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Charting Constructivism Curriculum with CDIO Curriculum

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Abstract

Higher education institutions' performance is increasingly influenced on the caliber of their training. To enhance the quality of teaching-learning in this setting, innovative practice and standards-based curriculum are the major teaching instruments and their applications. There are three key goals for this study. It is initially desired that a CDIO-based curriculum, AACSB accreditation, and other standards-based education be based on the constructivism theory. The study then uses these frameworks to connect CDIO Curriculum with Constructivism Curriculum. The final section offers proposed constructivism activities for business courses at FPT University. The findings of the study are consistent with the stated research question. One of the primary conclusions of the paper is the feasibility of mapping Constructivism Curriculum with CDIO Curriculum. Another important discovery is the progressive introduction of Constructivism Curriculum into the Business Course Syllabus, which attempts to make teaching-learning more innovative, interactive, and engaging.

Keywords: *CDIO Based Curriculum, Constructivism Concept, Modern Instruction.*

Introduction

The mapping of CDIO abilities to sequences within a syllabus is a major component of the CDIO paradigm that invites discussion and analysis. Such charting is essential, according to Loyer et al. (2011) and Crawley et al. (2014), to enable gap evaluations, ensure that talents are not used before they are trained, and balance across-course coverage of abilities. Loyer et al. (2011), Brennan et al. (2010), Campbell et al. (2009), Cloutier et al. (2010), and Gunnarsson et al. (2007) are a few instances. Mapping is currently achieved by constructing tables of course results and associated CDIO skills.

The FPT University's business program's Integrated Marketing Communication (IMC) course, which is taught utilizing a constructivist methodology, was used as a case study for this essay.

In this investigation, the following Hypothesis (H) will be tested.

H1*: The constructivism syllabus can be mapped to the CDIO syllabus.*
H2: *The constructivism syllabus can be implemented into IMC course curricula.*
H3*: One or more AACSB Standards can be met by the Constructivism Syllabus.*

Methods

Constructivism: Students, according to constructivism, should actively build their own information rather than simply engage with it. When people interact with the environment and think about it, they create their own representations of it by combining new evidence into their previous understanding (schematics). This

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pertains to the processes of assimilation and accommodation (Buffalo University, 2023).

B. Constructivist teaching components:

The constructivism rubrics in the lesson plan below are based on Galton's (1995) explanation of constructivist education's table components. Teachers' classroom performance is graded on a four-point scale based on the aforementioned aspects, with scores ranging from "intensely accept" (3) to "accept" (2), "slightly accept" (1), and "not witnessed" (0).

1. Use students' existing knowledge to guide teaching
1.1 teacher's awareness of students' previous concept
1.2 Before presenting the teacher's own notion, before studying concepts from a textbook or other sources, gather the opinions of the students.
1.3 confront pupils' first concepts
1.4 make fresh concepts available to students
2. Encourage pupils to come up with a variety of answers and interpretations
2.1 Learners take note of the occurrence
2.2 Learners describe situation
2.3 The explanations and interpretations that pupils produce
2.4 probe students' responses for clarification and justification
2.5 Students clarify inconsistencies and misunderstandings
3. Create pointed questions
3.1 a classroom filled with questions
3.2 based on the learners' responses
3.3 Learners elaborate on their inquiries and defend their solutions.
3.4 embrace and cherish the thoughts and responses of the pupils
4. Select resources and exercises so that students can test their theories
4.1 Undergraduates engage in doings and materials
4.2 Learners carry out scientific research
4.3 Undergraduates carry out individual work with little guidance from teachers.
4.4 Undergraduates test their theories by providing evidence to support or refute them.
4.5 suggestions made by apprentices on the course of the activity or experiment
5. Create an environment in the classroom that encourages dialogue
5.1 Undergraduates present and converse with teachers about ideas they have.
5.2 Undergraduates present and debate thoughts with their colleagues.
6. Give learners the chance to apply fresh views
6.1 connect the lessons being taught today to what you already know
6.2 Undergraduates apply their knowledge to brand-new circumstances or practical issues.

C. CDIO Syllabus 2.0 (CDIO, n.d.) includes four main parts as following:

1. Discipline-specific information and analysis (UNESCO: studying to comprehend).
2. Physical and mental abilities and characteristics (UNESCO: acquiring to be).
3. Teamwork and communication abilities interpersonal skills (UNESCO: acquiring to live together).
4. The innovation process: perceiving, scheming, employing, and functioning organizations in the environmental, social, and business setting (UNESCO: Acquiring to act).

The relationship between CDIO standards and the constructive alignment technique of outcome-based

education. The table below depicts the connection between CDIO criteria and the concept of constructive alignment in result-based instruction.

Standard	CDIO requirements	Building Block Alignment Model
1	CDIO as Setting	Knowledge Results
2	CDIO Prospectus Consequences	
3	United Prospectus	
4	Outline to Engineering	
5	Practices with Design-Build	
6	CDIO Spaces	
7	Combined Education Practices	Instruction and studying actions
8	Dynamic Studying	
9	Enrichment of CDIO Abilities	
10	Improvement of Ability Instruction Abilities	
11	CDIO Abilities Evaluation	Evaluation
12	CDIO Program Evaluation	

D. Business Accreditation by AACSB

To hold themselves accountable for advancing business practice, business schools should focus on strategic management, learner success, and compelling thought leadership. This is the primary objective of AACSB accreditation. AACSB creates a set of criteria and requirements to accomplish this. Accreditation standards are broken down into three categories: thought leadership, engagement, and social impact; strategic management and innovation; and learner success (AACSB, 2020).

