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 failed to integrate teaching, enterprises and society, and has not been aligned with the needs of local economic and industrial development. Build a long-term curriculum construction model that combines all links in the system of schools, enterprises, teachers and students to boost students' interest in learning and improve teaching quality. The two-way teaching method theory has been introduced, the extended case method and the comparative method for data collection have been employed, and existing theories have been integrated and extended to be applied in actual teaching. Based on the above results, it can be seen that clearly presenting elements of curriculum design, such as course goals, problem awareness, problem-solving, literacy, interactive teaching methods, enterprise integration, and various outcomes, can boost teaching efficiency, promote the combination of learning and application, and foster industry-education cooperation. It will also promote the continuous development of higher education and provide new ideas for later research.*

Keywords: *sustainable development, integration of teaching and learning, curriculum construction*

Introduction

With the changes in recent years, many universities have started combining theoretical teaching with practical training and discussion more closely. It embodies the spirit of learning by doing, doing while learning, learning and doing simultaneously, and seeking truth through facts; thus, it can help students apply their theoretical knowledge in practice and in their future jobs or entrepreneurship. Based on the above, this paper puts forward an effective and practical curriculum construction model for integrating teaching and learning in higher education. It is in line with the local economic and social development, provides professional knowledge corresponding to the regional industrial supply chain, and integrates all links of universities, colleges, departments, teachers, teaching, students, local enterprises and society. This way can help to reduce the gap between theoretical knowledge and practical skills, help teachers plan their teaching systematically and logically, stimulate students' enthusiasm for learning, motivate them to study hard, improve their grades, and achieve the aim of integrating teaching with life and preparing for future careers.

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. At the heart of sustainable development is education that considers both people and the environment, as well as the people and local economic and social development in their areas. Whether it is sustainable education in higher education institutions or the green development of the environment, both are new stages of integration between theory and practice and local economic and social development. Education for Sustainable Development has been named as the future direction of education by UNESCO around the world.

Education for Sustainable Development (ESD) is an educational idea that emerged in the era of sustainable development. It aims to help students build a scientific knowledge system, learn well, form positive values, develop a good lifestyle, and thus contribute to the sustainable development of society, the economy, the environment and culture[1].

The top institutions in the higher education system are also striving to achieve education for all.

Tongji University in China is a representative case; in 2016, it established a minor degree program in sustainable development and jointly developed a graduate degree in creative sustainability with Aalto University in Europe to advance international collaboration in sustainable education.

2. Foundational Theories

The new teaching methods put forward in this paper are problem-based learning, action learning, case study and social participation learning. The above ways help students grasp the theoretical sense of knowledge, consider the problems and deficiencies in the theory further, learn how to apply it, and guide them to transform theory into concrete practical results in the classroom. They will achieve the same results as those in the company.

2.1 Problem-Based Learning

Another term for this way is Project-based Learning (Problem-based learning)[2]. The basic parts are problems, results, learners and teachers. It means that the teacher helps the students recognise and solve problems, and the students can produce a particular and practical solution. The way to implement it is to have the teacher explain the proposer of the theoretical knowledge, its historical background, connotation, problems, limitations and theoretical dilemma, so that students can learn when, how and in what circumstances to apply this theory. Then, the students will be divided into small groups to discuss what they have learned in class, how they plan to apply it in their work, and how it can help to analyze and forecast the development of the company. The teaching result produced is the enterprise solution of each group based on theoretical thinking.

The three stages are: students learn to identify the problem; group negotiation; and learning how to solve the problem. It is a whole-school teaching and learning system that promotes students' self-study and collaboration. The teacher's position is now that of a guide, helper, motivator, and organizer. The course logic has changed from teacher-centered to student-centered.

2.2 Action Learning

Action learning[3] is a way of learning that combines knowledge acquisition, experience sharing, creative problem-solving and 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 way is to have the students find some real-life problems themselves. Then, groups of three or four people put forward difficult problems in the chosen company. Then, the group members will work together to solve the problems, learn from each other and gain some experience under the guidance of the leader.

