ISSN 2522-6398 Vol. 4, Issue 7: 62-65, DOI: 10.25236/FER.2021.040712

The Application of CDIO Model in the Contest-based Learning

Ya Lin

Wenzhou University of Technology, Wenzhou 325035, China

Abstract: *According to the '721' learning rule, of all the 100% of knowledge and skills acquired, 70%, 20% and 10% are acquired on the job, peers and university courses respectively. The CDIO model, originated from engineering education, offers a new vision and concept to codify the knowledge and skills required in the instruction of business course. As an effort to make the students excel in a real-life simulation contest, the contest-based training program aims to create an effective training syllabus embracing the four key elements, namely, the conceive-design-implement-operate procedure.*

Keywords: *CDIO model, contest-based learning, business contest training course*

1. Introduction

Students, who major in international economics and commerce, are expected to develop a profound understanding of the international business environment and skills in critical analysis, information processing and data presentation. They will be equipped with fundamental theories and knowledge of international trade, international finance and receive systematic training in import and export business simulation via both offline and online channels.

There is a series of methods such as projects, tests and business contests to evaluate their acquisition of knowledge and skills, and one of the most comprehensive contest is *The International Business Skill Contest of China University Business Challenge*. A nationwide contest, *The International Business Skill Contest* aims to simulate the procedure of attending global trade exhibition, during which the university students are playing the roles of international trade specialists to complete four stages of the contest, including business proposal writing, exhibit booth design, business negotiation and product launch. Throughout the preparation and participation of the contest, their professional ethics and knowledge, problem-solving skills, teamwork ability and creativity will be put to the test.

2. The major challenge

According to the '721' learning rule, of all the 100% of knowledge and skills acquired, 70%, 20% and 10% are acquired on the job, peers and university courses respectively. In this sense, the foundation of learning is practice-based instead of theory-based, and feedback plays an indispensable role in learning as the peers are critical learning resources (Morgan et al, 1988). With reference to the '721' learning rule, for students, who receive adequate and systematic theoretical training yet lack of sufficient practical training or any direct internship or work experience, it proves to be a daunting task for them to participate in a real-life simulation business contest with less than two months' preparation. The underlying reason that accounts for such challenge is because the 10% acquired knowledge and skills cannot suffice their needs to operate efficiently in the contest. This poses a key challenge for the contest advisors, that is, how to modify the instructional content and methods to fulfil the remaining 90% of the gap within a two-month period of training? In order to resolve the aforementioned challenge, the training program has applied the CDIO model to create hands-on learning experience and achieve the purpose of contest-based learning.

3. Literature review

The application of the CDIO model was originated from Massachusetts Institute of Technology, acknowledging the necessity to reconcile the tension between undergraduate engineering education and

ISSN 2522-6398 Vol. 4, Issue 7: 62-65, DOI: 10.25236/FER.2021.040712

the growing needs for future engineers to possess a wide array of professional and people skills. Edward F. Crawley states that students in the contemporary profession of engineering must be able to conceive-deign-implement-operate complex value-added engineering systems in a modern team-based environment (Crawley, 2001). The concept is not only confined to the fields of engineering education.

In a similar fashion, the students of international economics and commerce should be equipped with sufficient professional knowledge and a wider range of skills such as personal and people skills to conceive-design-implement-operate business upon graduation. In the context of *The International Business Skill Contest*, the CDIO model redefines new educational initiatives to create a codification of the knowledge and skills required.

4. Training schemes

4.1 Student learning outcomes

The purpose of the training is to build a wholly interactive and practically based course that focuses on the students' learning outcomes and connects seamlessly to the various activities of involved in a global trade exhibition. By receiving systematic training, the students are expected to enhance their business understanding, business English communication skills, presentational skills, marketing skills, team spirit, and innovational spirit. For the four stages of *The International Business Skill Contest*, the corresponding students learning outcomes are listed as follows:

Table 1: Student Learning Outcomes

Parts	Procedure	Details
Part 1	Business proposal	· Develop a profound profile of the company's history, mission, corporate culture, product lines, domestic and international markets, organizational chart · Develop a comprehensive SWOT analysis of the company's development · Develop a profound understanding of the industry and major competitors · Identify the needs and preferences of the existing customers · Apply fundamental theories and knowledge of international trade, international finance and international investment into the analysis · Analyze the operating rules and changing trends of the international market · Master the business process of international trade · Formulate the marketing strategies · Formulate the financial planning strategies
Part 2	Exhibit booth design	· Design posters, billboards, stage backdrop and roll banner · Design the layout of the booth
Part 3	Product launch	· Collaboration and teamwork · Understand the customers · Become a storyteller and relate the customers to the story · Excellent presentational skills
Part 4	Business negotiation	· Clear and effective business English communication skills · Problem analysis to identify interests and goals · Problem solving skills · Decision making skills · Active listening skills · Ethics and reliability · Create remarkable customer experiences

4.2 The CDIO instructional process

The CDIO instructional process organizes the training course by dividing the instructional organization into the conceive-design-implement-operate stages, instructing through the procedures of business proposal writing, exhibit booth design, business negotiation and product launch. The instructors' responsibilities and the students' tasks are illustrated in table 2.

