' performance in competition (every increase of 10 units in the academic level of the first instructor in competition will increase students' performance by 4.3 units), but second, we know that the contribution of the teacher's academic level to students' performance in competition is not obvious. The empirical results of this paper clarify the effect of the academic level of the leading teacher on students' performance in competition. From the perspective of guiding academic level, this paper further reveals the micro-mechanism of the formation of students' vocational skills.

**Key words:** Skill competition; Competition instructor; Academic level

In the process of vocational education development in China, skills competition is a very important innovative measure, but what are the factors that affect students' achievement in skills competition? The existing research does not give an answer to how much the tutor contributes to the students' achievement. Based on the above research deficiencies, this paper takes the first Guangdong Fintech Student Vocational Skills Competition in Guangdong Province in 2021 as the research object to explore the influence of the academic level of instructors on students' performance in the competition.

## 1. Literature review

At present, the research on skills competition mainly focuses on the following aspects: First, the statistical analysis of the results of skills competition. Qian Dongdong and Jiang Liping (2020) collected and analyzed the entries, participants and awards of vocational and vocational groups in the Teaching Ability Competition in 2019, and put forward suggestions on the problems such as insufficient participation of individual places, incomplete data of Level 4 competition, and poor personnel structure of participating teams. ; Skills competitions in vocational colleges have become an important starting point for effectively improving the training quality of technical and skilled talents (Jia Guiling,2018); Second, the impact of skills competition on teaching. Yang Jianliang (2013) believes that the performance-only theory should be abandoned, and the long-term competition mechanism and reasonable arrangement of teaching resources should be started to improve the performance of competition. Therefore, the teaching reform should be improved from four dimensions: talent training objectives, curriculum system construction, teachers' teaching ability and the contribution of school-enterprise resources. Existing studies have neglected the influence of teacher guidance on the performance of contestant competitions. The contribution of this paper is to clarify the contribution of competition instructors in academic skills competitions.

## 2. Research design

### 2.1. Variable selection

#### 2.1.1. Competition results of students with explained variables

The purpose of this paper is to explore the influence of the academic level of the instructor on the students' competition results, so this paper chooses the students' competition results as the explained variable of this paper. In order to alleviate the problem of heteroscedasticity caused by the large difference in scores, this paper takes the natural logarithm of students' scores in competitions and records the symbol as  $\lg\text{score}$ .

#### 2.1.2. Explain the variables

The academic level of the advisor is the key explanatory variable of this paper. The index to measure academic level is often H-index. Considering the absence of H-index data of the competition instructor, this paper adopts the following method to construct the academic level variable of the instructor, which is as follows:

$$\begin{aligned}
 total = & 1 \times (\text{Number of papers published as the first author}) \\
 & + 1/2 \times (\text{Number of papers published as the second author}) \\
 & + 1/3 \times (\text{Number of papers published as the third author}) \\
 & + 1/4 \times (\text{Number of papers published as the fourth author})
 \end{aligned} \tag{2.1}$$

In order to alleviate the problem of heteroscasticity and singular value as far as possible, this paper adds the sum of the academic level scores of the two advisors by 1 and takes the natural logarithm, denoted as  $lgtotal$ . Based on the same idea, we calculate the academic level variables of the first advisor and the second advisor, denoted as  $lgfirst$  and  $lgtwo$  respectively.

2.1.3. Control variables

This paper also introduces the number of teachers sent by each school, the number of participating teams, the level of economic development and the variables of urban area. Symbols are recorded as  $teacher$ ,  $group$ ,  $lggdp2$  and  $area$  respectively.

2.2 Model estimation

In order to test the influence of the competition instructor’s academic level on students’ competition results, this paper sets the following basic regression model:

$$lgscore = \alpha + \beta lgtotal + \varepsilon \tag{2.2}$$

In order to further examine the impact of the academic level of the first advisor and the second advisor on the performance of the competition, this paper also sets the following empirical regression model:

$$lgscore = \alpha + \beta_1 lgfirst + \varepsilon \tag{2.3}$$

$$lgscore = \alpha + \beta_2 lgtwo + \varepsilon \tag{2.4}$$

his paper also includes control variables such as the number of teachers, the level of economic development ( $lggdp2$ ), the number of teams ( $group$ ), and regional dummy variables. The control variables can be written as the following linear combination

$$\Theta X = \theta_1 teacher + \theta_2 lggdp2 + \theta_3 group + \theta_4 area \tag{2.5}$$

### 3. Empirical results analysis

Column (1) is the empirical result that only considers the overall student level variable of the competition instructor. The estimated coefficient of this variable is 0.369, and it passes the significance level test of 1%. Its economic implication is that every 10% increase in the academic level of the teacher, the average student performance in the competition will increase by 3.69%.