Students need to find problems and then solve them in action learning. This process is the interaction of thinking and doing; students accumulate experience and continuously propose corrections to improve the situation step by step until the problem can be solved better. The above learning method is active learning, experiential learning and reflection, etc.; it enables students to gain knowledge by doing, and also helps them develop self-awareness and self-management.

2.3 Case Study

It is also known as a case study[4], and it presents facts and then explains the relevant reasons. It is not only a story but also an analysis and discussion of the principles in the case; one can gain knowledge and experience from it and learn how to apply them.

The teacher chooses the research subject in class and then presents a case to compare with the theory. The teacher will collect some information through various means and then collect all of it for analysis.

2.4 Social Participatory Learning

Also known as social participatory learning[5], this way of teaching is one where students actively start or join in to learn knowledge based on their own interest in that knowledge and their personal

problems with their own development. At this time, some people will conduct independent studies or join a large group to help one another learn and overcome difficulties.

Participatory learning takes place when students are confused by something or have a wish to know more about a particular event. Then they form an interest group to carry out joint research or conduct positive experiments and attempts. With the combination of knowledge, skills and personalities, they will work well together, learn and grow together.

3. Qualitative and Quantitative Research Methods

Different ways are used in this study to collect all kinds of data, so the bias and deficiency of a single method are eliminated[6], and more complete information can be obtained.

3.1 The Extended Case Study Method

The extended case method of qualitative research will be used here[7]. Compare the theory with the interview data, then contrast the concepts in the data with those in the theory; through the exchange of two cycles and intensive analysis, interpret the data, expand the theory, and make reconceptualization and theory expansion possible. It is not to propose new theories, but rather to integrate and extend the existing ones through observation, interviews and study of literature[8].

3.2 Comparison Analysis

Based on the observation of undergraduate students in Classes 1-4 of Business Administration, Grade 2020, this paper will compare the various teaching methods used to identify differences in teaching effectiveness and build a reasonable curriculum design model. The first group, which includes Classes 1 and 2 of Business Administration, Grade 2020, will use the traditional method of teaching and introduce the cognitive teaching of theoretical connotations. The second group, Classes 3 and 4 of Business Administration, Grade 2020, will combine learning with practical application and align theory and practice; they will introduce cognitive teaching of theoretical connotations and carry out corporate practice.

From September 17, 2022, to January 31, 2023, classroom observations, experiments and interviews were carried out in Classes 1 and 2 of Business Administration, Grade 2020, as well as in Classes 3 and 4 of Business Administration, Grade 2020. The first group did not think that the theoretical knowledge was rigid and had a lower desire to learn. The second group thought it was "integration of learning and application"; that is to say, they knew how to use theory in the company. Based on the above comparisons, an integrated model of learning and application has been developed to connect schools, colleges, departments and enterprises and achieve the integration of theory and practice.

4. Sustainable Development of Higher Education

The continuous development of higher education is no longer based on traditional lectures in the previous era. In line with the development of the local economy and society, more practical, reasonable, lasting and stable opportunities have been created. It can connect schools, colleges, departments, teachers, students and enterprises to achieve the integration of theory and practice, the integration of enterprises and teaching, and the integration of employment and enterprises, thus building a long-term development model with resilience and adaptability.

This paper proposes a new, practical teaching method that can promote the continuous and stable development of higher education, and it is more systematic, organised, rational, stepwise and procedural. It shows that education can promote sustainable development in an enduring way, so it needs to be added to the curriculum knowledge system and teaching methods.

4.1 Curriculum Knowledge System

First, the teacher will confirm the content of the teaching for each course and the system of theoretical knowledge. For example, in the course "Brand Operation and Management", seven theories that support the development of the local economy include the market-oriented macro-environment, the

industry-oriented industrial analysis framework, the enterprise-oriented brand, situation analysis, corporate identity system, marketing strategy and consumer-oriented target market marketing. The above theories can help the learners make up for their lack of knowledge about that place.

4.2 Teaching Methods

The teacher introduces the seven theoretical knowledge systems related to the local environment and helps the students grasp the 5W1H of the theories. The teacher will present the contents of the theories, such as the proposer of the theory (1W, Who), the content of the theory (2W, What), the motivation for 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, in the theory of the industry-oriented industrial analysis framework, the teacher will present the relevant theoretical knowledge points, difficulties and problems.

