



Research on the Allocation of Ideological and Political Resources in Courses Based on QFD

—Taking the Course "Quality Management" as an Example

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Abstract. Curriculum ideological and political education has become the core and focus of the entire process of higher education and teaching. Integrating ideological and political elements with professional knowledge during the teaching process in universities is of great significance for enhancing students' overall quality and guiding them to establish correct values. This paper takes the course "Quality Management" as an example, and through field interviews and questionnaire surveys, selects materials for ideological and political education in the course, determining 4 first-level indicators and their corresponding 14 second-level indicators. Next, using the ideological and political education materials from the course as input, a resource allocation model for the ideological and political education of the "Quality Management" course based on Quality Function Deployment (QFD) was constructed, and the path relationships of the model variables were analysed. Finally, corresponding countermeasures and suggestions are provided, which also offer certain reference value for the ideological and political education in courses of other majors.

Keywords: Quality Management; Curriculum ideological and political education; Resource allocation; Course characteristics

1 Introduction

Curriculum ideological and political education is a new educational concept that integrates knowledge impartation, skill development, and value shaping into one, carrying a multidimensional mission of nurturing students^[1]. In May 2020, the Ministry of Education issued the "Guidelines for the Construction of Ideological and Political Education in Higher Education Courses," which require integrating ideological and political education throughout the talent cultivation system, comprehensively promoting the construction of ideological and political education in higher education courses, and effectively utilising the educational role of each course^[2,3]. In the new wave of educational reform, university teachers should integrate ideological and political education with professional course teaching. While imparting professional knowledge, they should deeply explore the ideological and political elements embedded in the courses and naturally incorporate them into the teaching content. This will cultivate students'

sense of social responsibility and mission, and guide them to establish correct values and professional outlooks.

Quality emphasizes whether the attributes of a product or service meet the requirements of customers, regulations, and other standards. From the customer's perspective, quality is the degree to which a product's performance and features meet expectations; from the company's perspective, quality is the degree to which a product meets standards. The course "Quality Management" is a discipline focused on using scientific management methods to ensure that the quality of products and services meets requirements. Its goal is to cultivate students' quality awareness, master quality management methods, enhance management capabilities, improve the reliability and satisfaction of products and services, and strengthen corporate competitiveness. This course, as a foundational course for majors such as logistics management, industrial engineering, postal management, and quality management engineering, plays an important role in the development of advanced manufacturing, high-end services, and in making Chinese manufacturing and social services high-quality benchmarks.

In this context, integrating ideological and political education into the "Quality Management" course not only helps improve students' professional competence but also enhances their sense of social responsibility and mission. Therefore, this article will use Quality Function Deployment to explore the issue of resource allocation for ideological and political education in the "Quality Management" course. By combining qualitative and quantitative analyses, it will systematically identify key issues in the ideological and political education of the course and propose targeted solutions. This will provide a scientific basis for the ideological and political education of the "Quality Management" course and offer valuable references for the ideological and political education of other professional courses in higher education institutions.

2 Construction of the Ideological and Political Education Resource Allocation Model

2.1 Quality Function Deployment (QFD)

Quality Function Deployment (QFD) was first proposed in Japan in 1960^[4]. It integrates customer requirements throughout the entire product development process, helping companies design products that meet customer requirements^[5]. Although it was originally designed for product development, it is now also applied in other fields^[6]. Nowadays, many scholars have applied QFD to aspects such as higher education curriculum development^[7].

The core of QFD is the House of Quality (HoQ)^[8], which transforms customer or market requirements into engineering characteristics^[9]. In this article, customer requirements are represented as ideological and political elements of the course, while engineering characteristics are the course characteristics. Therefore, by establishing a course ideological and political resource allocation model through QFD, the ideological and political requirements of "Quality Management" can be transformed into course characteristics, and corresponding teaching suggestions can be proposed.

2.2 Construction of the House of Quality Model

Identify Customer Requirements.

