

Research on Curricular Crossover Reform of the Environmental Art Design Courses

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Abstract. In the context of vigorously promoting the interdisciplinary in China, by comparing the concept of cross-curriculum, this paper puts forward the topic of curricular crossover. Accordingly, the purpose of this paper is to verify the curricular crossover helps to improve the learning outcomes of students in university. In this study, in order to obtain reliable data, students of the major of environmental art design and lecturers were invited as participants for this research.

1. Introduction

At present, Chinese universities attach great importance to the interdisciplinary. By drawing on experiences of the developed countries such as the United States, Germany and Japan, as well as combining Chinese national conditions, Chinese higher education has been exploring an interdisciplinary education model that both conforms to the reality of Chinese universities and follows the principles of international education. However, there are few studies on “curricular crossover” between courses in a specific major in China. In this paper, students of the major of environmental art design and their lecturers were invited as participants for this project to help verify the curricular crossover improve the learning outcomes of students.

2. Literature review

In the session of literature review, in order to make the application of the research results wider, the search keywords were expanded to “art and design”, not just the “environmental art design”. After searching for keywords that include “higher education”, “curricular crossover”, and “art and design” through the China National Knowledge Infrastructure (CNKI), the results are as follows: There were 6 publications in 2012, which is the year with the most publications in the past 15 years; between 2013 and 2018, the number of related topics is floating between one and two. At the same time, only 19 papers related to curriculum setting, knowledge points, and cross-related topics were found by investigation of cross-related literature of higher education. The above shows that there exist few relevant literatures, indicating that there is still a gap in the research in this field.

According to the above-mentioned few literatures, the trend of undergraduate teaching reform in colleges and universities is mainly focused on practical teaching and curriculum structure. Specifically, there is only one article related to the intersection of courses in art design [1]. However, the “cross-curriculum” surveyed in this article is essentially different from the “curricular crossover”. For this issue, this paper will be given the definition later.

3. Problem statement

The results of the research conducted by Liu Shaoshuai in a university in Beijing showed that most students do not understand the benefits of foundation course teaching for future learning; 50% of the students did not know how to apply the knowledge of foundation courses to the specialized curriculum; in the traditional courses, the teaching of foundation courses does not play a good support in specialized courses [2]. Additionally, most students are confused about the connection between the foundation curriculum and the specialized curriculum. One of the reasons is that these two parts of courses are taught independently, and there is a lack of effective guidance for students.

Xia Yanjing mentioned in her doctoral thesis that the core issue of the curriculum structure of art in Chinese colleges and universities is the composition of the curriculum sequence [3]. This sequence includes arrangements of the foundation course, the specialized course, the technical course, and the comprehensive course. Taking the Tianjin Academy of Fine Arts, the Beijing Institute of Graphic Communication, and the Beijing Institute of Fashion Technology as examples, a complete system of course sequences has been formed. These universities arrange the foundation courses before the specialized courses, and the skills courses are taken before the comprehensive courses. Students learn from the bottom up, from easy to difficult, from basic to comprehensive. However, in the actual teaching practice, the author found that the traditional sequence teaching system cannot properly solve the students' confusion about the curriculum connection.

In view of the problem that the traditional sequence teaching system cannot solve the issue of curriculum connection, this paper concentrate on the environmental art design courses of the university where she works as the research site, explores the curricular crossover reform and practice, and tries to formulate the applicable countermeasures for curricular crossover.

4. Scope and objectives

The definition of “cross-curriculum” is the intersection, integration, and penetration of two or more courses, which is an emerging course that appears on the margins. Therefore, the cross-curricular course is essentially an independent course, which only increases the integration and penetration of knowledge in the content of lecture. On the contrary, the term “curricular crossover” in this paper is the packaged curriculums of two or even three independent courses. It is a combination of multiple courses that are integrated into a modular system. Specifically, in this paper, it is essentially the cross-teaching between foundation (technical) courses and specialized (comprehensive) courses.

In this study, two or three independent courses were packaged and the course sequence was changed, from a traditional bottom-up learning sequence to a top-bottom sequence, sometimes involving crossover. Students first learned comprehensive courses, and further, students can hereafter learned skills courses with a problem-solving mentality in the middle stage of the comprehensive course. Therefore, the purpose of this study is to improve the learning outcomes of students by achieving the following objectives in teaching and learning processes: (1) strengthen the connection between the specialized curriculum and the foundation curriculum; (2) enable the teacher clarify the role each independent course plays in the overall ability development of students; (3) eliminate the confusion of students learning under the traditional curriculum system, and let students clarify the teaching objectives of the courses they are leaning.

5. Data collection procedure

To test the impact of curricular crossover design on the learning outcomes of students, this study initially adopted experimental design for data collection. After that, the survey design provides a quantitative and numeric description of the participants' perceptions [4]. In this study, the participants before the crossover of the course were students of the environmental art design program (enrolled in 2015), with a total of 102 classes in 3 classes. After the “curricular crossover”, the participants were another group of 110 students from three classes (enrolled in 2016). Additionally, the two instructors are also participants. The reason why the students are not the same before and after is because the same students are unlikely to take one course twice in university. Judging from the learning results of previous courses, and through the evaluation of their previous lecturers, the professional level and learning ability of the students in two groups are equivalent. Furthermore, this investigation was conducted with all students signing the consent form.

