

Reflection and Exploration on the Teaching Reformation of Application-oriented Curriculum in Local Universities

Taking *Three-dimensional Composition* for an Example*

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Abstract—Taking the course of *Three-dimensional Composition* for design specialty as the example, the thesis conducts a survey analysis on the learning situation from the aspect of curriculum teaching, learning habit, learning method, learning capacity, extracurricular reading, individual personality and learning environment, explores the teaching design of the application-oriented course *Three-dimensional Composition* in respect of teaching mode, learning situation and curriculum content, and expounds the working process systematization-based situational teaching flow.

Keywords—*local universities; application-oriented curriculum; teaching reformation; Three-dimensional Composition*

I. INTRODUCTION

In recent years, together with the transformation development tendency, universities are committed to training application-oriented talents. The course *Three-Dimensional Composition* is faced with new applied-oriented curriculum construction requirements. As the backbone professional basic course of design specialty, *Three-Dimensional Composition* possesses significant synthesis and practicability features. Three-dimensional composition extracts the co-related space factors among all design categories from overall design field and specializes in the study on its visual composition effects and modeling features, therefore scientifically, systematically and comprehensively commanding three-dimensional form and discussing about

the theory, law and structure of three-dimensional modeling. Throughout the learning of this course, students could cultivate their spatial imagination and spatial design ability, reinforce the combined exercise of mind and hand, activate initiative learning, thinking and design practice, stimulate creative thinking and innovative ability and lay a firm foundation for future design practice. It has vital realistic meaning to improve and elevate students' comprehensive design ability and quality.

II. LEARNING SITUATION ANALYSIS OF THREE-DIMENSIONAL COMPOSITION

For obtaining deep insights into the features of students majoring in design specialty in local universities, instructing the teaching reformation design and realizing the goal of course construction for application-oriented course *Three-Dimensional Composition*, the course team chooses 62 students in *Environment Design and Visual Communication Design* specialty enrolled by the Academy of Arts in Xinyu College in 2016 as the survey respondents and collects altogether 60 questionnaires. Based on the data analysis of students' assessment of curriculum teaching, learning habit, learning method, learning capacity, extracurricular reading, and individual personality and learning environment in "Fig. 1", this thesis sums up the learning situation of students majoring in *Environment Design and Visual Communication Design* specialty in 2016 grade.

*The research results of the application type course "three-dimensional constitution" of Xinyu University.

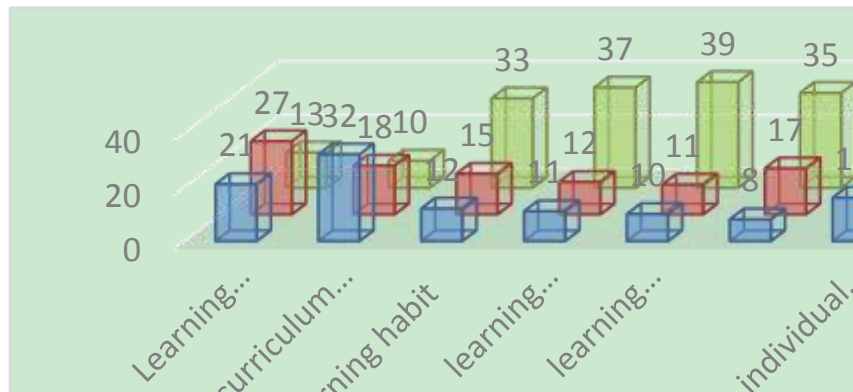


Fig. 1. Learning situation survey statistical table for design specialty in the academy of arts from Xinyu College.

The first column is about students' assessment for learning environment. As indicated by the questionnaire data for learning environment, 35% students feel satisfied with surrounding learning environment, and 21.7% feel dissatisfied. This should be primarily attributable to the difference in personality, communication ability, living background and other factors.

The second column is about students' assessment for the curriculum teaching of Three-dimensional Composition. 83.3% students feel satisfied or basically satisfied with Three-Dimensional Composition and quite a few students expect the curriculum teaching model to better adapt to their cognitive characteristics and give them more chances to positively participate in the class.

The third column is about students' assessment for their own learning habit, learning habit and learning capacity. The degree of satisfaction for the three items is respectively 20%, 18.3% and 16.7% and corresponding degree of dissatisfaction is respectively 55%, 61.7% and 65%. Most students consider that they could not reasonably arrange their time, command effective learning method, balance reading and leisure, or stick to any objectives out of indolence. Moreover, they suffer from heavy pressures because they realize the gap between their academic expectations and reality.

