



BioTechnology

An Indian Journal

FULL PAPER

BTALJ, 10(6), 2014 [1550-1555]

Art and design education's humanistic education occupied proportions research under analytic hierarchy process

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ABSTRACT

Humanistic education is particular important for art and design specialized students. The paper utilizes analytic hierarchy process model to study on art and design education's humanistic education occupied proportions from aesthetic consciousness, innovation consciousness, the perfection of character, and professional competence promotion such four aspects. By analytic hierarchy process model, the paper gets art and design major education mode, humanistic education accounts for 40.2% of art and design major, professional education accounts for 30.2% in total proportions, and traditional education accounts for 28.3% in total proportions. By obtained result, it can show that humanistic education is particular important for art and design major's education mode.

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KEYWORDS

Analytic hierarchy process;
Humanistic education;
Art and design;
Education mode.

INTRODUCTION

With characteristic education development, Chinese traditional education has also been comprehensive reformed, art and design major that possesses most extremely plentiful cultural background is particular important in universities' education mode. Humanistic education refers to inheritance and development of traditional cultures. Design itself is an organic combination in humanistic quality, is comprehensive reflection of a country's politics, economy, culture and science. Culture and economy in every era propel to design development in every era; art and design in every era reflect cultural features in every era. Chinese thousands years art education takes classic calligraphy and or painting models as good examples to used as education thought, "Believe and love ancient things", "Artist firstly regards

ancient people as teachers, and subsequently regards creation as teachers" all deeply express Chinese ancient art education's aims of inheriting traditional culture and building humanistic quality, therefore present famous art designer as Yu Wen-Kai, Li Chun and so on.

Nowadays, Chinese art has a drawback that is pursuing so-called personality, while avoiding discussion of Chinese traditional culture ideas, splashing paintings, and attaching some scrap elements in paper at random that is so-called behavior art, but is a kind of non-creative creative to creators. So before behavior art creating, whether he really understand and grasp traditional art essence? It's unknown to us. Old adage said "Ignore ancient people predecessors' method, while self-assured as celebrities to spray that cannot enjoy widely popularity". Since opening-up and reform, social eco-

conomic development has propelled to art and design develop towards industrial design, environmental art design, visual communication design and others multiple orientations, though design kinds is diversified, design form is various, design spirits always remain a kind of continuity. Traditional culture as organic composition in design spirits, it always implements the whole design lifeline. The writer has fundamentally understood during design working that Chinese design field existing drawbacks, "bringism" has become designer's old trick. Imitation, plagiarizing, and making up have become fixed modes. Especially prominent in our architecture art design, particularly in the introduction of western architecture art, western architecture design thought and techniques of expression have become Chinese designers' transcriptions, no matter architecture's territory, property and features, entirely adopt marble pillar, gypsum spiral lines as decoration, or just employ foreign designers to design, if this is so-called "Learn from west and use in China", "acting on international standards", then Chinese art and design will be nipped in the bud. Chinese ancient design thought due to under impact on Confucianism and Taoism philosophical thought, it formed into architecture thought of "win by comparing", "unity of heaven and man". It constructed Palace Museum such glorious building with ethnic features. Japan did better in the aspect than our country, it fused native culture and foreign culture, created "The Shrine", "Temple of God" such buildings with national cultural features, which led to it becomes one of important design powers from postwar to 1970s.

During long-term learning and educating, art and design universities education are mostly restricted in students' written education. But in students' art and design works at ordinary time, they often shows students understanding and performing on history, culture, and even humanistic characters, therefore, fuse humanistic education into art and design education, it is beneficial to students better develop themselves design inspiration, and is also beneficial to better interpret art and design.

ART AND DESIGN EDUCATION'S HUMANISTIC EDUCATION INFLUENCE FACTORS ANALYSIS

Art and design specialized students' basic courses

are roughly as socialistic theory, philosophy, political economy, an introduction to art, Chinese art history, history of Chinese arts and crafts, World art history and so on. For humanistic education history, folk custom and other courses learning are quite little, and these courses can effective play important roles in strengthening students in the aspects of aesthetic consciousness, innovation consciousness, the perfection of the character, and professional competence promotions.

Aesthetic consciousness

Humanistic education contains students' learning in humanistic history, folk customs cultures, for art and design students, except for contacting learning courses in classroom, obtained aesthetic perception from humanistic history and folk customs cultures are very important, such kind of education mode effective cultivates students' aesthetic awareness.

Innovation consciousness

Development of art and design is from students' constantly innovation on art perception as long as students innovation consciousness to be strong enough, then it can continuously create out new art and design.

