A Study on the Correlation between Borrowing Professional Books and Achievements----A case of Landscape Students in Guangdong Ocean University

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Abstract: Aiming at the problem that landscape students in Guangdong Ocean University are distressed by library professional books borrowing, this paper carries out an investigation and research on landscape students' professional books borrowing. Based on the data of landscape students' borrowing books in the library from 2008 to 2015, assistant with Excel, SPSS and other methods, from the total amount of students' borrowing, to the amount of professional and non-professional books borrowing, and then to the professional books, combined with the analysis of landscape professional training plan and students' defense scores, this paper deepened layer upon layer, from top to bottom, and finally draws the conclusion that there is a relationship between the borrowing of books for landscape specialty and students' achievement. The relationship provides a scientific guidance for library science and landscape students.

1. Introduction

Landscape Architecture is a highly comprehensive specialty, which needs a rich knowledge base, but it is far from enough to study from the curriculum alone [1-2]. Therefore, extracurricular readings play an important role in the professional learning for landscape students [3-5]. School library is a vital part of teaching and scientific research facilities in colleges and universities, as well as an important place for students to obtain learning resources [6-8]. A good university library has the functions of guidance, education, cohesion and stimulation for students' study and scientific research [9-12]. However, is there a certain relationship between the landscape students' achievement and their borrowing amount in the library [13-14]?

Therefore, based on the statistics of physical books borrowed by landscape students from grade 2008 to 2015 in Guangdong Ocean University, this paper studies the relationship between the borrowing situation of landscape books and students' academic performance, so as to guide the library to adjust its collection structure, and provide basis and suggestions for further strengthening the library to provide more accurate, effective and humanized services for school teaching and scientific research [15-18]. At the same time, it also provides a reference for the specialties setup, curriculum arrangement and the cultivation of students' reading ability, and provides a scientific and beneficial guidance for landscape students' extracurricular reading, to improve their comprehensive professional ability [19-22].

2. Data Preparation

2.1 Data Sources and Basic Information

To study the relationship between the borrowing situation of landscape books and students' academic performance, the graduation results of landscape students in 2008-2015 grade and their borrowing data in the library were obtained through the school library borrowing management system and the school educational administration management system. The data of borrowed books

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are the books that grade 2008 to 2015 landscape students borrowed for four years in the university library. Each student as an Excel file, which includes the information of books name, books author and borrowing time.

2.2 Data preprocessing

This study takes grade as a large unit, and the books read by each student are categorized into eight semesters, and each semester is categorized into professional books and non-professional books. Professional books are divided into three categories: drawing, foundation and principle. The classification of professional books is based on the school's professional training plan. The first, second and third semesters are mainly the study of drawing knowledge. Third, fourth and fifth semesters are the study of professional fundamental knowledge. Fifth, sixth and seventh semesters are the study of professional theoretical knowledge. Each Excel file or folder is named in detail and uniformly. For example, the folders in the unit of students are composed of the total reading volume of books plus the names of students; the documents of each semester are composed of the reading volume of professional books and the reading volume of non-professional books; the Excel files of each professional book are named by the reading volume of three categories of books: drawing, foundation and principle. Applicating Excel and the method of naming files, the huge and confused data can be classified relatively clearly, which also provides a good data base for the subsequent inductive analysis.

3. Data Statistics and Analysis

The whole statistics and analysis are divided into four stages, from the total amount of books borrowed and performance correlation analysis, professional and non-professional books and performance correlation analysis, outstanding students' professional books borrowed and performance correlation analysis, and then to outstanding students' professional books borrowed analysis, layer by layer, summarize and analyze in different stages.

3.1 Total Amount of Books Borrowed and Performance Correlation Analysis

First of all, it is questioned whether there is a certain correlation between students' scores and the total number of books borrowed by students, regardless of professional and non-professional books. Therefore, on the basis of data preprocessing, using SPSS analysis software, the correlation between total book borrowing and grade 2008-2015 landscape students’ achievement was analyzed. The results are shown in Table 1.

Table 1 Relevance analysis of students' achievements and total borrowed books from grade 2008 to 2015

Year	Pearson correlation coefficient(r)	Year	Pearson correlation coefficient(r)
2008	0.306*	2012	0.305*
2009	0.302*	2013	-0.276*
2010	-0.309*	2014	-0.297*
2011	0.306*	2015	-0.297*

Note: * is significant correlation, $P < 0.05$.