The fourth column is about students' assessment for extracurricular reading. As indicated by relevant questionnaire data about students' reading of course learning contents, over half students rarely read professional articles or books, listen to speeches or go to library to look up materials related to the specialty in spare time, and only 13.3% students majoring in design specialty read relevant knowledge in extracurricular reading process.

The last column is about students' assessment for individual personality. 26.7% students feel satisfied with their own personality, which could be primarily found from personal conducts, controllable emotions, independence and good interpersonal relationships; 35% feel dissatisfied with their own personality, which could be primarily found from poor thirst for knowledge, indolence, weak sense of time, self-control ability and communication ability, and self-centeredness.

III. TEACHING DESIGN FOR APPLICATION-ORIENTED COURSE THREE-DIMENSIONAL COMPOSITION

Based on full analysis for learning situation, the thesis aims to deepen the teaching reformation of application-oriented course *Three-Dimensional Composition*, stimulate students' self-learning enthusiasm, actively connect with the teaching modes and means proper for the thinking features and learning methods of students in design specialty from local universities, explore the application of problem-oriented learning, case learning, cooperation learning and project learning, and other learning methods in the teaching practice of application-oriented course *Three-Dimensional Composition*.

A. Design of Teaching Mode

According to the questionnaire survey, most students expect the course teaching mode of Three-Dimensional Composition to more adapt to the cognitive features of students majoring in design specialty and give them more chance to positively participate in class. Traditional teaching mode dominated by the explanation of teachers proves to have poor student learning initiative and learning effects. According to design specialty teaching features and market design practice requirements, the course group implements the

"learning-research-production& production-learning-research" teaching mode. The implementation of the "learning-research-production& production-learning-research" teaching mode altogether contains three links. In the first link, course principal constructs the learning situation according to market conditions, while students finish the assignment in cooperative groups as planned and learn and judge the knowledge in learning situation under the instructions of teachers. In the second link, course principal or students directly get contact with companies and altogether formulate project cooperation rules and contents. Subsequently, learning situation group leader will decompose and distribute assignments to specific students. Relevant teachers take charge of giving certain instructions and demonstrations and asking students to collect, collaborate, design and have inquiry-based learning for the assignments. Finally, as shown in "Fig. 2", the first link and

the second link would mutually integrate and incorporate with each other.

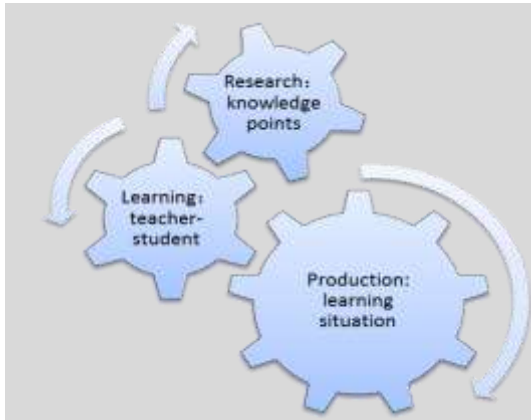


Fig. 2. "Learning-research-production& production-learning-research" teaching mode.

B. Design of Learning Situation

This section mainly determines the typical modeling design process of Three-Dimensional Composition. Specific procedures of modeling design process primarily include modeling scheme conception, drawing modeling structure effect sketch, decomposition and combination modeling structure, material selection, measurement, sampling and processing; While implementing the teaching processing for this typical modeling design process, the thesis chooses comparative modeling elements in the modeling design process as the reference; Next, it determines point, line and block material and comprehensive modeling design according to the modeling elements and designs the learning situation with the principle from simplicity to complexity and synthesis as shown in "Fig. 3".

