Analysis on the Influence of Teachers' Evaluation on Students' Learning Effect in Application-Oriented Universities

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Abstract

This paper finds out the existing problems in learning and implements effective intervention to stimulate students' enthusiasm for learning by analyzing the teachers' evaluation data of all classes in a semester. The results show that there is a significant positive correlation at the level of 0.01 through the correlation analysis of learning attitude, learning process and learning effect, and the correlation is above medium level. The prediction model of learning effect is established through regression analysis, which improves students' awareness of autonomous learning, standardizes the learning process and improves the learning effect.

Subject Areas

Education

Keywords

Teachers' Evaluation, Learning Attitude, Learning Process, Learning Effect, Regression Analysis

1. Introduction

Teachers' evaluation system is an important part of teaching quality monitoring, which is an important segment in teaching quality management. Teachers' evaluation is the overall evaluation of the students' learning status in the class, which is to effectively collect relevant information on the front line of teaching, which is an effective information channel to reflect the learning atmosphere of the class. It is helpful to improve teachers' teaching level, helps students find their

own problems in learning, improves students' learning quality and learning effect, and promotes emotional communication between teachers and students through teachers' evaluation. Find out the important factors that affect the teaching quality through the regression analysis of SPSS software, so as to improve the quality of classroom teaching and learning effect.

Teachers' evaluation can find out the shortcomings and problems existing in the learning process of students, and implement targeted teaching intervention through the analysis of the influencing factors. The university implements the teaching intervention, which stimulates the student's intrinsic study motivation and the study enthusiasm, which develops the habit of self-directed learning. The problems and deficiencies in teaching management are reflected in the students' learning status and learning effect. The school adopts rectification measures to push forward teaching reform and management reform.

2. Research Questions

1) Whether there is correlation among learning attitude, learning process and learning effect.

2) Whether the evaluation indexes such as learning attitude, learning process and learning effect can be regressed and the prediction model of learning effect can be established.

3. Research Objects

Take eight undergraduate classes of Physics Department of Nanchang Normal University as the research object. The teachers mainly evaluate the students' learning from three aspects: learning attitude, learning process and learning effect. The learning state of each class is graded by the teacher.

4. Research Results

The results of teachers' evaluation are divided into four grades based on students' actual performance and teachers' experience in evaluating learning: excellent (above 90), good (76 - 89), average (60 - 75) and poor (below 59). There are 10 indicators of teachers' evaluation, each of which has a score of 10, a total of 100.

1) The situation of teachers' evaluation in each class

In the evaluation of physics teachers, the scores of eight classes are as follows: class one 76.41, class two 87.75, class three 80.33, class four 80.33, class five 86.82, class six 80.47, class seven 80.78 and class eight 85.56. As shown in Table 1, the scores of each class are greater than 76, less than 89, so all classes get a "good" grade.

2) Independent analysis of teachers' evaluation in each class

a) Learning attitude

From the results of teachers' evaluation of learning, as shown in Table 2, the average score of class two's learning attitude is 9.25, with good learning attitude.

Table 1. The teachers' evaluation in each class.

class	mean	N	standard deviation
class one	76.4063	16	8.51316
class two	87.7500	20	9.83081
class three	80.3333	15	12.42358
class four	80.3333	15	12.35150
class five	86.8182	11	10.00568
class six	80.4688	16	8.02178
class seven	80.7813	16	8.50092
class eight	85.5556	9	9.74501
total	82.1398	118	10.42000

Table 2. The learning attitude of teachers' evaluation in each class.

class	mean	N	standard deviation
class one	8.5938	16	0.77392
class two	9.2500	20	1.10322
class three	8.7500	15	1.49404
class four	8.4167	15	1.45365
class five	8.9773	11	1.09233
class six	8.2813	16	1.10633
class seven	8.2031	16	1.11512
class eight	9.0278	9	1.21478
total	8.6758	118	1.20421

The average score of other evaluated classes is greater than 8.20, and all of them have correct learning attitude. In the early stage of this semester, due to the impact of the epidemic, most of the courses are online teaching. Under such circumstances, students in each class can abide by the teaching management system, have a high attendance rate, do not arrive late and leave early. Also the classroom order is good, which reflects the good study style of the class.

