A Systematic Curriculum Design Model for Sustainable Development in Higher Education that Integrates Learning and Practical Application

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Abstract: *The curriculum knowledge system of higher education has long been unable to integrate teaching, enterprises, and society, nor to align with the needs of local economic and industrial development. This study constructs a sustainable curriculum design model that promotes the integration of systems involving schools, enterprises, teachers, and students, thereby enhancing learning interest and teaching effectiveness. The introduction of the two-way teaching method theory, along with the use of the extended case method and the comparative method for data collection, helps to integrate and expand existing theories and apply them to the actual teaching process. The findings indicate that the clear introduction of curriculum design elements such as course objectives, problem awareness, problem-solving, literacy, interactive teaching methods, enterprise integration, and diverse outcomes effectively improves teaching effectiveness, facilitates the integration of learning and practical application, and promotes industry-education integration. Moreover, it advances the sustainable and lasting development of higher education and provides new thinking for subsequent research.*

Keywords: *sustainable development; integration of learning and application; curriculum design*

Introduction

As times change, higher education has shifted from traditional lecturing and theoretical speculation to a more interactive integration of theory and practice. It implements the spirit of learning by doing, doing while learning, learning and doing simultaneously, and seeking truth from facts, which helps students apply their theoretical knowledge to practical execution and job positions, and even to entrepreneurship. Under this premise, this study constructs a sustainable and systematic curriculum design model for the integration of learning and application in higher education. It aligns with local economic and social development, implements professional knowledge corresponding to the regional industrial supply chain, and integrates dimensions such as universities, colleges, departments, teachers, teaching, students, local enterprises, and society. This approach narrows the gap between academic theory and practical application, assists teachers in systematic and structured teaching, enhances students' learning interest, learning willingness, and learning outcomes, and achieves the goals of “integrating learning and practical application,”“graduation means employment,” and “competence upon taking up the post” for students.

1. The Origin of Sustainable Development in Higher Education

In recent years, it has become a trend for higher education to emphasize the integration of the local environment and enterprises into the teaching system. The focus of sustainable development is education that concerns people and the environment, as well as people and the local economic and social development of their region. Whether it is sustainable education in higher education institutions or the sustainable development of the environment, both signify a new stage in which theory and practice are integrated into local economic and social development. At the international level, education for sustainable development has become the future direction of education advocated by UNESCO.

Education for Sustainable Development (ESD) is an educational approach born in the era of sustainable development. Its goal is to help learners form the scientific knowledge system, learning abilities, values, and lifestyles required for sustainable development, thereby promoting the sustainable

development of society, the economy, the environment, and culture[1].

In the higher education system, top-tier institutions are also committed to education for sustainable development. Taking Tongji University in China as an example, it established a minor degree program in sustainable development in 2016 and jointly cultivated a graduate degree in creative sustainability with Aalto University in Europe, further strengthening international cooperation in sustainable education.

2. Foundational Theories

This study introduces new teaching methods, including problem-based learning, action learning, case study, and social participatory learning. These methods help students understand the theoretical connotations of knowledge, further consider the problems and limitations of the theories as well as how to apply them, and guide students in the classroom to transform theory into concrete practical applications. They also achieve the effects obtained from practicing in enterprises.

2.1 Problem-Baed Learning

This approach is also known as project-based learning (Problem-Based Learning)[2]. Its key components include problems, outputs, learners, and teachers. This means that the teacher assists learners in identifying and solving problems, and the students produce a specific and feasible solution. The implementation method involves the teacher explaining the proposer of the theoretical knowledge, the historical background, the connotation, the problems, the limitations, and the theoretical dilemma, which helps students understand the timing, methods, and contexts for applying the theory. Then, students are asked to engage in group discussions, reflect on the specific content and the methods of practicing the theory, and apply it to the current situation analysis and future development prediction of a particular enterprise. The teaching outcome produced is each group's enterprise solution summarized based on theoretical thinking.