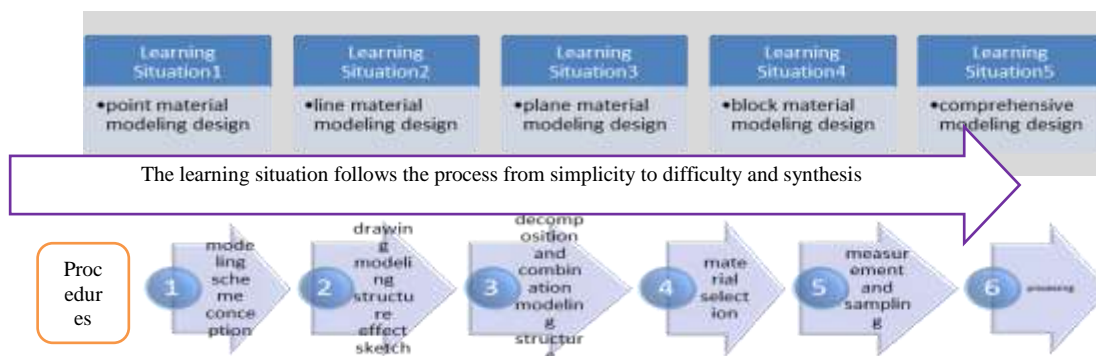


Fig. 3. Structural Design of Application-Oriented Course Three-Dimensional Composition.

C. Design of Curriculum Contents

On account of design companies' requirements for curriculum knowledge and design capacity, the thesis takes projects as the carrier and adopts task-driven mode to reconstruct the teaching contents of *Three-Dimensional Composition*. In line with the real process of three-

dimensional modeling design, there have five learning situations, namely point material, line material, plane material, body material and comprehensive modeling design. Corresponding knowledge points could be determined pursuant to the task requirements of each learning situation as shown in "Table I".

TABLE I. THREE-DIMENSIONAL COMPOSITION CURRICULUM KNOWLEDGE MATRIX

Knowledge point Learning situation	Theoretical knowledge	Form element	Formal beauty	Formal sense	Modeling method
point material modeling design	integrating abstract knowledge into project	material	symmetry and balance, contrast and reconciliation, rhythm and meter, unity and change		combination and simulation
line material modeling design		color and material	symmetry and balance, contrast and reconciliation, rhythm and meter, unity and change	illusionary visual sense	knit, combination and simulation
plane material modeling design		color, texture and material	symmetry and balance, contrast and reconciliation, rhythm and meter, stability and lightness, unity and change	sense of texture, sense of color, and illusionary visual sense	transformation, deconstruction, combination and simulation
body material modeling design		color, texture and material	symmetry and balance, contrast and reconciliation, rhythm and meter, stability and lightness, unity and change	sense of mass, sense of space, sense of texture, sense of color, and illusionary visual sense	hollowing-out, transformation, deconstruction, combination and simulation
comprehensive modeling design		color, texture and material	symmetry and balance, contrast and reconciliation, rhythm and meter, stability and lightness, unity and change	sense of mass, sense of space, sense of texture, sense of color, and illusionary visual sense	hollowing-out, knit, transformation, deconstruction, combination and simulation

IV. TEACHING IMPLEMENTATION OF APPLICATION-ORIENTED COURSE THREE-DIMENSIONAL COMPOSITION

Taking project as the carrier, teaching implementation should allow every student majoring in design specialty to actively participate in the class in the form of cooperative group so that students could learn and comprehend abstract theoretical knowledge points in pragmatic design practices and finally apply the knowledge points in projects. In this way, the teaching mode could stimulate students' learning enthusiasm to the uttermost and allow students to command real skills in real practice environment.

First of all, the teacher should establish and improve cooperative group appraisal management mechanism, take project as the carrier to clarify learning contents and appraisal objectives and encourage students to actively learn, exercise and have design practice after class.

Secondly, the teacher should utilize advanced teaching equipment such as multi-media, P+B environmental art training camp, modeling production workshop, and computer training machine room in practical teaching, and combine theory, demonstration, and practice as a whole. Moreover, students could repetitively correct their assignments in combination with the comments of the teacher until meeting teaching requirements.

Thirdly, the teacher should divide students to several cooperative groups with 3-4 members according to their specialty and knowledge structure. These cooperative groups are supposed to take charge of creativity, material, design and processing by turns and accordingly reach the purpose to exercise students in an all-round way and realize mutual progress. While attending class, the teacher could encourage students to mutually review each other's assignments and express their own thoughts so that they could make progress, find the gap and clarify future development orientation.

Fourthly, it is also important to try new form of three-dimensional composition achievements, break through the prime paper training form in traditional three-dimensional composition teaching, stipulate themes and free materials, and widen students' recognition about composition. Simple hand-made three-dimensional form tries 3DsMAX and CAD software to design complicated or creative three-dimensional form modeling facing; refers to computer effects sketch to produce work with subtle materials and processing skills; and guides students to value the application of environmental protection materials.

