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Inspiration for Crafting Teaching Program for Chinese Vocational Colleges: Insights from BTEC Curriculum Outline

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Abstract: The curriculum outline developed by the Business and Technical Education Commission (BTEC) in the UK outlines the basic professional requirements of employers, educational institutions, and teachers for industry technological progress and learner development, covering the learning outcomes and corresponding evaluation criteria that learners need to achieve. This learner centered curriculum design method has important implications and practical guidance for the development of teaching outlines in vocational colleges in China.

Keywords: BTEC; Curriculum Outline; Learning Outcomes; Learners

1. Introduction

BTEC, as an esteemed brand in vocational education, has demonstrated exceptional performance and authority in the field of vocational education and talent development [1]. The BTEC curriculum outline represents a culmination of expertise from industry professionals and curriculum specialists, resulting in instructive documents that meticulously consider the needs of businesses, social demands, relevant industry standards, as well as pedagogical principles. These comprehensive syllabi not only prioritize the holistic growth of students but also cater to their individual developmental needs, establishing a solid foundation for employment and long-term career advancement [2].

2. Composition of Curriculum Outline

There are several courses available for learners and teachers to choose from for each major, including core courses and specialized courses. Besides, the curriculum outline for each course is composed of five sections, namely: course introduction, learning outcomes, course content, assessment criteria, and learning resources.

2.1 Course Introduction

The course introduction serves to emphasize the significance of the technology or skill, as well as its current state of development. Notably, this particular technology or skill constitutes a fundamental requirement for learners pursuing specific disciplines. This introduction seeks to provide learners with an understanding of the role this technology plays within the broader field of study, illuminating the reasons why it is crucial to acquire this specific expertise. Furthermore, it offers insights into the latest advancements in the field. Subsequently, the course introduction outlines the learning objectives, as well as the key topics covered in the course. It concludes by illustrating the professional opportunities that learners can pursue upon completing the course, showcasing the practical application of the acquired skills within their chosen field. Additionally, the course aims to foster the comprehensive development of learners' abilities. Noteworthy is the inclusion of communication skills, critical thinking, analysis, reasoning, and presentation skills throughout many courses, recognizing their vital role in securing employment opportunities and fostering academic growth.

2.2 Learning Outcomes

In the BTEC curriculum outline, the term "learning outcomes" is used instead of "teaching objectives" found in traditional syllabus. Teaching objectives primarily express the requirements that teachers expect students to achieve. On the other hand, learning outcomes evaluate whether learners have met the course requirements based on the explicit results they demonstrate. It focuses on what learners are able to do. Learning outcomes serve as evidence provided by learners themselves. Typically, a

course will have three to seven key learning outcomes, which form the core of the curriculum. By adopting a "backwards design" approach, these learning outcomes serve as a guiding framework to derive other relevant content of the course.

2.3 Learning Content

Each learning outcome is accompanied by the main knowledge and skills involved. It specifies the content that needs to be learned in order for learners to achieve the desired learning outcomes. This section provides key terms or concepts related to the main content of the course, which serves as a basis for teachers to prepare their teaching materials. During instruction, it is important to ensure comprehensive coverage of all the learning content.

2.4 Evaluation Criteria

The assessment of learning outcomes is categorized into three levels: Pass, Merit, and Distinction. For each learning outcome, corresponding criteria are provided for achieving each level. The Pass level represents the minimum requirements that must be met, clearly specifying the technical skills and knowledge necessary. The Merit level builds upon the Pass level and requires learners to demonstrate a more comprehensive, in-depth, and standardized analysis, comparison, clarification, and implementation. It entails a higher level of understanding and application. The Distinction level, on top of meeting the Merit criteria, places more emphasis on learners' ability to effectively evaluate, reflect, and showcase innovation [3]. The differences between Pass, Merit, and Distinction for the skill of riding a bicycle are as follows:

(1) Pass: Learning to ride a bicycle and being able to ride in typical road conditions.

(2) Merit: Building upon the ability to ride a bicycle proficiently, being able to perform extraordinary maneuvers, accurately analyze and assess risks in various situations, and navigate more complex road conditions.

(3) Distinction: Building upon a solid foundation of proficient cycling skills, being able to execute advanced stunt maneuvers, evaluate personal achievements, analyze weaknesses and strengths, and continuously reflect and improve. It requires courage and a spirit of innovation to perform these stunts.

2.5 Recommended Resource

Recommended resources for this course include books, journals, websites, and other relevant materials. Additionally, it is important to identify the course prerequisites and how this course supports other subsequent courses. Furthermore, the recommended resources should highlight any associations between the course and industry certifications from companies such as Cisco, Huawei, Microsoft, or other relevant organizations in the field of computer information technology.

3. Learning Outcomes Focus on Problem-Solving

The Outline of the National Medium and Long Term Education Reform and Development Plan points out that we should adhere to the combination of learning and application, combine learning with practical activities, and enhance students' problem-solving abilities through practice. The country urgently needs to cultivate talents with innovative spirit, comprehensive development in morality, intelligence, physical fitness, aesthetics, and labor, which requires strengthening the cultivation of students' higher-order thinking abilities such as problem-solving ability and critical innovation ability for complex problems. Numerous studies have shown that cultivating students' problem-solving abilities is of utmost importance in cultivating innovative talents. By solving problems, it is possible to strengthen the interconnection between different disciplines, drive the comprehensive implementation of professional courses, strengthen the practical requirements of the profession, and promote the good cultivation of students' professional abilities [4].