This process includes three stages: students learning to identify the problem, group negotiation, and learning how to solve the problem. It is an integrated teaching and learning context that promotes students' independent learning and cooperative learning. The teacher's role shifts from a transmitter to a facilitator, catalyst, and designer. The course logic has moved from teacher-centered to student-centered.

2.2 Action Learning

Action learning[3] is a method that integrates learning knowledge, sharing experience, creatively solving problems, and taking practical action. It includes the learning of professional knowledge, the use of such knowledge to analyze and study corporate problems, and the proposal of solutions to these problems.

The implementation method involves the teacher guiding students to identify practical problems. Then, groups of three to four members propose challenging issues related to a selected enterprise. After that, the group members solve the problems, acquiring knowledge and experience in an atmosphere of team spirit, high responsibility, and strong mutual trust.

Action learning requires students to actively seek out problems and solutions. This process is an interactive process between thinking and practical operation, in which students continuously gain experience and propose corrective measures until the problem is resolved more satisfactorily. This learning method involves active learning, experiential learning, and an emphasis on reflection, allowing learners to develop self-awareness and self-reflection through experience, thereby stimulating their interest in learning.

2.3 Case Study

Also known as a case study[4], this is an empirical research method that presents facts and explains principles. It not only involves a story but also requires the analysis and discussion of the principles embedded in the case, from which one can acquire knowledge and experience and learn how to apply them.

In the classroom, the teacher selects the research subject, that is, introduces the case and compares it

with the theory. The teacher also collects information through multiple channels and then brings all the data together for analysis.

2.4 Social Participatory Learning

Also known as social participatory learning[5], this approach refers to a process in which learners actively initiate or participate in knowledge-seeking activities based on their own interests in knowledge and their personal confusions about their own growth. This process may involve small-scale individual research or participation in a large team, through which learners improve themselves and resolve their confusions.

Participatory learning occurs when learners feel confused about something or have a desire for information related to a particular event. They then form an interest group to conduct collaborative research or engage in constructive experiments and attempts. Through the complementarity of knowledge, expertise, and personalities, they cooperate better, learn together, and grow together.

3. Qualitative and Quantitative Research Methods

This study adopts different methods to collect various types of data, which resolves the biases and limitations of a single research method[6] and facilitates the collection of more comprehensive information.

3.1 The Extended Case Study Method

This study adopts the extended case method of qualitative research[7]. By comparing theory with interview data and then contrasting concepts with theories, this method, through the exchange of two cycles and intensive analysis, facilitates the interpretation of data, enriches theoretical development, and aids in reconceptualization and theory expansion. Its purpose is not to construct new theories but to integrate and expand existing ones[8], supplemented by observation, interviews, and literature collection.

3.2 Comparative Analysis

This study conducts a comparative analysis[9] using undergraduate students from Classes 1 to 4 of Business Administration, Grade 2020, as the observation subjects to explore the differences and effectiveness of various teaching methods and to construct a systematic curriculum design model. The first group, consisting of Classes 1 and 2 of Business Administration, Grade 2020, adopts the traditional didactic teaching method and introduces cognitive teaching of theoretical connotations. The second group, consisting of Classes 3 and 4 of Business Administration, Grade 2020, adopts the integration of learning and practical application and the alignment of theory with practice, introduces cognitive teaching of theoretical connotations, and carries out corporate practice.

This study conducted classroom observations, experiments, and interviews from September 17, 2022 to January 31, 2022, targeting Classes 1 and 2 of Business Administration, Grade 2020, and Classes 3 and 4 of Business Administration, Grade 2020. The study found that the first group perceived theoretical knowledge as rigid and showed relatively low learning willingness. The second group perceived the "integration of learning and application," that is, they knew how to apply theory to solve corporate problems. After comparative analysis, the study developed an integration model of learning and practical application, which helps connect schools, colleges, departments, and enterprises and realizes the integration of theory and practice.