The perfection of the character

For art and design students, it always the character decide student art and design trend, in school learning, for students personality perfection is an important link for students walking away from classroom and learning.

Professional competence promotion

To sum up, excellent professional standard that starts from students' essence is the key to success; therefore the paper takes professional competence promotion as education level's influence factor.

MODEL ESTABLISHMENTS

Establish hierarchical structure

Firstly establish a clear and well-organized structure for problems, at first establish three layer relations, target layer, medium layer, scheme layer. Classified layer number is related to research objects' complicated degree and detailed degree.

The paper based on analytic hierarchy process, it

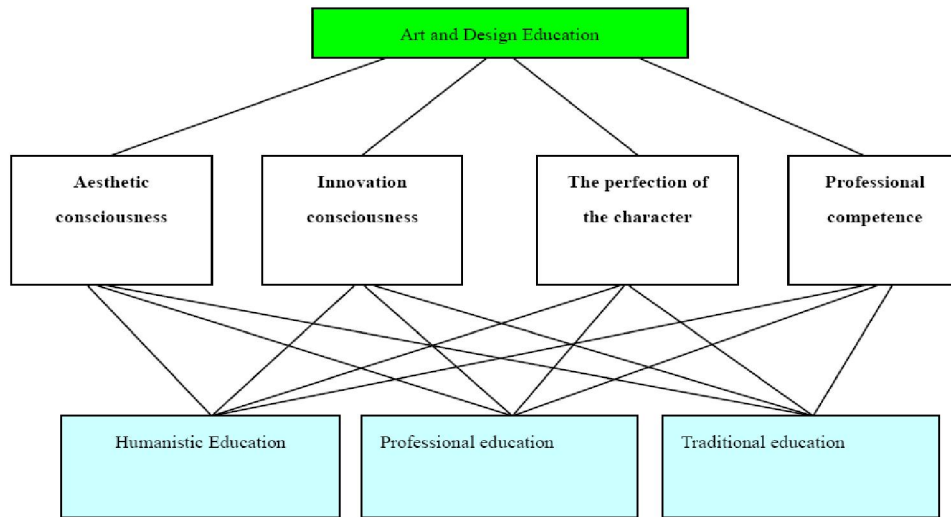


Figure 1 : Hierarchical structure

quantizes art and design education mode. Establish target layer, criterion layer, and scheme layer relations.

Target layer: Art and design Education mode.

Criterion layer: Scheme influence factors, c_1 is the aesthetic consciousness, c_2 is innovation consciousness, c_3 is the perfection of the character, c_4 is professional competence promotion.

Scheme layer: A_1 is humanistic education, A_2 is professional education, A_3 is traditional education

It gets hierarchical structure, as Figure 1 shows.

Construct each layer judgment matrix

In criterion layer, each criterion target occupies different proportions, by researchers researching on criterion layer, and according to number 1~9 and its reciprocal to judge each criterion target occupied weights.

The paper takes TABLE 1 showed 1~9 scale table

as evidence, it makes weight analysis.

At first, solve judgment matrix, according to above principle, reference 1~9 scale setting, and according to experts' experiences and refer to lots of documents, it gets paired comparison matrix that are respective as TABLE 2-6.

Among them, TABLE 2 is target layer and criterion layer comparison matrix, TABLE 3-6 are criterion layer and scheme layers' comparison matrixes.

Hierarchical single arrangement and consistency test

Use consistency indicator to test: Set in comparison matrix, λ_{max} is maximum feature value, n is comparison matrix order:

$$CI = \frac{\lambda_{max} - n}{n - 1}$$

CI Value gets smaller; it shows judgment matrix

TABLE 1: 1~9 Scale table

Scale a_{ij}	Definition
1	factor i and factor j have equal importance
3	factor i is slightly more important than factor j
5	factor i is relative more important than factor j
7	factor i is extremely more important than factor j
9	factor i is absolute more important than factor j
2 4 6 8	Indicates middle state corresponding scale value of above judgments
Reciprocal	If factor i and factor j are relative weak, obtained judgment is reciprocal

gets closer to completely consistent. *CI* gets bigger, it shows that known degree is lower.