In Pearson correlation coefficient, |r| less than 0.3 indicates that the correlation degree is weak and basically irrelevant. From the table above, it can be seen that all of the |r| are less than 0.3 or about 0.3, it can be concluded that the total amount of books borrowed by students is not related to their grades.

Because the total amount of books borrowed by students has little correlation with their grades, we try to classify the books borrowed into professional books and non-professional books, and deeply investigate the correlation between the amount of books borrowed by non-professional and professional students and their grades.

3.2 Professional and Non-professional Books and Performance Correlation Analysis

Using Excel, on the basis of data preprocessing, the total amount of professional and non-professional books borrowed by each student is counted. Assistant with SPSS, correlation analysis and variance analysis were carried out to research the relationship between the total amount of professional books borrowed by students, the total number of non-professional books borrowed by students, and the ratio of non-professional books to professional books borrowed by students. Relevance analysis is aimed at the total amount of professional books borrowed by students and non-professional books borrowed by students. Significance analysis and variance analysis are aimed at the ratio of non-professional books to professional books borrowed by students and students' performance. The purpose is to determine the accurate relationship between the two, so as to guide students to read.

3.2.1 Relevance Analysis of Professional Books Borrowed and Student Achievement

Table 2 Pearson correlation coefficient and student's professional books borrowing and achievement in grade 2008-2015

Year	Pearson correlation coefficient(r)	Year	Pearson correlation coefficient(r)
2008	0.510**	2012	0.663**
2009	0.454**	2013	0.704**
2010	0.506**	2014	0.539**
2011	0.603**	2015	0.470**

Note: * is significant correlation, P < 0.05, ** is extremely significant correlation, P <0.01.

Table 2 shows that there is a significant positive correlation between students' professional book borrowing and their grades. It proves that reading more professional books is helpful to students' achievement.

3.2.2 Relevance Analysis of Non-professional Books Borrowed and Student achievement

From Table 3, it can be concluded that there is a very significant negative correlation between students' non-professional book borrowing and their grades, which indicates that the more non-professional books they read, the worse their performance will be. But how much professional and non-professional books should be read is appropriate? Another factor, the ratio (total non-professional book reading / total professional book reading), is introduced to measure the relationship between the two.

Table 3 Pearson correlation coefficient and student's non-professional books borrowing and achievement in grade 2008-2015

Year	Pearson correlation coefficient(r)	Year	Pearson correlation coefficient(r)
2008	-0.465**	2012	-0.626**
2009	-0.494**	2013	-0.746**
2010	-0.537**	2014	-0.577**
2011	-0.830**	2015	-0.786**

Note: * is significant correlation, P < 0.05, ** is extremely significant correlation, P <0.01.

3.2.3 Achievement Analysis and Ratio Analysis of Amount of Non-professional Books and Professional Books

In Table 4, Y is the student's achievement, and X is the ratio of non-professional book reading to professional book reading. According to the inferred functional relationship, when having the ratio of non-professional books to professional books that students read, their achievements can be predicted. At the same time, having the achievements can also predict the number of non-professional books and professional books students read. This can give students a range to control the proportion of books reading.

Table 4 Functional relationship between the ratio of non-professional books to professional books borrowing and performance in grade 2008-2015

Year	Function Relationship	R-th
2008	Y=9.290*X^2-28.987*X+101.737	0.933
2009	Y=2.202X^2-17.357*X+97.063	0.940
2010	Y=19.965*X^2-43.303*X+102.472	0.929
2011	Y=9.507*X^2-40.778*X+104.857	0.927
2012	Y=2.675*X^2-19.364*X+95.122	0.965
2013	Y=13.700*X^2-40.626*X+99.139	0.936
2014	Y=1.122*X^2-13.839*X+94.695	0.935
2015	Y=7.943*X^2-37.614*X+96.716	0.957

In Table 5, High Distinction (HD), Distinction (D) and Credit (C) represent academic grade level, with a full score of 100, 100-90 being HD, 89-80 being D and 79-70 being C. From the chart, it can be known that there is a parabolic function relationship between the ratio of non-professional book reading to professional book reading and performance. Within a certain range, with the increase of the ratio, the performance shows a downward trend. From the chart of variance analysis, it can be seen that there is a significant difference in the ratio of academic achievement to the ratio of non-professional to professional books reading amount, which further confirms that the scores are related to the number of professional and non-professional books reading.