The teacher helps the students grasp the academic, practical and social values of the theory, and then uses it to study problems in daily life. The teacher helps students learn the theories, recognise the theories, understand the theories, and apply the theories in practice; thus, the learners know that the theories are vivid and not dry. It can be used to conduct enterprise analysis, boost people's interest in learning, and motivate them to think about integrating theory and practice.

5. The Concept of Integration of Learning and Practical Application

The course "Brand Operation and Management" is a typical case; thus, lecturing cannot be the sole way. Kotler proposes that a brand is a name, symbol, term, trademark, icon or a combination of these, that helps people distinguish one's own products and services from those of others. Students can only learn this theory intellectually and do not know how to use it in practice.

In an interactive problem-based learning model, the teacher can first introduce the concept of brand theory and then guide students to apply this theory in the study of a particular enterprise. Thus, the teacher will be able to integrate teaching theory and actual teaching in the class. Through interaction among the teacher, students and groups, students will be able to learn how to apply theoretical thinking in the context of enterprise analysis. They offer a solution to the current situation, problems and causes of the enterprise, thereby achieving the goal of "integration of learning and application", which is the application of theoretical knowledge in practice.

6. Systematic Curriculum Design Model

To promote the continuous development of the curriculum, various links involving schools, enterprises, teachers and students need to be strengthened. The theoretical knowledge taught by the teacher should be in line with corporate practice to help students become competent upon joining the company; thus, the goals of "learning theory" and "application of practice" can be achieved, and the ideas of "industry-education integration" and "integration of learning and practical application" will be realized. To fully implement the concept of integration of learning and practical application, the teacher needs to design the curriculum systematically, in an orderly manner, logically, step by step and procedurally. The teacher should confirm the course objectives, the problem awareness of the course, the solutions to problems in the course, the introduction of competencies, interactive teaching methods, integration of the knowledge system with industry, and various OBE (Outcome-based Education) outcomes.

6.1 Course Goals

First, a systematic curriculum design needs to establish the reasons for offering the course, that is, the course goals. The course "Brand Operation and Management" is based on the idea of local thinking and requires students to learn about the local economy and society. It is to integrate the industry and the school through research. Industrial education is carried out in conjunction with local enterprises to apply what has been learned in school to real-world problems faced by the company and develop countermeasures together. According to the ideas of "learning theory" and "practice application", the concepts of "industry-education integration" and "integration of learning and practice" have been realised.

6.2 Course Problem Awareness

After the teacher sets the goals for the course, they will introduce problems to spark students' interest and guide the direction of the lesson. The teacher introduces the problem awareness of the course using the "5W1H" method for cognition, emotion and practice.

Regarding learning motivation (Why), learners do not know about the local (Where) economic and social conditions, so the teacher strengthens the link with local enterprises. The teacher increases the emotional connection between local enterprises and the students (who) and helps the students 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 analyses enterprise phenomena, problems, causes and remedies. As for the way, teachers can take cases and current events (When) as entry points to teach students how to apply theories in their own lives or work (How).

6.3 Addressing Course Problems

The teacher guides the students to put forward solutions for the enterprise's problems and addresses deficiencies in market orientation, industry orientation, enterprise orientation and consumer orientation; thus, the students can learn by doing.

The teacher develops students' knowledge, emotions and behaviour related to local enterprises. The teacher also analyzes the current situation, problems, causes, and solutions of local enterprises. The teacher will also conduct literature studies to gather academic and practical materials on the company, and then pose questions for discussion and problem-solving.

6.4 The Integration of Professional Competencies in the Course

Professional Competencies should be linked to the course. The course helps students learn about the contents of these abilities, strengthens their understanding of how these abilities are related to the knowledge system in the course, and improves their awareness and use of such abilities[9].

Ethical competence refers to the process of cultivating students' awareness of the ethics in the local economic and social environment so that they can understand how the macro-environment positively and negatively affects enterprises. Professional competence is the level of a student's ability to take responsibility for and handle group work. With the division of labour and roles, students study the target enterprise and learn to solve problems in all areas, such as human resources, production planning, marketing, research and development, finance, etc.