4. Sustainable Development of Higher Education

Sustainable development of higher education breaks away from the traditional didactic teaching methods of previous higher education. It aligns with the local economic and social development, providing more feasible, more rational, more durable, and more sustainable opportunities. It helps connect schools, colleges, departments, teachers, students, and enterprises, realizing the integration of theory and practice, the integration of enterprises and teaching, and the integration of employment and enterprises, thereby constructing a long-term development mechanism with resilience and adaptability.

This study constructs an innovative new practical teaching method for the sustainable and lasting development of higher education, which is more systematic, structured, logical, step-by-step, and procedural. It demonstrates the sustainable vitality and enduring vigor of education for sustainable development, which must be introduced from the curriculum knowledge system and teaching methods.

4.1 Curriculum Knowledge System

Each course requires the teacher to first confirm the content of the instruction, namely the theoretical knowledge system. Taking the course "Brand Operation and Management" as an example, seven theories that align with local economic development include the market-oriented macro-environment, the industry-oriented industrial analysis framework, the enterprise-oriented brand, situation analysis, corporate identity system, and marketing strategy, and the consumer-oriented target market marketing. These theories help learners compensate for their lack of understanding of the local environment.

4.2 Teaching Methods

The teacher introduces the seven theoretical knowledge systems related to the local environment and guides students to understand the 5W1H of the theories. The teacher explains the content of the theories, including the proposer of the theory (1W, Who), the content of the theory (2W, What), the motivation of the theory (3W, Why), the source of the theory (4W, Where), the publication year of the theory (5W, When), and how to apply the theory (1H, How). For example, for the industry-oriented industrial analysis framework theory, the teacher clearly explains the relevant theoretical knowledge points, difficulties, and problem areas.

The teacher encourages students to understand the academic, managerial, and social significance of the theories, which helps students apply the theories to analyze and solve problems. The teacher enables students to learn the theories, recognize the theories, understand the theories, and apply the theories to practical alignment, allowing learners to comprehend that the theories are lively rather than dead knowledge. This application can be used for enterprise analysis, enhancing learning willingness, and stimulating thinking about the integration of theory and practice.

5. The Concept of Integration of Learning and Practical Application

Taking the course "Brand Operation and Management" as an example, the traditional lecturing method merely introduces theories. For instance, Kotler argues that a brand is a name, symbol, term, trademark, icon, or a combination of the foregoing elements, used to distinguish a product or service from those of competitors. Students only cognitively understand this theory but do not know how to apply it in practice.

In the more interactive problem-based learning method, the teacher first explains the connotations of brand theory and then asks students to connect the theory to a specific enterprise for practical analysis. This approach allows the teacher to realize the integration of theory and practice in the classroom. Through the interactive process involving the teacher, students, and groups, students become familiar with how to specifically apply theoretical thinking to enterprise analysis. They propose a solution to the current situation, problems, and causes of the enterprise, thus achieving the concept of "integration of learning and practical application," in which theoretical learning is applied to practice.

6. Systematic Curriculum Design Model

A sustainable curriculum design requires the teacher to consider the integration of systems such as schools, enterprises, teachers, and students. The theoretical knowledge taught by the teacher must align with corporate practice, which helps students become competent immediately after taking up their posts, thereby fulfilling the concepts of "learning theory" and "applying practice" and implementing the ideas of "industry-education integration" and "integration of learning and practical application." To fully implement the concept of integration of learning and practical application, the teacher needs to first consider how to design the curriculum in a systematic, structured, logical, step-by-step, and procedural manner. The teacher must confirm the course objectives, the course's problem awareness, the solutions to course problems, the introduction of competencies, interactive teaching methods, the integration of

the knowledge system with industry, and diverse OBE (Outcome-based Education) outcomes.

6.1 Course Objectives

A systematic curriculum design must first determine the rationale for offering the course, that is, the course objectives. This course, "Brand Operation and Management," emphasizes "local thinking" and requires students to develop an understanding of the local economic and social environment. It focuses on "industry-education field integration" by introducing school-enterprise research thinking. It practices "industry-education integration" by aligning theoretical thinking with local enterprises, exploring the current situation, problems, causes, and impacts of enterprises, and proposing solutions. This approach conforms to the principles of "learning theory" and "applying practice" and implements the concepts of "industry-education integration" and "integration of learning and practical application."