Hierarchy total sorting and its consistency test

$$A = \begin{pmatrix} 1 & 1/3 & 3 & 3 \\ 3 & 1 & 5 & 5 \\ 1/3 & 1/5 & 1 & 1 \\ 1/3 & 1/5 & 1 & 1 \end{pmatrix}$$

Nbrmalizat ion accor di ng to col umn vect or $\rightarrow \begin{pmatrix} 0.214 & 0.192 & 0.3 & 0.3 \\ 0.075 & 0.577 & 0.5 & 0.5 \\ 0.121 & 0.115 & 0.1 & 0.1 \\ 0.201 & 0.115 & 0.1 & 0.1 \end{pmatrix}$

Sol ve sum by li ne $\rightarrow \begin{pmatrix} 1.066 \\ 2.22 \\ 0.386 \\ 0.386 \end{pmatrix}$

Nbrmalizat ion $\rightarrow \begin{pmatrix} 0.2515 \\ 0.555 \\ 0.0965 \\ 0.0965 \end{pmatrix} = W^{(0)}$

It can get:

$$AW^{(0)} = \begin{pmatrix} 1 & 1/3 & 3 & 3 \\ 3 & 1 & 5 & 5 \\ 1/3 & 1/5 & 1 & 1 \\ 1/3 & 1/5 & 1 & 1 \end{pmatrix} \begin{pmatrix} 0.2514 \\ 0.555 \\ 0.0965 \\ 0.0965 \end{pmatrix} = \begin{pmatrix} 1.012 \\ 2.275 \\ 0.387 \\ 0.387 \end{pmatrix}$$

$$\lambda_{\max}^{(0)} = \frac{1}{4} \left(\frac{1.054}{0.257} + \frac{2.254}{0.786} + \frac{0.257}{0.045} + \frac{0.457}{0.078} \right) = 4.038$$

$$w^{(0)} = \begin{pmatrix} 0.278 \\ 0.56 \\ 0.045 \\ 0.098 \end{pmatrix}$$

Similarly, it can calculate judgment matrix:

TABLE 2 : Comparison matrix

G	c ₁	c ₂	c ₃	c ₄
c ₁	1	1/3	3	3
c ₂	3/8	1	5	5
c ₃	1/3	1/5	1	1
c ₄	1/3	1/5	1	1

$$B_1 = \begin{pmatrix} 1 & 1 & 1/3 \\ 2 & 1 & 1/3 \\ 3 & 6 & 1 \end{pmatrix}, B_2 = \begin{pmatrix} 1 & 5 & 5 \\ 1/5 & 1 & 2 \\ 1/5 & 1/5 & 1 \end{pmatrix}, B_3 = \begin{pmatrix} 1 & 6 & 8 \\ 1/5 & 1 & 5 \\ 1/8 & 1/5 & 1 \end{pmatrix}, B_4 = \begin{pmatrix} 1 & 8 & 8 \\ 1/5 & 1 & 5 \\ 1/8 & 1/5 & 1 \end{pmatrix}$$

By above, it is clear that the paper takes art and design education mode maximum feature value and feature vector as weights to analyze, and establishes weight hierarchical chart.

$$\lambda_{\max}^{(1)} = 3.31, \omega^{(1)}_1 = \begin{pmatrix} 0.252 \\ 0.089 \\ 0.66 \end{pmatrix}$$

$$\lambda_{\max}^{(2)} = 3.12, \omega^{(1)}_2 = \begin{pmatrix} 0.575 \\ 0.286 \\ 0.139 \end{pmatrix}$$

$$\lambda_{\max}^{(3)} = 3.30, \omega^{(1)}_3 = \begin{pmatrix} 0.624 \\ 0.240 \\ 0.136 \end{pmatrix}$$

$$\lambda_{\max}^{(4)} = 4.05, \omega^{(1)}_4 = \begin{pmatrix} 0.185 \\ 0.240 \\ 0.575 \end{pmatrix}$$

Use consistency indicator to test: $CI = \frac{\lambda_{\max} - n}{n - 1}$,

$$CR = \frac{CI}{RI}$$

TABLE 3: Comparison matrix

c ₁	A ₁	A ₂	A ₃
A ₁	1	1	1/3
A ₂	1	1	1/3
A ₃	3	3	1

TABLE 4 : Comparison matrix

c ₂	A ₁	A ₂	A ₃
A ₁	1	8	7
A ₂	1/8	1	5
A ₃	1/7	1/5	1

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TABLE 5 : Comparison matrix

c_3	A_1	A_2	A_3
A_1	1	5	8
A_2	1/5	1	5
A_3	1/8	1/5	1

TABLE 6 : Comparison matrix

c_4	A_1	A_2	A_3
A_1	1	3	8
A_2	1/3	1	5
A_3	1/8	1/5	1

Use TABLE 7 RI value, it gets judgment matrix A ,

$$\lambda_{\max}^{(0)} = 4.073, RI = 0.9$$

$$CI = \frac{4.073 - 4}{4 - 1} = 0.24$$

$$CR = \frac{CI}{RI} = \frac{0.024}{0.90} = 0.027 < 0.1$$

It shows A inconsistency test is valid and moves within permissible range, it can use A feature vector to replace weight vector.