Scientific literacy is the ability of students to learn about new technologies, use decision-making and analysis tools to study a particular company, verify the rational use of its resources, and explore or develop new markets. Media literacy is the ability to develop emotions and reflections about new media and news topics and theories, and to implement media plans for the target enterprise to help in the operation and management of brand image construction. Aesthetic competence refers to the course training learners in the practice of truth, goodness and beauty, as well as in the planning and implementation of the visual identity of the target enterprise, so as to effectively differentiate the brand from that of others and attract the attention of consumers.

6.5 Introduction of Teaching Methods

The teacher organises group discussions (team-based learning) on the topics of various courses and has students collect academic and practical materials[10]. Based on the above, the teacher can use problem-based learning to have students discover the problems themselves and find solutions. Action Learning Promotes the Spread of Knowledge. A few cases are presented below. Social participation in learning is related to real life and promotes more thinking and discussion.

6.6 Integration of the Knowledge System with Enterprises

Introduce the concept of theoretical thinking to help students be aware of the contents, problems, shortcomings and contradictions in the theories. Only then will the students know when and how to use

the theories properly; they will not be misused but truly learned and applied. The course will also have a learning group perform alignment analysis of some enterprises. In the course of practice, the groups will analyse enterprise phenomena, problems, reasons and countermeasures, and then find good solutions.

6.7 Various Forms of Outcomes

The course can be taught in various ways and will have many different types of results. The results are as follows: Individual theoretical and practical assignments, a mid-term proposal for the brand marketing plan, subject-specific professional competitions, a final-term report on the brand marketing plan, and an achievement exhibition.

7. Conclusion

The systematic curriculum design model for integrating learning and practical application in the sustainable development of higher education is an innovative way that is systematic, structured, logical, step-by-step and procedural. It will help cultivate the new generation of talents needed for the development of our local economy and society. The above is a very practical, systematic process that covers course objectives, problem awareness, problem-solving, introduction of competencies, interactive teaching methods, integration with enterprises, and all kinds of results. Help teachers organise their lessons logically, improve the quality of teaching, boost students' enthusiasm for learning, and achieve good teaching results. It can promote the integration of learning and application, industry-education collaboration, and the continuous development of higher education in a sustainable manner; thus, new research ideas will be generated.

The systematic curriculum design model in this study helps teachers achieve good teaching performance, helps students learn the theories of life and apply them in daily life, and enables students to identify problems in their learning and solve them. It is suitable for teaching at the university level.

At the level of theory, this paper presents problem-based learning, action learning, case study and social participatory learning. The above ways can help students better grasp what is being taught, increase their enthusiasm for studying, improve academic performance, and also help construct a well-organised curriculum model that is systematic, ordered, logical, staged and procedural, in line with the ideas advanced by Barrows (1980) and Hills (2001).

An extension of the case method is to be added to incorporate and expand on the above theories. Through cross-validation and comparison of authentic information obtained from various sources, such as observation, interviews and literature, it has been confirmed that the theoretical propositions can be applied reasonably and appropriately in practice. Seek a more feasible and effective development path for theoretical progress, ensure that the collection of information is more objective, and thus make the developed curriculum design model more convincing. This is in line with what Danneels (2002) said.

Industry-education integration has helped to identify many talents in corporate practice who are more suitable for positions at the company. Under the guidance of both academic teachers and enterprise mentors, these students will be trained to become excellent employees of the company in the future. The above ways can help schools and enterprises work together to foster talent, create order classes and named classes, build co-built colleges, promote the healthy development of the local economy and society, and also help to develop a more systematic, well-organised, logical, step-by-step and procedural curriculum design model.

It is hoped that the curriculum design model sorted out in this study will motivate more young scholars to be drawn into the research field of curriculum design and bring new vitality to the sustainable development of higher education in the future. For the selection of research methods in the future, quantitative research can be used to show the differences in students' achievements under the traditional lecturing and interactive teaching models, as well as how to increase students' desire to learn, interest and efficacy in classroom management.

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