The Relationship between Junior Students' Self-regulation of Time Management and Academic Performance: the Mediating Effect of Independent Learning

Sixue He
Guangzhou College of Technology and Business
Guangzhou, China

Zhuoye Zhang
South China Institute of Software Engineering
Guangzhou University
Guangzhou, 510990

Abstract—**Educators are making efforts to find the factors affecting students' academic performance and help enhance their grades. This paper explored the effects of the self-regulation of time management and independent learning on junior students' academic record, found out the structure chart of their theoretical relation, and provided effective thoughts and methods for vast educators. The questionnaire survey was adopted in this research, and there were 448 junior students accepting the survey. The measuring tools were The Chart of Junior Students' Self-regulation of Time Management and The Chart of Self-adjustment Study. And the total number of questionnaire was 448. The recycled data were performed by t-test, F-test, correlation analysis, regression analysis and intermediary test analysis. The results were:(1)There was a significant positive correlation among self-regulation of time management, independent learning and academic performance;(2)Self-regulation of time management has a positive prediction effect on independent learning and academic performance;(3)Independent learning has the total mediating effect between self-regulation of time management and academic performance.**

Keywords—junior students; self-regulation of time management; academic performance; independent learning

I. INTRODUCTION

Self-regulated learning, also called active learning, means that students an master knowledge and develop learning abilities by means of independent, active, selective and creative learning activities on the basis of current knowledge base, skills and teachers' scientific guidance[1]. With the fast development in the era of information, knowledge is experiencing consistent upgrading, and independent learning has caught people's attention. According to Pang Weiguo, a Chinese scholar, what students learn in school just accounts for 2% of what is needed in the job[2], which shows that independent learning is of great significance to the later study and work.

Among various factors affecting independent learning, individual self-regulation is a concerning factor. Zimmerman thought that independent learners should have positive regulation and adjustment with the feedback from the external environment and learning. At the same time, they should adjust their cognition and emotion, and choose optimal learning strategies and modes so as to improve learning efficiency[1]. Self-regulation is an ability which means that individuals can make adaptive adjustment according to external situations. It is measured by personal plans, regulation, examination, evaluation and feedback[3]. Time management has aspects in time, namely, time value, time monitor, and time efficacy. Time value means that how learners use and arrange time, allocate time schedule, formulate targets, and monitor the final results[4]. However, self-regulation of time management refers to the individual monitoring and controlling with time[5]. The above time management model has provided an important framework for understanding the relationship between independent learning and self-regulation. According to the theory, students with higher self-regulation ability of time management can rationally arrange time, possess more time resource, acquire more knowledge within limit learning time, and improve learning abilities, efficiency and grades.

In recent years, more scholars have begun to explore the relation between self-regulation of time management and learning factors. Eilam found that students who have better grades have more self-regulation abilities than others[6]; and according to Zhang Feng's further study, there exists positive relationship between these aspects and math and English grades[7]; and obviously, those students with better grades also have higher grades in self-regulation of time management[8]. This conclusion is also proved by other researchers[9] [10].

There is a positive correlation between self-regulation of time management and academic performance, but how the former affects the latter, and what is the function mechanism? Even though there have been some scholars making efforts to research the function mechanism between time management trend, independent learning and other variables. For example, time management trend has some mediating effects between self-efficacy and self-learning, professional identity and self-learning[11-12]. However, the relationship and function mechanism among self-regulation of time management,

academic performance and independent learning is still in the exploration stage.

Based on the above analysis, this research, referring to domestic related scales of time management self-monitoring and independent learning, measured junior students, explored the effect of self-regulation of time management on independent learning, and the function mechanism of independent learning on self-regulation of time management and academic performance. It is expected in this study that there is a significant positive correlation between the self-regulation of time management and independent learning in junior students, and independent learning plays an intermediary role between the self-regulation of time management and academic performance.

II. RESEARCH METHODS

A. Research objects

The method of cluster stratified random sampling was adopted in Guangdong province. One class in three grades was respectively selected in urban ordinary middle school(a school in Zhuhai) and township middle school(a school in Zhanjiang). A total of 448 questionnaires were issued, and 445 were returned. After excluding invalid questionnaires, there are 417 valid questionnaires. The effective rate was 93.3%. The basic information of subjects is shown as the table 4-1:

TABLE I.   THE BASIC CONDITION OF SUBJECTS(N=417)

Demographic variables	Classes	Number	Percentage
Gender	Male	210	50.40%
	Female	207	49.60%
Grade	Seven	154	36.90%
	Eight	90	21.60%
	Nine	173	41.50%
Only-child	Only-child	83	19.90%
	Non-only child	334	80.10%
Boarding ways	Non-boarding	326	78.20%
	Boarding	91	21.80%

B. Research tools

This paper adopted the *Self-regulation Scale of Time Management for Junior Students* formulated by Zhang Feng and Huang Xiting in 2006[13] and *Self-adjusted Learning Scale* formulated by Zhang Jinkun in 2008[14].