b) Learning process

According to the evaluation index of learning process, the average score of class five is 8.77, which is the highest score of each class. The average score of class one is 7.25, which is the lowest score of each class, as shown in Table 3. For online teaching courses, students are required to prepare before class and review after class. Some courses also need to read a lot of professional literature, so as to grasp the learning content. But teachers reflect that some students' self-learning ability is weak, and some students lack the consciousness of active learning. The interaction is not active enough between students and teachers in most classes, and some students lack of their own thinking about the problem.

c) Learning effect

As can be seen from Table 4, the learning effect of class two is the best, class

Table 3. Learning process of teachers' evaluation in each class.

class	mean	N	standard deviation
class one	7.2500	16	1.06458
class two	8.6750	20	0.94972
class three	7.8000	15	1.34695
class four	7.9333	15	1.61319
class five	8.7727	11	1.21169
class six	8.0938	16	1.08349
class seven	8.0625	16	1.01448
class eight	8.5556	9	1.10240
total	8.1144	118	1.24106

Table 4. The learning effect of teachers' evaluation in different classes.

class	mean	N	standard deviation
class one	7.6563	16	1.14741
class two	8.6250	20	1.18701
class three	7.9444	15	1.36810
class four	7.9444	15	1.08501
class five	8.3333	11	1.23603
class six	7.8125	16	0.67185
class seven	8.0208	16	0.95622
class eight	8.2407	9	0.97222
total	8.0720	118	1.10950

five is the second, and class one is the last. In terms of learning effect, the score of "learning flexibly, being able to use learned knowledge to put forward, analyze and solve practical problems" is generally low. Teachers think that some students' practical ability is a little poor, and the ability of autonomous learning and practical innovation needs to be further improved.

In a word, teachers generally agree with the style of study of the evaluated class, but think that the students' self-learning ability, the ability of integrating theory with practice, and the ability of "learning flexibly" need to be further improved.

5. The Correlation Analysis among Learning Attitude, Learning Process and Learning Effect

It can be seen from Table 5 that there is a significant correlation between learning attitude and learning process at the level of 0.01, and the correlation coefficient is 0.538, so the correlation between learning attitude and learning process is positive, and the correlation is moderate. There is a significant correlation between learning attitude and learning effect at the level of 0.01, and the correlation coefficient is 0.505, that is, the correlation between learning attitude and

Table 5. Correlation among learning attitude, learning process and learning effect.

		learning attitude	learning process	learning effect
	Pearson correlation	1	0.538**	0.505**
learning attitude	Significance (bilateral)		0.000	0.000
	N	118	118	118
	Pearson correlation	0.538**	1	0.702**
learning process	Significance (bilateral)	0.000		0.000
	N	118	118	118
	Pearson correlation	0.505**	0.702**	1
learning effect	Significance (bilateral)	0.000	0.000	
	N	118	118	118

**There is a significant correlation at 0.01 level (bilateral).

learning effect is positive, and the correlation coefficient is 0.505. There is a significant correlation between learning process and learning effect at the level of 0.01, and the correlation coefficient is 0.702, which means that the correlation between learning process and learning effect is positive, and the correlation is strong.

6. Regression Analysis among Learning Process, Learning Attitude and Learning Effect

Taking model 4 as an example, the model uses input method, learning process and learning attitude as independent variables, learning effect as dependent variables, Table 6 is the summary of model 4. From Table 6, we can see that R is the complex correlation coefficient, R = 0.718, R^2 is the determination coefficient, which is used to reflect the interpretation degree of the established model, R^2 = 0.516. Learning process and learning attitude are used to predict learning effect, and the prediction accuracy is 51.6%. The value of Durbin Watson in model 1 is 1.961, ranging from 1.8 to 2.2, which meets the independent condition of linear regression. The value of Durbin Watson in model 4 is 1.901, ranging from 1.8 to 2.2, which meets the condition of independence of linear regression. The value of DurbinWatson in model 2 and model 3 is not ranging from 1.8 to 2.2, which does not meet the condition of independence of linear regression. Table 7 is the statistical test results of model 4, and ANOVA is used to test whether the model has statistical significance. The test result is F = 61.234, P = 0.000 < 0.05, that is, the regression model of learning effect constructed by learning process and learning attitude is statistically significant [1] [2] [3].

