Research Article

The Research of philosophy Specialty Performance Evaluation on the Grounds of Multivariable Linear Regression Theory

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ABSTRACT

Obscure or missing standard is a common phenomenon in the performance evaluation of the philosophy specialty. The multivariable linear regression theory based on the statistics can systemize and modularize the evaluation frame, as well as quantize teaching efficiency scientifically, definite the teaching purpose, so is provide the reference basis for standardize the teaching management of the philosophy specialty.

Keywords: philosophy, performance evaluation, multivariable linear.

INTRODUCTION

All the courses of the are design teaching system will be examined by teachers and finally form the achievements. The students' achievements is the direct presentation of the level on mastering the courses examination, and at the same time, it is the self-judgment for checking the teachers' teaching achievements, as well as the significant accordance for schools to evaluating the teaching quality. Even if in the case that the teachers is objective and judicial, the achievements has apparent divergence because of the uncertainty due to mood and environment and such evaluation methods. In some extent, it indicates that the evaluation system loses the key evaluated factor. Besides the subjective factor of teachers, on the other hand, we find that the outstanding students always perform innovation ability of high art design in the professional courses, which shows that there has strong similarity in the same specialty field on the aspects such as courses frame, training purpose, and evaluation method, and they have similar evaluation factor frame and weight proportion relationship. Thus, we can classify the professional courses of art design specialty according to the system structure. In a sense, it projects professional courses in light of teaching process, but it does not set the teaching purpose systematically. Because of the quantification of the final marks, we extract the relative evaluation factor of courses in system of the professional teaching, so the weight proportion dividing the evaluation factor forms the important quantitive features that testing the learning effect and the teaching quality, which forms quantitive courses evaluation index system. The detailed method can use the courses relative factor or system frame of cluster analysis improving courses and relative weight proportion to analyze, and using multivariable linear regression theory to realize quantitive evaluation index combining the courses evaluation's quantity and qualitative diagnosis.

THE FRAME RESEARCH OF ART DESIGN SPECIALTY TEACHING EVALUATION FACTOR
To test the establishment of evaluation factor and set of weight proportion is reasonable or not, we must set it in the system of art design education system to establish, and examine as well as correct it in practice. The purpose of establishing the evaluation system not only check and evaluate students' courses homework, furthermore, to examine as well as correct the students' learning process. In this way, it will make students lay stress on the final visual effect, the most important is to pay attention to the inner logicality and rationality of design and clear the connotation and culture of art design. On the other hand, the evaluation to students' learning process can make teachers to focus on

students' learning ability, get to know students' design ability, and think about students' character factor. Based on this, we can decide the evaluation system into two parts as a whole, namely the process evaluation of art design and effect evaluation of art design.

Compare to the process evaluation of art education and the final effect evaluation, the former has stronger effectiveness and accuracy. It can focus on the students' learning trends in the whole process at the beginning of courses, which presents the dynamic relationship between the students and teachers as well as the students and courses design in courses teaching. In this process, the main evaluative factors are as follows: the first is the learning attitude of students; the second is the inner logicality and relevance of the students' innovative mind in the process of courses projection.

In the process of students' class teaching, the creed of "attitude decides everything" is one of the evaluation standard, for the learning attitude of students has no relationship with the IQ, EQ and such individual attribute. Seeing from the surface that whether the learning attitude is proper or not is the individual performance of students, however, if most students learn knowledge actively and earnestly, then the good class learning atmosphere forms. The check and evaluation of students' learning attitude can identify from the following aspects. First is the attendance condition. Students should not be late for class, early leaving, absent for class for no reason. Second is the class performance. Students should obey the classroom discipline, interact actively with teachers and students in the process of subject projection and create a impassioned class atmosphere. Third is the homework. Students should finish homework which is arranged by teachers on time and adjust the homework in time according to the revised suggestion teachers give.

Usually, the teaching of art design specialty courses take the form of topic projection leading, moving forward orderly from the establishment of the first scheme to the revise of the projection scheme. The test to the inner logicality and relevance of students' innovation mind in the course projecting process mainly pays attention to the process of students' creative mind, at the same time, it is a reasonable judgment on students' projecting process and method. The design is a process that the creative mind has out release and inner convergence, divergence as well as gathering, so we can imagine it with a fancy pie-in-the-sky, however, the process of mind creation has inner relevance and logicality. The proper design mind method will lay a solid foundation for students' later career. On the other hand, the test of the inner design relevance and logicality can make teachers finds the projection plagiarism and prevent plagiarizing others' projection work, thus create a equal, ordered, and active teaching atmosphere.