6.2 Course Problem Awareness

After the teacher determines the course objectives, the teacher develops the problem awareness of the course, that is, the direction of the course content. The teacher introduces the problem awareness of the course through the "5W1H of cognition, emotion, and practice."

Regarding learning motivation (Why), learners lack an understanding of the local (Where) economic and social environment, so the teacher strengthens the connection with local enterprises. The teacher increases the emotional connection between local enterprises and learners (Who) and helps learners understand the background and development of local enterprises. Regarding the course knowledge system (What), it includes the market-oriented macro-environment theory, the industry-oriented industrial analysis framework, the enterprise-oriented brand theory, situation analysis, corporate identity system, marketing strategy, and consumer-oriented target market marketing. The teacher analyzes enterprise phenomena, problems, causes, and solutions. Regarding the method, the teacher uses cases and current events (When) as entry points to train learners on how (How) to use theories to align with corporate practice.

6.3 Solving Course Problems

The teacher leads students to propose solutions for enterprises, addressing issues related to the market orientation, industry orientation, enterprise orientation, and consumer orientation, thereby helping students engage in concrete practice.

The teacher cultivates learners' cognition, emotion, and action regarding local enterprises. The teacher also analyzes the current situation, problems, causes, and solutions of local enterprises. Furthermore, the teacher adopts literature surveys to collect academic and practical documents on enterprises, and then raises questions for discussion and problem solving.

6.4 The Integration of Professional Competencies with the Course

Professional competencies must be connected with the course. The course trains students in the cognition of the connotations of these competencies, strengthens their understanding of the relationship between the competencies and the course knowledge system, and enhances their recognition and application of such competencies.

Ethical competence refers to the course cultivating students' cognition of the ethics of the local economic and social environment, enabling them to understand how the macro-environment exerts positive and negative influences on enterprises. Professional competence refers to the course cultivating students' ability to fulfill their responsibilities and obligations in group discussions. Through professional division of labor and roles, students analyze the target enterprise, thereby fully sorting out solutions in areas such as human resources, production scheduling, marketing planning, research and development, financial planning, and information management.

Scientific competence refers to the course cultivating students' ability to introduce new technologies, apply decision-making analysis tools to the target enterprise, confirm the rational allocation of enterprise resources, and explore or develop new markets. Media competence refers to the course cultivating learners' emotional connection and reflection on new media, news topics, and theories, enabling them to execute media plans for the target enterprise and assist in the operation and management of brand image shaping. Aesthetic competence refers to the course training learners in the

practice of truth, goodness, and beauty, as well as in the planning and execution of the visual identity of the target enterprise, so as to effectively differentiate the brand from competitors and also capture customer attention.

6.5 Introduction of Teaching Methods

The teacher arranges group discussions (Team-Based Learning) for each course topic and asks students to collect academic and practical literature[10]. This practical experience involves learners' active participation, and the teacher introduces problem-based learning to guide students in designing solutions. Action learning guides the penetration of knowledge. The case study presents real-world images. Social participatory learning connects with actual situations and leads to more reflection and discussion.

6.6 Integration of the Knowledge System with Enterprises

The course introduces theoretical thinking to help students recognize and understand the connotations, problems, limitations, and dilemmas of the theories. Only then can students clearly grasp the timing, methods, and contexts for applying the theories, avoid misusing the theories, truly learn the theories, and apply them. The course also arranges for each learning group to conduct alignment analysis on selected enterprises. During the practical process, the groups analyze enterprise phenomena, problems, causes, and countermeasures, and then find the optimal solutions.

6.7 Diverse Forms of Outcomes

The course trains students in problem analysis and problem-solving abilities, and it produces diverse forms of outcomes. These outcomes include individual theoretical and practical assignments, a mid-term proposal for brand marketing planning, subject-specific professional competitions, a final term report on brand marketing planning, and an achievement exhibition.