Table 8 shows the coefficients of the constructed model 4, and it can be concluded that the prediction model 4 is:

$$Y = 2.247 + 0.165 \times K_1 + 0.541 \times K_2$$

Among them, K_1 is learning attitude, K_2 is learning process, and Y is predicted learning effect.

Table 6. The learning effect of teachers' evaluation in different classes.

model	R	R^2	AdjustR^2	Error of standard estimation	Durbin-Watson
1	0.702[a]	0.493	0.489	0.79345	1.961
2	0.538[a]	0.290	0.284	1.01921	1.337
3	0.505[a]	0.255	0.249	0.96166	1.487
4	0.718[a]	0.516	0.507	0.77879	1.901

Table 7. ANOVA[a].

model		square sum	df	mean square	F	Sig.
1	regression	70.997	1	70.997	112.772	0.000[b]
	residual	73.029	116	0.630		
	total	144.027	117			
2	regression	49.165	1	49.165	47.329	0.000[b]
	residual	120.499	116	1.039		
	total	169.664	117			
3	regression	36.751	1	36.751	39.739	0.000[b]
	residual	107.276	116	0.925		
	total	144.027	117			
4	regression	74.278	2	37.139	61.234	0.000[b]
	residual	69.749	115	0.607		
	total	144.027	117			

Table 8. Coefficients[a].

model		Coefficient of non standardization		Standardization coefficient	t	Sig.
		B	Standard error	Beta		
1	(constant)	2.979	0.485		6.140	0.000
	learning process	0.628	0.059	0.702	10.619	0.000
2	(constant)	4.437	0.623		7.121	0.000
	learning process	0.522	0.076	0.538	6.880	0.000
3	(constant)	4.034	0.647		6.239	0.000
	learning attitude	0.465	0.074	0.505	6.304	0.000
4	(constant)	2.247	0.571		3.936	0.000
	learning attitude	0.165	0.071	0.179	2.326	0.022
	learning process	0.541	0.069	0.606	7.866	0.000

Model 1: a. dependent variable: learning effect b. predictive variable: (constant), learning process. Model 2: a. dependent variable: learning attitude b. predictive variable: (constant), learning process. Model 3: a. dependent variable: learning effect b. predictive variable: (constant), learning attitude. Model 4: a. dependent variable: learning effect b. predictive variable: (constant), learning process, learning attitude.

7. Improvement Measures

Adhering to the principle of promoting improvement through evaluation, the department will take the following measures according to the results of the teachers' evaluation:

1) None of the classes got "excellent" in the evaluation results, so we should further improve the style of study and class atmosphere, for example, it is necessary to establish one-to-one help group for learning difficulties, and advocate evening self-study and tutorial system. The results will be fed back to all classes, counselors and class teachers will organize theme class meetings to further strengthen the education of class atmosphere and class atmosphere.

2) In the teaching process, teachers should pay attention to the students' learning state, whether the students can keep up with the teachers' thinking in class, and make the students and teachers' explanation ideas reach the same frequency resonance. Experimental courses should not only focus on cultivating students' practical ability, but also cultivate students' ability to analyze and solve problems. The tutor should guide the students to think independently.

8. Conclusions

There is a significant positive correlation at the level of 0.01 through the correlation analysis of learning attitude, learning process and learning effect, and the correlation is above medium level. The prediction model of learning effect is established through regression analysis, which improves students' awareness of autonomous learning, standardizes the learning process and improves the learning effect.

The data of teachers' evaluation is too small, and only one semester sample is selected, so it is difficult to observe the results of teachers' evaluation comprehensively. In the future, the selected time period should be longer and the sample size should be larger to eliminate the interference of accidental factors.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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