Determining customer requirements is a key step in constructing the Quality House model^[10], enabling the teaching to achieve an organic unity of "knowledge transfer" and "value guidance."

Using the ideological and political materials of the "Quality Management" course as the research subject, customer requirements were collected from employers, university teachers, and learners through various methods such as market research, individual interviews, brainstorming, and group discussions.

Subsequently, the collected ideological and political requirements will be organised and classified, and based on the collected customer requirements, a reasonable questionnaire will be designed and a survey will be conducted. The survey targets mainly students from local universities in Shaanxi, such as Xi'an University of Posts and Telecommunications, Xi'an Technological University, and Xi'an University of Technology, who are enrolled in the "Quality Management" course. Online surveys will be distributed using the Questionnaire Star software platform, while offline surveys will be conducted through the distribution of paper questionnaires and face-to-face interviews. A total of 300 questionnaires were distributed, and 267 valid questionnaires were collected, resulting in a valid response rate of 89%. Using the α coefficient in SPSS software to assess the consistency of the indicators, to ensure the scientific nature and consistency of the questionnaire survey, the α coefficient was found to be 0.846, greater than 0.8, indicating that the internal consistency between the main items of the questionnaire is good and can provide data support.

Finally, based on the educational background of the new era, comprehensive survey data, and the advice of experts with many years of experience in the industry, customer requirements are summarised into four primary indicators: responsibility and accountability, scientific spirit, thinking Patterns, and high-quality development, along with their corresponding 14 secondary indicators, as shown in Table 1.

Determine Course Characteristics.

In the teaching and talent cultivation process of the "Quality Management" course, the collection of ideological and political materials has become a key link in building the education system, while classroom teaching is the core approach to achieving the goal of talent cultivation.

To explore the characteristics and teaching requirements of the course, we first employed the expert opinion method, inviting 10 senior experts from higher education research institutes and related fields to engage in in-depth discussions and analyses on the teaching objectives, content design, and integration of ideological and political elements in the "Quality Management" course. Secondly, establish a QFD group composed of university teachers, learners, and industry leaders from relevant fields associated with Xi'an University of Posts and Telecommunications, Xi'an Technological University, and Xi'an University of Science and Technology. The group will consist of 3 university teachers, 2 university students, and 3 quality management personnel. A brainstorming meeting will be held to determine the specific composition of course

characteristics and the indicators for students' ideological and political education requirements. Finally, through the ideological and political education reform plan for the course, combined with the analysis of the characteristics of talent demand from all sectors of society, a systematic analysis is conducted on the design requirements or course characteristics that the "Quality Management" course should have for each customer requirements. The specific content is shown in Table 2.

Table 1. Customer requirements.

First-level requirements		Second-level requirements	
Responsibility and Accountability	A1	Patriotism	A11
		Historical Sentiment	A12
		Cultural Confidence	A13
		Dedication to work	A14
Scientific Spirit	A2	Upholding Truth	A21
		Down-to-earth	A22
		Perseverance	A23
		Adhere to the truth	A24
Thinking Patterns	A3	Systems Thinking	A31
		Critical Thinking	A32
		Integrating Theory with Practice	A33
		High-Quality Products	A41
High-Quality Development	A4	High-Quality Services	A42
		Total Quality Management	A43

Table 2. Course Characteristics.

First-level indicators		Second-level indicators	
Theoretical Explanation	B ₁	Development history of quality management	B ₁₁
		Representative figures in quality management	B ₁₂
		basic concepts of quality management	B ₁₃
		Total Quality Management	B ₁₄
		Quality Standardization	B ₁₅
		Quality Culture	B ₁₆
Process Explanation	B ₂	Seven Basic Tools of Quality	B ₂₁
		Seven Management and Planning Tools	B ₂₂
		Process Capability	B ₂₃
		Sampling Inspection	B ₂₄
		Service Quality	B ₃₁
Application Explanation	B ₃	Reliability Engineering	B ₃₂
		Economics of Quality	B ₃₃
		Quality Management Cases	B ₃₄
		Quality Management Standards	B ₃₅

Establish the House of Quality.