**Table 1 Empirical results of the influence of the instructor’s overall academic level on students’ competition scores**

	(1)	(2)	(3)	(4)	(5)
$lgtotal$	0.369 *** (3.01)	0.340 ** (2.62)	0.327 ** (2.51)	0.376 *** (2.85)	0.365 ** (2.35)
Control variables		YES	YES	YES	YES
Constant term	6.066 *** (21.15)	5.836 *** (13.37)	5.400 *** (9.13)	5.734 *** (9.28)	5.453 *** (3.47)
$R^2$	0.117	0.124	0.139	0.174	0.189
$N$	70	70	70	70	70
$F$	9.044	4.733	3.561	3.418	1.105

Column (1) is the empirical result that only considers the variable of the overall student level of the first competition instructor. The estimated coefficient of this variable is 0.446, and it passes the significance level test of 1%. Its economic implication is that every 10% increase in the academic level of the first competition instructor will increase the average student competition score by 4.46%.

**Table 2 Empirical results of the influence of the first instructor’s overall academic level on students’ competition scores**

	(1)	(2)	(3)	(4)	(5)
$lgfirst$	0.446 *** (2.90)	0.409 ** (2.48)	0.396 ** (2.40)	0.430 ** (2.59)	0.432 ** (2.31)
Control variables		YES	YES	YES	YES
Constant term	6.161 *** (23.11)	5.951 *** (13.90)	5.477 *** (9.29)	5.772 *** (9.26)	5.335 *** (3.40)
$R^2$	0.110	0.115	0.133	0.158	0.187
$N$	70	70	70	70	70
$F$	8.402	4.361	3.376	3.046	1.089

Column (1) is the empirical result considering only the variable of the overall student level of the second competition instructor. The estimated coefficient of this variable is 0.236, and it has passed the significance level test of 10%. Its economic implication is that every 10% increase in the academic level of the first teacher will increase the average student performance in the competition by 2.36%. The estimated coefficient of the key variable is consistent with the basic result.

**Table 3 Empirical results of the influence of the second advisor's overall academic level on students' competition results**

	(1)	(2)	(3)	(4)	(5)
lgtwo	0.239 * (1.90)	0.216 * (1.71)	0.203 (1.61)	0.241 * (1.87)	0.206 (1.32)
Controls Variables		YES	YES	YES	YES
Constant term	6.497 * * * (29.09)	5.988 * * * (13.53)	5.515 * * * (9.12)	5.808 * * * (9.11)	5.279 * * * (3.23)
$R^2$	0.0503	0.0746	0.0927	0.118	0.137
$N$	70	70	70	70	70
$F$	3.598	2.702	2.248	2.177	0.753

#### 4. Conclusions and policy implications

For the first time, this paper examines the impact of the teaching ability of guidance contest teachers on the performance of students in the competition. The research results show that, regardless of the type of guidance, the teaching ability of guidance contest teachers can significantly improve the performance of students in the competition, but the academic level variable of the first competition instructor has a greater impact, while the estimated coefficient of the second competition instructor's academic level variable is not obvious. The results of this paper have the following enlightenments:

First, construct the professional teacher expert database and improve the professional teacher skill evaluation system. In the statistical part of this paper, it is found that the teaching level index of some teachers is 0, which means that most teachers have not published relevant papers in domestic journals. Although teachers have not published papers, it does not affect the ability of teachers to guide students to obtain awards in skills competitions. Therefore, it is an important step to build the expert database of teachers in vocational skills competition and perfect the evaluation system of vocational teachers' skills to improve the performance of student competitions.

Second, improve the selection mechanism of the instructor of the skills competition. Many vocational colleges will be provincial competition results into an important condition for professional title evaluation. Therefore, this paper believes that the selection mechanism of instructors for skills competition should be improved, and the correlation between the selection index system and the performance of the competition should be studied to select suitable instructors for the competition.

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