Table 5 Relation between the ratio of non-professional books to professional books borrowing and achievements in grade 2008-2015

Year	Academic Grade Level	Index	Grade	Academic Grade Level	Index
	H D	94.8±1.30a		H D	91.2±1.10a
2008	D	86.0±2.24b	2012	D	83.6±2.07a
	C	78.8±0.45c		C	73.6±1.92b
	H D	93.2±2.17a		H D	91.0±1.22a
2009	D	83.2±1.92b	2013	D	85.0±1.00a
	C	76.2±2.95c		C	71.8±0.48b
	H D	93.2±2.17a		H D	91.4±0.89a
2010	D	82.8±3.70b	2014	D	82.6±2.41b
	C	78.4±0.89c		C	75.6±2.88c
	H D	95.0±1.05a		H D	95.2±2.39a
2011	D	84.0±2.39b	2015	D	84.6±3.65b
	C	77.8±0.71c		C	75.8±3.63c

3.3 Outstanding Students' Professional Books Borrowed and Performance Correlation Analysis

Compared with Table 2 and Table 6, it shows that the correlation coefficient between the amount of professional books borrowed by outstanding students and their scores is significantly higher than that of the overall students, which proves that professional books reading has a greater impact on the performance of outstanding students. The reason for this is that every student reads different books, and different kinds of books have different effects on students' grades. Next step of the research is to find out which books have the best impact on students' performance.

Table 6 Pearson correlation coefficient and outstanding student's professional books borrowed and achievement in grade 2008-2015

Year	Pearson correlation coefficient(r)	Year	Pearson correlation coefficient(r)
2008	0.798**	2012	0.881**
2009	0.887**	2013	0.987**
2010	0.939**	2014	0.947**
2011	0.866**	2015	0.953**

Note: * is significant correlation, P < 0.05, ** is extremely significant correlation, P <0.01.

3.4 Analysis of Outstanding Students' Professional Books Borrowed and Teaching Training Plan

According to the analysis of students' scores and ratios, it can be known that there is a relationship between scores and professional borrowing. The smaller the ratio is, the less the non-professional books are borrowed and the more professional books are borrowed. So what kind of professional books have the greatest impact on students? At the time of data preprocessing, each student's professional reading books have been classified according to each semester. Now process the data again. The data of eight semesters are divided into three stages: the first, second and third semesters are mainly drawing knowledge; the third, fourth and fifth semesters are professional fundamental knowledge; and the fifth, sixth, seventh and eighth semesters are professional theoretical knowledge. According to our school syllabus arrangement, it can be concluded that the number of core knowledge reading for each student should be controlled at five or above in these three stages. Using this standard, to see whether the number of students' reading has reached the standard, the number of three stages must be up to the standard in order to meet the requirements of the syllabus. The sample of this study is excellent students from the previous years. As shown in Table 8, the aim is to verify whether these excellent students meet the requirements of the syllabus.

Table 7 Achievement rate of outstanding students in grade 2008-2015

Year	Number of Sample	Achievement Rate
2008	11	72.7%
2009	11	72.7%
2010	10	70.0%
2011	9	77.8%
2012	2	100.0%
2013	1	100.0%
2014	6	66.7%
2015	11	100.0%

From Table 7, it can be seen that the students with HD graduation results in grade 2008-2015 have a high rate of standard reaching. This shows that students follow the school syllabus, learn the core professional knowledge well in class, consolidate after class, and achieve a thorough understanding degree, the achievement will correspondingly keep up with.

4. Conclusions

The results show that although there are many uncertainties between the borrowing of books for landscape architecture and students' performance, there is little correlation between the total amount of books borrowed by students and students' performance through statistical analysis of a large number of data. When deeply analyzing the correlation between student's non-professional and professional book borrowing and achievement, it can be found that there is a significant positive correlation between student's professional book borrowing and achievement, a very significant negative correlation between student's non-professional book borrowing and achievement, and a certain functional relationship between the ratio of student's non-professional book borrowing to

professional book borrowing and achievement. Finally, from book borrowing to professional book, through the analysis of excellent student's professional book borrowing, some instructive books with guidance significance and professional training plan are obtained.

Through this study, on the one hand, it can better guide landscape students' extracurricular reading and improve their professional ability; on the other hand, it can better improve the construction of school libraries and play an important role in personnel training.

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