C. Statistical analysis tools

The statistical software package of SPSS18.0 was used for statistical analysis.

III. RESULTS

A. Correlation analysis among the self-regulation of time management, independent learning and academic performance

The related analysis result was shown as table, and the result showed that there was significant positive correlation among them.

TABLE II.   CORRELATION ANALYSIS AMONG THE SELF-REGULATION OF TIME MANAGEMENT, INDEPENDENT LEARNING AND ACADEMIC PERFORMANCE

Observable variables	M	SD	Self-regulation of time management	Independent learning	Academic performance
Self-regulation of time management	129.65	23.36	1		
Independent learning	168.46	28.92	0.79^{**}	1	
Academic performance	-0.00	2.46	0.22^{**}	0.25^{***}	1

B. The mediating effect test of independent learning between the self-regulation of time management and academic performance

The third regression analysis was made according to the mediating effect test model and methods, and the result was shown as table4[15].

TABLE III.   THE MEDIATING TEST ANALYSIS OF JUNIOR STUDENTS' INDEPENDENT LEARNING ON THE SELF-REGULATION OF TIME MANAGEMENT AND ACADEMIC PERFORMANCE

Variables	Regression1 — Independent learning (Coefficient a)	Regression2 — Academic performance (Coefficient b)	Regression3 — Academic performance (Coefficient c)(Coefficient c')
Self-regulation of time management	26.62^{***}		
Independent learning		5.320^{***}	
Self-control of time management			4.55^{***}
Self-control of time management			0.60
Independent learning			5.32^{***}
R^2	0.63	0.06	0.05 0.06
F	708.40^{***}	28.29^{***}	20.68^{***} 28.29^{***}

Note: * represents $p<0.05$,** represents $p<0.01$, note: *** represents $p<0.001$.

IV. DISCUSSION

A. The relationship among junior students' self-regulation of time management, independent learning and academic performance

According to the research in this paper, junior students' self-regulation of time management has a significant and positive correlation with independent learning, and has a strong ability to predict independent learning. This result acquired the supported of previous studies. Dai Xin pointed out that higher vocational students' time management trend has close relationship with independent learning, and it can positively predict the happening of independent learning[12]. Meanwhile, self-regulation of time management is also significantly related with academic performance. Openness and flexibility also have strong ability to predict academic performance. The conclusion was also supported by lots of previous studies. Liu Xingyao found out that the three aspects of time management trend were positively related with academic performance[16]; and Deng Ling found out that students with better grades have higher abilities in time monitoring, which also proved that there exists significant difference in self-regulation of time management between superior and inferior students[17]. In my opinion, the reason is that junior students can develop good self-regulation of time management, correctly treat time, and carry out learning activities with this attitude. Meanwhile, they should combine their conditions, rationally arrange and allocate time, fully use time, and form an efficient time arrangement model. They can acquire more knowledge, and improve learning abilities and efficiency within limit learning time.

And there was positive relation between independent learning and academic performance. The self-examination of independent learning had strong ability to predict academic performance and grades of Chinese, math and English. Jia Shengru's research result also provided support for the conclusion. She found out that there was significant and positive relation between senior-one students' self-regulation and academic grades, and self-regulation had certain ability to predict academic performance[18]. In the education content of current stage, increasing content requires students to review and digest knowledge by themselves. At the same time, the test content needs students' comprehensive knowledge, which means that what students have learned in class cannot satisfy the requirements of evaluation. So students' independent learning is necessary in other time. In addition, students with strong abilities of independent learning have more abundant and comprehensive knowledge system, which can promote their independent learning.

B. The mediating effect of independent learning between self-regulation of time management and academic performance

With the further research of the relationship among them, it was found out that independent learning played a completely mediating role between self-regulation of time management and academic performance. Namely, self-regulation of time management had effects on academic performance through independent learning. Maybe it was because the objects involved in independent learning and self-regulation of time management were different. Self-regulation of time management is monitoring and managing time, while independent learning is supervising and adjusting the whole process of learning. It can be that there is more specific and pertinent of independent learning promoting academic performance. It is easy to find in our real life that some students spend much time learning but without satisfying results. Such kind of students fails to master learning methods so that they cannot have good academic performance.

V. CONCLUSIONS

There are various factors affecting academic performance, and the previous studies have proved that self-regulation of time management is significantly related with academic performance. But the function mechanism hasn't been found out. According to this paper, self-regulation of time management can positively predict independent learning and academic performance, and independent learning has the mediating effect between the others. In addition, there exists significant grade difference in junior students' self-regulation of time management and independent learning. Specifically, students of Grade Seven has stronger ability to self-monitor their time management than those of Grade Nine, and students in Grade Seven and Eight have higher ability to independently learn. The research results in this paper can provide good theoretical basis for educators. At the same time of promoting junior students' better grades, educators should pay attention to students' abilities of independent learning and leave them more time to learn by themselves so that they can better improve their academic performance based on their own learning abilities and habits.

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