ISSN 2522-6398 Vol. 4, Issue 7: 62-65, DOI: 10.25236/FER.2021.040712

Table 2: The CDIO instructional process

Stage	Process	Instructors' responsibilities	Students' tasks
Week 1-2	Conceive	· clarify the training objectives and expectations · distribute work division and assign tasks	· develop a profound understanding of the goals and specific task requirements
Week 2-4	Design	· provides students with instructional materials including sample business proposals, contracts, product description, exhibit booth design photos, product launch videos from the previous contests · work with each team to create the framework of the overall exhibition plan	· conduct thorough research to learn more about the company and products · work within the team to sketch the outline of business proposal and draft of the contract, the script of product launch, the draft of the booth layout and the statistics and information needed for the business negotiation
Week 5-8	Implement	· revise the writing of business proposal · Polish the exhibit booth design · offer advice to improve the effectiveness the product launch · negotiating with team members in the business negotiation session	· complete the writing of business proposal · complete the exhibit booth design · rehearsal the product launch · simulate business negotiation
Contest	Operate	· collect feedback and suggestions from the judges and students alike · observe and learn from other teams · offer suggestions for students to make improvements in their future work	· participate in the national contest · complete a learning report · offer feedback to the training course

The first stage of the instructional process focuses on the aspect of conception, during which students are well informed of the goals of the contest and engage in a series of brainstorming activities to develop a profound understanding of the goals and specific task requirements. The purpose of these activities is to relate the students to highlight the relevance and importance for students to increase motivation and focus their energy on the specific tasks.

The second stage is the design phase, during which students conduct thorough research to learn more about the company and products and work within the team to sketch the outline of business proposal and draft of the contract, the script of product launch, the draft of the booth layout and the statistics and information needed for the business negotiation. This is the stage where they become curious and creative by a combined learning experience from previous contestants, instructors and peers.

During the third stage, the instructors play significant roles in advising, revising and improving the work completed by the teams. By offering guidance and advice on the revision of the business proposal writing exhibit booth design, product launch and business negotiation, students are able to understand the areas where they could work on to make further improvements.

The final stage is to participate in the national contest to compete against students from other universities and colleges, during which they will be assessed by the judges, course instructors and themselves. Meantime, the students do not only need to complete a learning report to assess their performance in the contest and summarize their observations from the other teams, but also are required to offer feedback to the training course.

ISSN 2522-6398 Vol. 4, Issue 7: 62-65, DOI: 10.25236/FER.2021.040712

4.3 Evaluation

A team evaluation sheet is created to evaluate the effectiveness of the course by comparing the pre-training and post-training performance. Prior to the training courses, each team is scored in the evaluation sheet show in table 3. For each stage of the contest, the criteria are specifically laid out to develop a comprehensive assessment of their knowledge and skills.

Table 3: Evaluation Sheet

Stages	Criteria	Scores
Business proposal	Mission statement (10%)	
	Industry analysis (10%)	
	Company profile and product analysis (20%)	
	Marketing strategies (10%)	
	Financial planning (15%)	
	Human resources management (10%)	
	Exhibition plan (15%)	
Exhibit booth design	Poster design for the company 25%	
	Poster design for products 25%	
	Display and position 25%	
	Overall impact 20%	
Product launch	Fluency and clarity of expression 20%	
	Presentational skills 20%	
	Selling points 20%	
	Team spirit 20%	
	Effectiveness 20%	
Business negotiation skills	Fluency and clarity of expression 20%	
	Business etiquette 20%	
	Selling technique 20%	
	Familiarity with the contract terms and clauses 20%	
	Teamwork 20%	

By the end of the contest, instructors will make improvements by comparing the pre-training and post-training scores, contest results, personal observations and students' feedback to improve the particulars of the instruction for the upcoming training.

5. Conclusion

The CDIO model offers a novel insight into the instruction of business-related contests. By implementing the CDIO model with the application of the '721' learning principle, this contest-based training course creates a crash course that simulates the four critical stage of attending global trade exhibitions, offering valuable hands-on experiences for students to improve their professional ethics and knowledge, intercultural communication skills, innovation consciousness and team spirit and internalizing their theories and concepts into actual implementation and operation.

References

[1] Crawley, Edward F(2001). The CDIO Model Syllabus: A Statement of Goals for Undergraduate Engineering Education, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology.
[2] McCall, Morgan W.(1988).Lombardo, Michael M.& Morrison, Ann M. The Lessons of Experience: How Successful Executives Develop on the Job, Simon & Schuster.