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SIMPLE REGRESSION ANALYSIS ON AESTHETIC LITERACY, SELF-EFFICACY AND LEARNING PERFORMANCE

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ABSTRACT

In order to understand the relationship among aesthetic literacy self-efficacy, and learning performance, the study employed simple linear regression analysis to explore learning performance, self-efficacy, and learning performance to understand if there existed relationship between any two of the variables and realize the direction and strength between the two variables. The results indicated that there is significant relationship between beautification students' aesthetic literacy significantly and positively impacts on their learning performance; beautification students' self-efficacy significantly and positively impacts on their learning performance; beautification students' aesthetic literacy significantly and positively impacts on their self-efficacy. Discussion and suggestion are also provided based on the results and supported hypotheses.

KEY WORDS: ***aesthetic literacy, learning performance, self-efficacy, simple regression analysis***

1. INTRODUCTION

In order to deeply understand the relationship among aesthetic literacy, self-efficacy, and learning performance, the study employed simple linear regression analysis to conduct the research to understand if there existed relationship between any two of the variables and realize the direction and strength between the two specific variables. It is depicted in details as follows:

2. SIMPLE REGRESSION ANALYSIS

Simple linear regression model refers to the relationship between two variables; one can present the linear relation model through applying the related parameters. In regression analysis, R^2 (coefficient of determination) represents the variation proportion that regression model can explain for the total variation, therefore, R^2 is the

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indicator that reflects the fitting degree of the regression model. In other words, R^2, coefficient of determination is to examine the fitting ability of the regression model, meanwhile, the value of R^2 also reflects the compactness between sample data and regression equation. When the value of R^2 is approaching to 1, which means the fitting degree of the regression equation is good. The requested standard of academic papers is usually about 0.3; the adjusted R^2 (Adj.R^2) is to more precisely explain the fitting degree between the real regression and equation model. If the statistics of the F test is significantly different, it implies that there exists linear relationship between the independent variable and dependent variable (Chen, 2017).

If the p value of F test is less than 0.05, then the null hypothesis H_0 is rejected, which implies that the coefficient of determination R^2 is with explanatory power. On the other hand, t-test was conducted to determine if the coefficient of the dependent variable is significant; if t value is greater than 1.96, and p value is less than 0.05, then H_0 will be rejected, this indicates that the effect of dependent variable explains independent variable is significant. Practically, if Durbin-Watson Statistic (D-Wvalue) lies between 1.5 and 2.5, it approximately reflects that there has no autocorrelation between the error terms, and then the linear regression is rational. In addition, to solve the problem of collinearity, one can directly explore the correlation coefficient between the dependent variable and independent variable rather than explain the whole model (Wu, 2015).

2.1 Simple linear regression analysis on aesthetic literacy and learning performance

The study conducted simple regression analysis and took learning performance as dependent variable, aesthetic literacy as independent variable to analyze the results. The results are reported as Table 1. Based on Table 1, R^2=0.489、Adj.R^2=0.488, actually, Adj.R^2 can more precisely reflect the fitting degree of the model, which means that 48.8% of the variation of learning performance resulted from the linear relation impact of aesthetic literacy, it also explains that aesthetic literacy is with good explanatory power to describe learning performance. Therefore, the fitting degree of the regression model is adequate and acceptable. On the other hand, D-W value=1.973, one can realize that there is no autocorrelation phenomenon among the error terms.

F test statistics=443.730，p=0.000(p＜0.001)，the F value is significant; constant=1.134; the unstandardized coefficient of aesthetic literacy B=0.744, the standardized coefficient Beta =0.699 is positive; t value is 21.065，p＜0.001, which is significant. The linear regression equation that describes the relationship between aesthetic literacy and learning performance: Learning performance = 1.134+ 0.744* aesthetic literacy; the equation explains that whenever aesthetic literacy increases one point, learning performance would increase 0.744 point, p< 0.001. Accordingly, the regression model is an effective model that is with predicting ability as well as rational and meaningful. The model provides evidence that employing aesthetic literacy to predict learning performance is statistically significant and positive. The higher the aesthetic literacy of beautification students, the better their learning performance. Based on the results of the regression model, H_1: Beautification students' aesthetic literacy significantly and positively impacts on their learning performance is supported.

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Table 1 Simple regression analysis on aesthetic literacy and learning performance

Mode	Unstandardized coefficients		Standardized coefficients	t-test	Significance
	Estimated β	Standard error	Beta		
Constant	1.134	0.157	---	7.203	0.000***
Aesthetic literacy	0.744	0.035	0.699	21.065	0.000***
R^2		0.489			
Adj.R^2		0.488			
F		443.730***			
D-W		1.973			

Predicted variable: (constant), aesthetic literacy；Independent variable: learning performance

Note:*$p<0.05$; **$p<0.01$; ***$p<0.001$

2.2 Simple linear regression analysis on self-efficacy and learning performance

The study conducted simple regression analysis and employed self-efficacy as independent variable, learning performance as dependent variable, the results are reported as Table 2. Based on Table 2, R^2=0.579、Adj.R^2=0.578, actually, Adj.R^2 can more precisely reflect the fitting degree of the model, which means that 57.8 % of the variation of learning performance resulted from the linear relation impact of self-efficacy, it also explains that self-efficacy is with good explanatory power to describe learning performance. Therefore, the fitting degree of the regression model is adequate and acceptable. On the other hand, D-W value=1.948, one can realize that there is no autocorrelation phenomenon among the error terms.