The students enrolled in 2015 were first completed the basic technical course “Computer Aided Design–SketchUp”, and then continued to study the comprehensive specialized course “Public Landscape Design”. In contrast, as for the courses for the students enrolled in 2016, the progress of the two courses was crossed during the teaching. The specific intersections are as follows (Table 1).

Due to the paper length, the name of the specific course chapters has been omitted. Additionally, questionnaires were also distributed to students after the courses.

Table 1. Course intersection of “Public Landscape Design” and “Computer Aided Design-SketchUp”

Phases	Objectives	Contents	
Phase 1	<i>Stage of understanding:</i> Through the “Public Landscape Design” course, students got a preliminary understanding of the nature of the course and the scope involved.	“Public Landscape Design” Module 1 Courses of preliminary understanding	
Phase 2	<i>Cross stage:</i> Based on the understanding of landscape design, the technique course “Computer Aided Design - SketchUp” will be targeted simultaneously. Because of the landscape design foundation, students can understand why they learn software “SketchUp”.	“Public Landscape Design” Module 2 Landscape graphic design technique, Preliminary landscape design	“Computer Aided Design-SketchUp” Software learning combined with the course “Public Landscape Design”
Phase 3	<i>Comprehensive application stage:</i> In the end, the knowledge of the two courses should be integrated into a whole project.	“Public Landscape Design” Module 3 Comprehensive project (example 1) Comprehensive project (example 2)	

6. Findings

The findings were presented in three aspects, namely learning outcomes, feedbacks from students, and feedbacks from lecturers.

6.1 Learning outcomes

All grades were given by three lecturers, for objectivity, two of whom did not teach the courses. By comparing the scores in the chart, students who scored 100-90 after the curricular crossover were increased by 2% and students with 90-80 points increased by 8%. On the contrary, the proportion of low-scoring students (below 80 points) was significantly reduced (Figure.1).

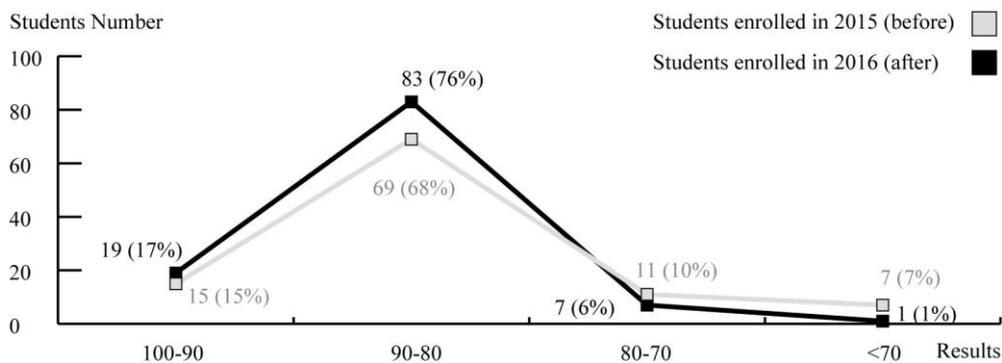


Fig. 1. Learning outcomes of students

6.2 Feedbacks from students

From the comparison of the student feedbacks before and after the curricular crossover in Table 2, the number of students who understand how the fundamental knowledge is used flexibly has increased by 34%; the number of students who learned to bring questions to find a solution has increased by 38%; and the number of students who felt that their self-learning ability has increased by 30%. In contrast, both the number of students who are confused and feel no benefit has been reduced to varying degrees.

Table 2. Students' feedbacks

Participants	I understand how the fundamental knowledge are used flexibly	I learned to bring questions to find a solution	Self-learning ability has improved	Confused about this way of teaching	Not benefited me
Students enrolled in 2015 (before)	46 (45%)	33 (32%)	14 (14%)	30人(29%)	17(17%)
Students enrolled in 2016 (after)	87 (79%)	78 (70%)	48 (44%)	9 (8%)	6 (5%)

6.3 Feedbacks from lecturers

The feedback from the two instructors on the curricular crossover is as follows (Table 3). Each score is a 5-point scale, and the scores in the table are the average scores of the three lecturers. Combining the interviews and the results of the questionnaires, the lecturers believe that the curricular crossover facilitated students to learn with questions, this form can improve students' motivation. However, the crossover of the curriculum also brings some challenges to lecturers. Firstly, the cross-coordination with other courses requires good communication and cooperation skills among lecturers. Secondly, lecturers only teach an independent course in the past, they do not need to understand related courses; but now lecturers must comprehend all other courses that intersect with their own curriculum.

Table 3. Lecturers' feedbacks

Increased my workload	Improved student learning	Bring difficulty to the work	The teaching method is a bit confusing	Meaningless	other
2	4.5	3	0	0	0

7. Conclusion

Thus far, the original objectives are clearly supported by the current findings. In addition to the expected results, it also includes unexpected findings from lecturers. On the one hand, the method of curricular crossover places high demands on lecturers' communication skills and professional abilities. Especially lecturers who teach foundation courses need to have the ability to apply basic knowledge flexibly. On the other hand, this form also allows lecturers to clarify the role each independent course plays in the development of students' comprehensive abilities, which is beneficial to curriculum development. The last but not the least, the crossover of courses allows students to clarify the objectives of the course and help students improve their ability to solve problems.

References

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