The learning outcomes submitted by learners are mostly presented in the form of coursework. In coursework, the first step is to provide the background of the project, which is the specific scenario in work or life. In this context, what is the current problem that learners need to take on a certain role to complete the task requirements given in their coursework, in order to solve the problem, most problems in work and life have multiple solutions. In the process of finding solutions, learners continuously cultivate their

professional abilities to solve practical work problems. Through cooperative exploration and communication, they explore consensus on problem-solving solutions, enhance their collaborative and self-management abilities, and cultivate their comprehensive qualities. After asking a question, the most important thing for learners is to analyze the problem, propose solutions to the problem, and explore what tasks can be completed to solve the problem, rather than simply staying at the operational or activity level. After learners solve a series of clear and gradually deepening related problems, they obtain the learning outcomes of the course, so learning outcomes should focus on solving problems.

4. Full-process Capability Development

In our own course syllabus, we place special emphasis on the learning and application of knowledge and skills. This is a common approach taken in many curriculum outlines and textbooks. While there may be occasional mentions of requirements related to needs analysis, design, testing, and documentation, they are often mentioned briefly without specific and explicit instructions. However, in the BTEC curriculum outline, there is a strong focus on developing full-process capabilities, which means fostering skills in various aspects of the entire workflow.

First and foremost, the learning outcomes reflect the comprehensive capability requirements of the entire workflow. Taking the most widely applied engineering and business-oriented curriculum outline as an example, each course incorporates the complete work process, encompassing technical selection and comparison, needs analysis, system design, implementation, testing, maintenance, and documentation.

4.1 Needs Analysis

Learners are encouraged to engage in communication with clients, understand the business rules in practical work, and provide different solutions. They are expected to compare the merits and drawbacks of various approaches and make informed choices based on the requirements. Throughout this process, learners are required to visit work sites, work collaboratively in teams, develop plans and interview outlines, acquire effective communication skills, and practice

problem-solving in real-life situations.

4.2 Research and Analysis

Learners are encouraged to conduct research and carry out rational market analysis to gain insights into the practical applications of technology. They are expected to research and compare different techniques, products, and tools, especially noting the differences between business and non-business applications and explaining the suitability of various technologies in specific scenarios. Understanding market conditions, pricing, and other factors enables learners to foster a sense of realism in the projects they undertake during the learning process, stay connected to the market, and stay informed about new technologies and applications, thereby cultivating their business acumen and the ability to foresee developments.

4.3 Testing, Evaluation, and Documentation

Throughout the learning process, learners are guided to appreciate the importance of testing and evaluation. They need to develop testing plans, collect and validate test data, and optimize solutions. Many courses explicitly acknowledge documentation as part of the learning outcomes, including documents for needs analysis, design, implementation, testing, user manuals, and maintenance logs. Through the process of documentation, learners can record their learning journey and provide guidance for future learning endeavors.

5. Learning and Teaching with Learning Outcomes as the Core

An educational approach centered around learning outcomes places the BTEC outline at the forefront. It adopts a "backward design" thinking process. Starting with the final learning outcomes and assessment criteria, a continuous process of backward planning is employed as figure 1.

A: Based on the desired learning outcomes, the specific learning content that learners need to acquire is determined. This learning content becomes the core topics that teachers deliver. Following the inherent logical sequence of the instructional content, instructional plan for an entire semester is formulated. Importantly, this instructional plan is shared with the learners for their awareness.

B: Once the instructional plan is established, the next step is learner analysis, which involves analyzing various aspects of the learners, such as their learning motivation, learning style, and cognitive preferences. It is also important to assess their existing proficiency and previous coursework to understand their baseline knowledge and skills. This analysis allows teachers to tailor their approach accordingly. After completing the learner analysis, the next stage is to determine the learning objectives for each teaching unit. It is recommended to use Bloom's Taxonomy to define the learning objectives. Depending on the type of knowledge being targeted, appropriate vocabulary should be chosen to describe the desired outcomes of the learning objectives. The formulation of learning objectives should adhere to the SMART principles, meaning they should be specific, measurable, attainable, relevant, and have a defined time frame [5].

Figure 1. Arrange Learning and Teaching Based on Learning Outcomes.

C: With clear guidance from the learning objectives, both teachers and students engage in specific learning activities that encompass various formats, such as problem discussions, skill rehearsals, case analyses, outcome showcases, and project competitions [6]. These activities should fully reflect a student-centered approach, where students take an active role while teachers assume a guiding position. In terms of instructional organization, it is recommended that teachers limit their lecture practice to no more than one-third of the classroom time. Instead, learners should be encouraged to engage in activities such as demonstrations, hands-on practice, and application transfer, which facilitate more effective learning.

6. Conclusions

The curriculums outline serves as a guiding document for instructional work, leveraging comprehensive industry insights and professional qualification standards to determine the desired outcomes for learners upon completion of each course. In the BTEC curriculums outline, there are explicit requirements for learners to engage in training activities that encompass the entire process, such as research, design, and testing. This approach sets higher expectations for student-centered learning, critical thinking, communication, problem-solving, and other relevant aspects. By referencing the student-centered design of the BTEC curriculums outline, we can improve our own and foster the development of students' comprehensive capabilities, which in turn, contributes to the advancement of vocational education in China.

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