7. Conclusion

The systematic curriculum design model for the integration of learning and practical application in the sustainable development of higher education is an innovative approach that is systematic, structured, logical, step-by-step, and procedural. It meets the demand for talent cultivation required by the development trend of the local economy and society. This model is a highly feasible systematic procedure that includes course objectives, problem awareness, problem solving, the introduction of competencies, interactive teaching methods, integration with enterprises, and diverse outcomes. It helps teachers teach systematically, improves teaching effectiveness, enhances students' learning willingness and interest, and thereby achieves good learning outcomes. It facilitates the integration of learning and practical application, industry-education integration, and systematically promotes the sustainable and lasting development of higher education, providing new thinking for subsequent research.

The systematic curriculum design model in this study helps teachers achieve good teaching performance, assists learners in absorbing theoretical knowledge and applying it to practical practice, and helps learners learn to identify problems and solve them. It is worthy of introduction in higher education institutions.

In terms of theoretical development, this study introduces problem-based learning, action learning, case study, and social participatory learning. These methods help students integrate into the course content, enhance their learning willingness, interest, and learning outcomes, and also enable the development of a systematic, structured, logical, step-by-step, and procedural curriculum design model, which is consistent with the claims of Barrows (1980) and Hills (2001).

In addition, the introduction of the extended case method aims to integrate and expand existing theoretical perspectives. Through the cross-validation and comparison of authentic information collected via different methods, such as observation, interviews, and literature, the method confirms that the theoretical propositions can be applied reasonably and appropriately in practice. It seeks a more implementable and effective development path for theoretical advancement, and it ensures a more objective information collection process, thereby making the developed curriculum design model more convincing. This is consistent with the claims of Danneels (2002).

In terms of corporate practice, industry-education integration has helped identify many talents who are more suitable for enterprise positions. During their studies, these students are co-cultivated by academic teachers and enterprise mentors, which trains the talents needed for long-term enterprise development. This approach helps schools and enterprises jointly cultivate talents through methods such as order classes, named classes, and co-built colleges, thereby promoting the vigorous development of the local economy and society, and also enabling the development of a more systematic, structured, logical, step-by-step, and procedural curriculum design model.

For future research, it is hoped that the curriculum design model sorted out through this study can inspire more emerging scholars to enter the research field of curriculum design and inject new vitality into the sustainable development of higher education. In terms of research method selection, future studies may consider introducing quantitative research to demonstrate the differences in student performance between traditional lecturing methods and interactive teaching methods, or to explore how to enhance students' learning willingness, interest, and effectiveness in classroom management.

References

[1] Chen, X. P., & Hou, X. Y. (2022). Towards a Sustainable Future. Encyclopedia of China Publishing House.

[2]Barrows, H. S. Problem-based learning: An approach to medical education. Springer Publishing Company, 1980.

[3]Revans, R. W. The origin and growth of action learning.Brickley, UK: Chartwell-Bratt, 1982.

[4] Schatzman, L., and Strauss, A. L. Field research: Strategies for a natural sociology. Englewood Cliffs, NJ: Prentice-Hall, 1973.

[5]Thompson, R. Social participation or social distancing: agency, personal & community leadership. Paper presented at the meeting of ACROD National Conference on Social Participation, Sydney, Australia, 2006.

[6]Jick, T. D. Mixing qualitative and quantitative methods: Triangulation in action. Administrative Science Quarterly, 1979, 24(4): 602–611.

[7] Burawoy, M. 1998. The Extended Case Method. Sociological Theory, 16(1): 4-33.

[8]Danneels, E. The dynamics of product innovation and firm competences. Strategic Management Journal, 2002, 23: 1095-1121.

[9] Lin, P. J., Kao, Ching-kuei, Liu, Wen-wen, Yuan, Maoying. 2025. Research on the Dual-Teacher and Dual-InnovationTraining ProgramforMaster's Students in Logistics Management. Journal of Modern Educational Theory and Practice, 1(3): 54-59.

[10]Hills, H. Team-based learning. Gower Publishing, Ltd, 2001.