F test statistics=639.097，p=0.000(p＜0.001)，the F value is significant; constant=0.987; the unstandardized coefficient of aesthetic literacy B=0.779, the standardized coefficient Beta =0.761 is positive; t value is 25.280, p＜0.001, which is significant. The linear regression equation that describes the relationship between aesthetic literacy and learning performance: Learning performance = 0.987＋0.779* self-efficacy; the equation explains that whenever self-efficacy increases one point, learning performance would increase 0.779 point, p< 0.001. Accordingly, the regression model is an effective model that is with predicting ability as well as rational and meaningful. The model provides evidence that employing self-efficacy to predict learning performance is statistically significant and positive. The higher the self-efficacy of beautification students, the better their learning performance. Based on the results of the regression model, H_2: Beautification students' self-efficacy significantly and positively impacts on their learning performance is supported.

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Table 2 Simple regression analysis on self-efficacy and learning performance

Mode	Unstandardized coefficients		Standardized coefficients	t-test	Significance
	Estimated β	Standard error	Beta		
Constant	0.987	0.137	---	7.201	0.000***
Self-efficacy	0.779	0.031	0.761	25.280	0.000***
R^2	0.579				
Adj.R^2	0.578				
F	639.097***				
D-W	1.948				

Predicted variable: (constant), self-efficacy；Independent variable: learning performance

Note: *$p<0.05$; **$p<0.01$; ***$p<0.001$

2.3 Simple regression analysis on aesthetic literacy and self-efficacy

The study conducted simple regression analysis and employed aesthetic literacy as independent variable, self-efficacy as dependent variable, the results are reported as Table 3. Based on Table 3, R^2=0.563、Adj.R^2=0.562, actually, Adj.R^2 can more precisely reflect the fitting degree of the model, which means that 56.2％ of the variation of self-efficacy resulted from the linear relation impact of aesthetic literacy, it also explains that aesthetic literacy is with good explanatory power to describe self-efficacy. Therefore, the fitting degree of the regression model is adequate and acceptable. On the other hand, D-W value=1.876, one can realize that there is no autocorrelation phenomenon among the error terms.

F test statistics=598.06, p=0.000($p<0.001$), the F value is significant; constant=0.964; the unstandardized coefficient of aesthetic literacy B=0.780, the standardized coefficient Beta =0.750 is positive; t value is 24.455, $p<0.001$, which is significant. The linear regression equation that describes the relationship between aesthetic literacy and learning performance: Self-efficacy=0.964＋0.780* aesthetic literacy; the equation explains that whenever aesthetic literacy increases one point, self-efficacy would increase 0.780 point, $p<0.001$. Accordingly, the regression model is an effective model that is with predicting ability as well as rational and meaningful. The model provides evidence that employing aesthetic literacy to predict self-efficacy is statistically significant and positive. The higher the aesthetic literacy of beautification students, the better their self-efficacy. Based on the results of the regression model, H_3: Beautification students' aesthetic literacy significantly and positively impacts on their self-efficacy is supported.

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Table 3 Simple regression analysis on aesthetic literacy and self-efficacy

Mode	Unstandardized coefficients		Standardized coefficients	t-test	Significance
	Estimated β	Standard error	Beta		
Constant	0.964	0.142	---	6.781	0.000***
Aesthetic literacy	0.780	0.032	0.750	24.455	0.000***
R^2		0.563			
Adj.R^2		0.562			
F		598.061***			
D-W		1.876			

Predicted variable: (constant), aesthetic variable；Independent variable: Self-efficacy

Note: *$p<0.05$; **$p<0.01$; ***$p<0.001$

Table 4 Empirical results of the hypotheses

Hypotheses	Empirical results
H_1： Beautification students' aesthetic literacy significantly and positively impacts on their learning performance	H_1 supported
H_2： Beautification students' self-efficacy significantly and positively impacts on their learning performance	H_2 supported
H_3： Beautification students' aesthetic literacy significantly and positively impacts on their self-efficacy	H_3 supported

3. CONCLUSION

Based on the above-stated text, the results of the study are in light with that of the prior research (Chang, 2015; Chiu, 2009; Han & Huang, 2014; Huang, 2015).. which matches the essence of quantitative research: seeking common ground in differences.

According to the simple regression model, the study concludes the following findings: 1) The relationship between aesthetic literacy and learning performance: Specifically, aesthetic literacy is positively related to learning performance for the beautification department students, which implies that the better their aesthetic literacy, the better their learning performance. 2) The relationship between self-efficacy and learning performance: Particularly, self-efficacy is positively related to learning performance for the beautification department students. This reflected that the participants' practical and diversified experiences are beneficial to integrate the difference between profession and practice. Building up the participants' higher self-efficacy and

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active devotion in learning has directly strengthened their learning performance. 3) The relationship between aesthetic literacy and self-efficacy: Precisely, aesthetic literacy is positively related to self-efficacy for the beautification students, which indicated that when the aesthetic literacy of the participants was accumulated psychologically, it would become a positive reinforcement and then strengthen their self-efficacy.

It is suggested that future researchers could go further to explore the related issues to facilitate beautification students learning performance.

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