(2) Similarly, make consistency test on judgment matrix B_1, B_2, B_3, B_4 , it gets weight vectors.

Utilize hierarchical chart drawing out calculation results from target layer to scheme layer, as Figure 2 show.

Calculation structure as following:

$$\omega^{(1)} = (\omega_1^{(1)}, \omega_2^{(1)}, \omega_3^{(1)}, \omega_4^{(1)})$$

$$= \begin{Bmatrix} 0.624 & 0.185 & 0.252 & 0.575 \\ 0.234 & 0.240 & 0.089 & 0.286 \\ 0.136 & 0.575 & 0.66 & 0.139 \end{Bmatrix}$$

$$w = w^{(1)}w^{(0)}$$

$$= \begin{Bmatrix} 0.262 & 0.585 & 0.664 & 0.185 \\ 0.079 & 0.276 & 0.220 & 0.240 \\ 0.66 & 0.149 & 0.156 & 0.575 \end{Bmatrix} \begin{Bmatrix} 0.567 \\ 0.056 \\ 0.104 \\ 0.273 \end{Bmatrix}$$

$$= \begin{Bmatrix} 0.425 \\ 0.302 \\ 0.283 \end{Bmatrix}$$

TABLE 7 : RI value

n	1	2	3	4	5	6	7	8	9	10	11
RI	0	0	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49	1.51

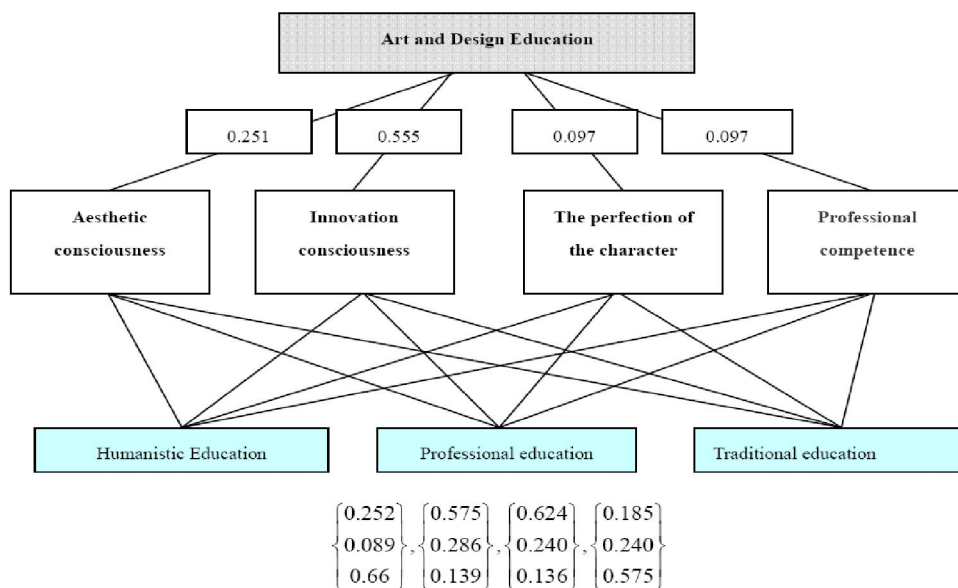


Figure 2 : Hierarchical structure chart

CONCLUSIONS

Analytic hierarchy process can dynamic integrate qualitative analysis with quantitative analysis to make multiple targets decision-making analysis, the method can analyze a problem according to its contained all kinds of factors occupied weights, and classifies a problem into different hierarchies and multiple, comprehensive influence factors, by paired factors comparing, it gets comparison matrix. And there are many analytic hierarchy process methods, as fuzzy analytic hierarchy process, grey analytic hierarchy process, improved analytic hierarchy process and so on.

By analytic hierarchy process model, it gets conclusion that in art and design major education mode, humanistic education accounts for 40.2% of art and design major, professional education accounts for 30.2% in total proportions, and traditional education accounts for 28.3% in total proportions. On a whole, in the main situation of international economic integration, face to opportunity and challenge, Chinese art and design should reconstruct our design education so as to have a foothold in international design grand stage and create design works with Chinese cultural connotation and background. Design education system is art and design impetus and also art and design's constraint factor, which is up to it has a set of matched education mode and education system or not. Only update thought, establish new thought, then can develop Chinese characteristic education in 21st century art and design education.

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