Three-Dimensional Composition project situational teaching based on working flow mainly follows seven steps as shown in "Fig. 4".



Fig. 4. Seven steps of project situational teaching.

V. APPRAISAL ASSESSMENT OF APPLICATION-ORIENTED COURSE THREE-DIMENSIONAL COMPOSITION

Course teaching and appraisal should be a synthesis where the two parties mutually interact with each other. The

course appraisal system of *Three-Dimensional Composition* should not follow the past simple appraisal method characterized by class teaching, traditional textbook-based teaching contents, common knowledge and skills-dominated examination and "class assignment"-centered traditional

final examination performance. Such appraisal method far from meeting present social development and industry requirements is in need of bold innovation and reformation. Based on the course principle of applied talent cultivation, the course group reforms traditional appraisal mode and preliminarily sets up a multi-layer, all-round and practice-focused appraisal assessment mechanism. In line with the course features in *Three-Dimensional Composition*, the course group proposes to further improve previous course appraisal means and implement “theoretical examination (30%) + hand-made work (50%) + competition (20%)” examination reformation as shown in "Table II".

TABLE II. APPRAISAL MODULE OF COURSE THREE-DIMENSIONAL COMPOSITION

appraisal module	appraisal form	score
theoretical examination	written examination	30
hand-made work	skill operation, interaction, cooperative group mutual review	50
competition	full-time and part-time teacher comprehensive assessment and defense appraisal	20

- The theoretical examination follows the form of closed-book examination and uses hundred-market system for scoring. The question items cover 60% knowledge points and emphasize the application-oriented features of the course. Besides, the capacity level and proportion of question items are shown as "Table III".

TABLE III. THEORETICAL EXAMINATION CAPACITY LEVEL PROPORTION OF *THREE-DIMENSIONAL COMPOSITION*

difficulty level	proportion
memorization	10%-15%
comprehension	20%-25%
application	30%-35%
synthesis	30%-35%

- Hand-made work assessment standards follow hundred-mark system for scoring and primarily make assessment via project tasks. The assessment will be made according to students' performance in project assignments during each stage. Please refer to "Table IV" for hand-made work project planning design and assessment standards.

TABLE IV. HAND-MADE WORK PROJECT PLANNING DESIGN AND ASSESSMENT STANDARDS

planning design	assessment standards	score
project introduction	market conditions and prospects	15%
point, line, plane and body integration	aesthetic sense of form	35%
material selection and processing	energy conservation and environmental protection (green design)	10%
design skills and methods	sketch and model	15%
user use experience	man-machine interaction	25%

- The competition follows hundred-mark system for scoring, including college-level competition, school-level competition and provincial-level competition as shown in "Table V". Both school-level competition and provincial-level competition supplement college-level competition. Every member in the cooperative group enjoys equal scores for award-winning works. If students win awards in other projects at different levels, the system will record the scores at maximum level.

TABLE V. WORK COMPETITION OF *THREE-DIMENSIONAL COMPOSITION*

level	college level				school level				provincial level		
	first prize	second prize	third prize	winning prize	first prize	second prize	third prize	winning prize	second prize and above	third prize	winning prize
score	90	85	80	75	95	90	85	80	100	95	90

VI. CONCLUSION

Throughout university-company cooperative construction for several years, companies which participate in *Three-Dimensional Composition* course cooperation include Xinyu City Funshion Interior Design Engineering Company Limited, Jiangxi Province Venus Environmental Art Engineering Company Limited, Xinyu Yali Furniture Limited Liability Company, Oriental Paris Furniture Market, Xinyu City Jiali Furniture Manufacturing Co., Ltd, Xinyu Enda Cultural Communication Co., Ltd, Xinyu Branch Company of Ebey Decoration & Design Group Co., Ltd. The course *Three-Dimensional Composition* takes “P+B environmental art work training camp” as the prime carrier and urges students to learn authentic skills in practical design environment and practices. It greatly simulates students' learning initiative by propelling students to understand and internalize knowledge during series of specific design practices. Up to now, a series of education and teaching

achievements have been made, including one school-level third prize of teaching achievements, one national-level textbook, three teaching papers, and multiple school-level and provincial-level prizes in student competition.

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