The House of Quality includes customer requirements and course characteristics. First, determine the weight of customer requirements, with the weight range from 1 to 10. The larger the weight coefficient, the more important the customer requirement is; conversely, the smaller the weight coefficient, the less important the customer requirement is. Subsequently, experienced experts and scholars in the field of "Quality Management" and relevant researchers will be invited to hold discussions and explore the relationship between various customer requirements and corresponding course characteristics. This relationship can be represented by Eq.(1):

$$R = r_{ij} \tag{1}$$

where r_{ij} refers to the contribution and impact of the j -th course characteristic on the i -th customer requirements. The range of values for r_{ij} is $\{0, 1, 3, 5, 7, 9\}$. The contribution and impact of the j -th product feature on the i -th customer requirements increase as the value increases, as shown in Fig. 1.

ideological and political elements		Course Characteristics												
		development history of quality management	representative figures in quality management	basic concepts of quality management	Total Quality Management	Quality Standardization	Quality Culture	Seven Basic Tools of Quality	Seven Management and Planning Tools	Process Capability	Sampling Inspection	Service Quality	Reliability Engineering	Economics of Quality
responsibility and accountability	Patriotism	7	9		1		5							3
	Historical Sentiment	9	7	3	3		1							1
	Cultural Confidence	7	7	7	1	5	9				1			1
	Dedication to work	5	7	1	5		5			3	5	5	3	1
Weight value		227	249	86	83	40	169			27	45	53	27	9
Ranking		2	1	6	7	10	3			11	9	8	11	12
Scientific Spirit	Upholding Truth	7	5	9	1	1	7	1	1	1	5	1	1	1
	Down-to-earth	7	7	7	1	3	5	7	7	3	5	1	5	1
	Perseverance	7	7	7			1	5	5	1	7	1	3	3
	adhere to the truth	9	7	9	5	5	3	9	9	5	9		5	1
Weight value		247	215	263	57	75	133	183	83	213	25	117	49	81
Ranking		2	3	1	11	10	6	5	5	8	4	13	7	12
Thinking Patterns	Systems Thinking	3	1	3	5		5	3	3	7	7		7	9
	Critical Thinking	3	3	3	5		7	5	5	9	5		7	1
	Integrating Theory with Practice	1	1		3		1	5	5	5	3			7
Weight value		51	37	42	97		93	101	101	157	111		49	175
Ranking		9	12	11	5		6	4	4	2	3		10	1
High-Quality Development	High-Quality Products				5	5		3	3	1	1		7	5
	High-Quality Services				3	1				1	1	9		7
	Total Quality Management	1	1		9	7		3	3	5	1	5	3	9
Weight value		8	8		144	110		51	51	58	26	121	87	180
order		11	11		2	5		9	9	8	10	4	6	1
Total Weight value		533	509	391	381	225	395	335	335	325	395	199	280	413
Overall Ranking		1	2	5	7	12	4	8	8	9	4	13	10	3

Fig. 1. House of quality.

Results Analysis.

Through the analysis of the House of Quality model, it is evident that the allocation of ideological and political resources in the "Quality Management" course presents both overall and specific aspects: overall, development history of quality management, representative figures in quality management, economics of quality, sampling inspection, and quality culture are at the forefront, indicating that teachers should emphasise the introduction of ideological and political elements in these chapters during their teaching.