Though the process evaluation of projection art specialty courses is very important, the final teaching effectiveness is the main accordance to evaluate the degree that students master the courses professional knowledge. It reflects in the following three aspects: the normative degree of the final projection homework, the modal beauty, and innovative degree of projection.

Every art design specialty courses will make some requirement to the homework using certain form standard, which indicates the strictness and rationality of modern art design teaching and has the same steps with the perceptual as well as imaginative art design activity. The test of the projection homework's formal degree mainly examine the implementation that the students finish the homework in light of the form given by teachers. The students majoring in art have free character. Usually they focus on the shape and result of the project, easily ignoring the form and standard which carries the project content. The research of modern project theory indicates that only the combination of rational standard consciousness and perceptual innovation mind can establish the scientific project management concept, thus can acquire the strict work style and long design life.

The formal beauty of projection consider the aesthetic experience of project's apparent form as the judgment accordance. Definitely, the quality of design work can not solely base on the students or the teachers' subjective consciousness, neither did the degree of formal beauty's resonance, or we will go back to the preceding road and lose our ways. The detailed art design specialty courses consider the design application as the premise, requiring that it must combine with the society reality. In such premise, corresponding design specialty courses can easily find the formal beauty standard of a good design. These years the report about the college education and society production is quite normal, which is a warning sign for all of us. There is an essential difference between art design and art. Art design is the applied art. Only it considers the utility, humanity, emotion caring, culture resonance etc. as the value basis of formal beauty can it is accepted by the masses.

Innovation is the initial motive power to endlessly moving forward, the life of art design, and the important sign post for weighing a project's value. As a teacher, he(she) has many angles to understand the students' design work. However, as for the innovation, we consider it in two aspects. First is whether the design work has innovation, as well as the degree of innovation, which should be emphatically stated in the design instruction of students' courses

homework, and it is also the part which needs the teachers to understand thoroughly. Secondly, as for the design education, we ought to encourage innovation. Marks is only the number in the paper, which does not have the vitality. However, we give the marks as the encourage to the students who have the innovation consciousness, which may waken their design vigor, furthermore, influence the students around, thus establish the design concept of design innovation. All in all, we have preliminarily established an evaluation frame of art design specialty teaching. As shown in sheet 1.
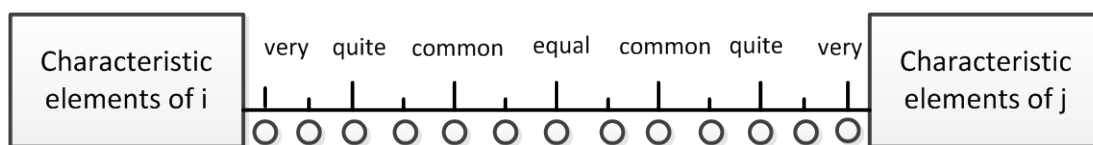
MULTIVARIABLE LINEAR REGRESSION MODEL

The theme of multivariable linear regression is about the regression issue between a dependent variable and an independent variable. However, in many practical problems, such as the air meteorology, aquaculture scientific fields, there are many independent variables, so we need to do the multivariable analysis between a dependent variable and many independent variables, namely the multivariable regression. In that the most simple, common, and elementary is the multivariable linear regression. The multivariable linear regression is widely applied for many nonlinear regression and polynomial regression problems can be solved by the multivariable linear regression.

The basic missions of multivariable linear regression includes: Firstly, establish the multivariable linear regression equation between a dependent variable and many independent variables in light of the practical observation of a dependent variable with many independent variables. Secondly, examine and analyze the significance of the comprehensive linear influence between independent variables and dependent variable. Thirdly, examine and analyze the significance of the simple linear influence between independent variables and dependent variable, select the independent variable which solely has apparent influence on the dependent variable, and establish the optimized multivariable linear regression equation. Fourthly, evaluate the relative significance of many independent variables to the dependent variable and test the deviation of optimized multivariable linear regression equation.