In terms of the requirement for responsibility and accountability, representative figures in quality management, the development history of quality management, and quality culture rank among the top three course characteristics. This indicates that these course characteristics are closely related to ideological and political elements such as patriotism and historical sentiment. Therefore, during the teaching process, it is essential to focus on integrating ideological and political elements centred on responsibility and accountability into these chapters. In terms of the requirement for scientific spirit, the basic concepts of quality management, the development history of quality management, and sampling inspection are more aligned with customer requirements. In terms of the requirement for thinking methods, elements of ideological and political education such as systematic thinking, critical thinking, and the integration of theory with practice can be incorporated into chapters on economics of quality, process capability, and sampling inspection. In terms of the requirement for high-quality development, combining high-quality products, high-quality services, and comprehensive quality management with chapters on economics of quality, total quality management, and quality management cases is preferable.

3 Suggestions for the Allocation of Ideological and Political Resources in the Course "Quality Management"

Based on the analysis results of the Quality House model, this paper believes that responsibility, scientific spirit, thinking methods, and high-quality development are significantly related to the teaching content of "Quality Management." Based on the research findings of this paper, the following resource allocation recommendations are proposed:

At the macro level of construction, first, the ideological and political education in courses should perfectly correspond with the characteristics of the courses. Second, the construction of ideological and political education in courses should achieve regionalisation and modularisation, placing the entry points of ideological and political elements on the corresponding content of the respective chapters, achieving face-to-face, point-to-point, and block-to-block connections. Third, the construction of ideological and political education in courses should rely on the joint efforts of all teachers and students, making the allocation of ideological and political education resources in the "Quality Management" course more refined through the continuous cycle of teaching and learning.

At the micro-level of assumptions, first, cultural confidence and quality culture are unified; patriotism and representatives of quality management are unified. The course design should focus on the advanced practitioners of Chinese quality management and the history of quality development in China, establishing national cultural confidence, and fostering students' patriotic spirit. Second, adhering to truth is unified with the basic concepts of quality management. The teaching of quality management concepts should be clear, precise, and accurate, strictly practicing the objectivity of truth. Down-to-earth, critical thinking combined with sampling inspection. When conducting sampling inspection, case explanations should be introduced in the selection of samples and the calculation of inspections to illustrate with facts the importance of being down-to-earth; when designing the content of the two types of misjudgments that may occur in the identification function, students should be guided to use critical thinking to reflect on the teaching content. Thirdly, system thinking and quality economy are unified; integrating theory with practice and quality management cases are unified. In the teaching design of quality cost analysis and quality economic analysis within economics of quality, elements of ideological and political education can be introduced through systems thinking. Incorporate quality management cases into the course design, guiding practice with theory and promoting the development of theory through practice. Fourth, high-quality service and service quality should be unified; high-quality products and reliability engineering should be unified. The course content of service quality and reliability engineering is aimed at achieving excellent service and excellent product service. The course design should integrate the two ideological elements of high-quality service and high-quality products.

4 Conclusion

Introducing the Quality Function Deployment (QFD) method into the study of resource allocation for ideological and political education in the "Quality Management" course can provide scientific and effective theoretical support and practical pathways for the construction of ideological and political education in the course. By constructing a customer ideological and political education requirement indicator system, we comprehensively sort out the requirements of ideological and political education in this course, clarifying students' expectations in areas such as value shaping, professional quality cultivation, and enhancement of social responsibility. Based on these requirement indicators, using a combination of qualitative and quantitative methods, the relationship between customer requirements and course content was analysed, thereby determining the key characteristics of resource allocation. By constructing a resource allocation model for ideological and political education in the "Quality Management" course, teachers can fully understand the core content and importance of customers' ideological and political requirements, propose course characteristics with targeted approaches, and ultimately ensure that ideological and political elements are effectively integrated with the course content. Other specialised courses can also comprehensively analyse their ideological and political elements based on the Quality Function Deployment (QFD) model, combining the characteristics of the major and the needs of students to find

suitable integration points for ideological and political education in their courses. This will promote the overall improvement of ideological and political education in higher education courses and lay a solid foundation for cultivating high-quality talents with both integrity and ability.

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Disclosure of Interests

The authors have no competing interests to declare that are relevant to the content of this article.

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