THEORETICAL MODEL

Let the dependent variable be y and independent variable be x1,x2, …, xm-1 , so we get n groups of practical observation data. y is a randomized variable that can be observed and effected by the m- 1 non-randomized variables x1, x2, …, xm-1 as well as the ε randomized variables. Supposing there is the linear relation between y and x1, x2, …, xm-1

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_{m-1} x_{m-1} + \varepsilon \quad (1)$$

Let the dependent variable **be** y and independent variable be x1,x2, …, xm-1 , "0, "1, "2, …,"m-1 is the unknown parameter, ε is the randomized variable called error term whose mean value is zero, variance is σ2>0 and can not be observed. Usually we suppose ε～N(0, σ2) .

$$x_{i_1}, x_{i_2}, \cdots, x_{i_{m-1}}; y_i (i = 1,2, \cdots n) \quad (2)$$

so we get

$$\begin{cases} y_i = \beta_0 + \beta_1 x_{11} + \beta_2 x_{12} + \cdots + \beta_{m-1} x_{1m-1} + \varepsilon_1 \\ y_i = \beta_0 + \beta_1 x_{21} + \beta_2 x_{22} + \cdots + \beta_{m-1} x_{2m-1} + \varepsilon_2 \\ \vdots \\ y_n = \beta_0 + \beta_1 x_{n1} + \beta_2 x_{n2} + \cdots + \beta_{m-1} x_{nm-1} + \varepsilon_3 \end{cases} \quad (3)$$

In that, $\varepsilon_1, \varepsilon_2, \cdots \varepsilon_n$ is independent of each other, distributing as $N \cdots (0, \sigma^2)$.

Let

$$Y = \begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_n \end{bmatrix}_{n \times 1}, \quad X = \begin{bmatrix} 1 & x_{11} & x_{12} & \cdots & x_{1m-1} \\ 1 & x_{21} & x_{22} & \cdots & x_{2m-1} \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ 1 & x_{n1} & x_{n2} & \cdots & x_{nm-1} \end{bmatrix}_{n \times m}$$

$$\beta = \begin{bmatrix} \beta_0 \\ \beta_1 \\ \vdots \\ \beta_{m-1} \end{bmatrix}_{m \times 1} \quad , \quad \varepsilon = \begin{bmatrix} \varepsilon_0 \\ \varepsilon_1 \\ \vdots \\ \varepsilon_n \end{bmatrix}_{n \times 1} \quad （4）$$

SR is the Regression sum of square, reflecting the moderate deviations between linear fitted value and their average value, namely the fluctuation of $y_i(i=1,2,\ldots,n)$ caused by the changes of $x_1,x_2,\ldots,x_{m-1}$. The bigger of SR, the bigger proportion of the fluctuation of y_i described by the linear regression relation, namely the more obvious of the linear relation between the y and $x_1,x_2,\ldots x_{m-1}$. In that the degree of freedom of SR is m- 1.

Se is the sum of squared residuals, reflecting that the factors besides the linear relation between y and $x_1,x_2,\ldots x_{m-1}$,   the bigger of the fluctuation, the bigger deviation between the observation value and linear fitting. In that the degree of freedom of   Se is n- m. When the H0 is real, we can prove F～F(m- 1,n- m). When the H0 is not real and the value of F has trend of getting bigger, so we name the obvious level α , testing the distribution chart F and get the critical value, calculating the observation value F named F0 , if F0<Fα(m-1,n-m) , accepting H0 , namely in the obvious level of α , then we think the linear relation is not obvious; if F0≥Fα(m-1,n-m) , rejecting H0 , then we think there is obvious linear relation between y and $x_1,x_2,\ldots,x_{m-1}$.

CONCLUSION

Using the evaluation method based on the multivariable linear regression theory to evaluate the achievements of art design specialty courses, on one hand it can standardize the art design teaching, making the art design teaching more scientific, systematic and strict; on the other hand, it provides a reference for the daily teaching. That is to say, the learning of students makes the purpose and distinction of specialty learning; at the same time, it provides referential theoretical accordance for the teaching of teachers. what's more, in the practical application of specialty achievements' evaluation, the evaluated factor and weight involved by the multiple equation can readjust according to the characters of the specialty courses by teachers, optimizing the evaluating system, better servicing for the teaching of design specialty courses.

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