Results

1. Mapping of CDIO Syllabus to IMC Course LOs:

CDIO Syllabus 2.0	Course Knowledge Results(LO)					
	1	2	3	4	5	6
1.1						
1.2						
1.3						
2.1						
2.2						
2.3						
2.4						
2.5						
3.1						
3.2						
3.3						
4.1						
4.2						
4.3						
4.4						
4.5						
4.6						
4.7						
4.8						

2. Integrating Constructivism Syllabus into IMC Courses Syllabus

Table below shows the 15 suggested activities which are encouraged in constructivist classrooms:

No	Constructivist Activities	Activities Description/Purpose
1	Game-based learning and experimentation	Undergraduates do an experiment on their own before coming together as a class to discuss the findings.
2	Research initiatives	Students may share their results to the class after conducting research on a subject.
3	Companies Visit	Students can then use the theories and ideas they learned in class to solve real-world problems. Field trips were typically followed by class discussions.
4	Movies	These give the learning process a fresh sense by adding visual context.
5	either in-class or oral talks.	This tactic is used in all four of the aforementioned strategies (Nos. 1, 2, 3, and 4). It is one of the most important variations among constructivist teaching methods. The teacher asks the class a "focus" question before allowing open discussion on the topic.
6	Question, quizzes or issue	Encourage children to create their own inquiries
7	Case study	This enables students to develop their analytical skills.
8	Multiple intelligences	allowing various learning perspectives and manifestations
9	Collaborative learning	promote collaboration and the utilization of peers as resources in groups
10	Reciprocal teaching/learning	Permit pupils to learn from each other in pairs.
11	Inquiry-based instruction (IBL)	Undergraduates ask their own questions and use study and personal observation to find the solutions...
12	Problem-based education (PBL) and/or project-based education (PBL)	Similar to IBL, the core principle of PBL is that students learn through coming up with a solution to a problem. PBL exercises are different from IBL in that they provide students actual problems from the real world to tackle together.
13	Learning in groups	Undergraduates collaborate in small groups to enhance their individual and group learning.. Small groups of students with varied levels of ability use cooperative learning to increase their understanding of a given subject by using a range of learning activities.
14	Mind Mapping	Students list and classify the thoughts and ideas related to a topic in this task.
15	Hands-on activities	These nudge pupils to play with their surroundings or a specific teaching tool. To gauge their students' proficiency with the specific content, teachers can employ checklists and direct observation.

3. Constructivism Curriculum may correspond to all or some AACSB Standards: The study discovered that the applied Hypothesis H3 that Constructivism Syllabus can satisfy AACSB Standard 4 - Curriculum in Section (2) Learner Success, which states that curricula and extracurricular programs should promote innovative, promoting involvement with business practice, among students, students and teachers, and experiential learning..

Conclusion

In order to deliver outcome-based education, the curriculum for the undergraduate program was developed in accordance with the CDIO's 12 benchmarks and a productive position standard that

stresses studying goals, acquiring actions, and comprehension consequences evaluation. The CDIO approach implementation given in this paper can be used as a set of guidelines. Constructivism Questions (CQs) and Debate Activities are the only two methods used in the class. More information about constructivism activities may be found there. These activities follow the four primary constructivist principles and can be found in the classroom or when developing lessons (Baviskar, Hartle, and Whitney, 2009). To promote student involvement and interest in the subject, constructivism activities should be specific about what the teacher and students accomplish in the classroom and should use technologies like Padlet and Mentimeter.

References

Biggs, J and Tang, C. (2011): Teaching for Quality Learning at University, (McGraw-Hill and Open University Press, Maidenhead)

Cetin-Dindar, A. (2016). Student Motivation in Constructivist Learning Environment. *Eurasia Journal of Mathematics, Science & Technology Education*, *12*(2).

Crawley E. F, Malmqvist J, Lucas W. A and Brodeur D.R. (2011). The CDIO Syllabus v2.0 An Updated Statement of Goals for Engineering Education, Proceedings of the 7th International CDIO Conference.

Crawley E. F, Malmqvist J, Ostlund S, Brodeur D.R and Edstrom K. (2014). Rethinking Engineering Education. The CDIO Approach, Springer, New York. Temasek Foundation, Singapore Polytechnic. (2015-2016), CDIO training components 1-5, Ulaanbaatar, Mongolia, October 2015 to May 2016.

Galton, M. (1995). Classroom observation. In L. W. Anderson (Eds.), International Encyclopedia of Teaching and Teacher Education (2nd ed., pp. 501-506). U.K.: Pergamon. (cho Bảng Rubric Galtom 1995)

Hein, G. (1991)Download pdf. Constructivist learning theory. *Institute for Inquiry. Available at: http://www.exploratorium.edu/ifi/resources/constructivistlearning.html*.

AACSB. (2020, September 8). *Standards Overview*. Retrieved from AACSB: https://www.aacsb.edu/accreditation/standards

University of Buffalo. (2023, June 1st). Retrieved from Office of Curriculum, Assessment and Teaching Transformation : https://www.buffalo.edu/catt/develop/theory/constructivism.html#title_1930168193

Keller, D. (2012). *Teaching and Learnin Resources*. Retrieved from Constructivism: http://teachinglearningresources.pbworks.com/w/page/19919544/Constructivism

CDIO. (n.d.). Retrieved June 2023, from CDIO Syllabus 2.0: http://www.cdio.org/benefits-cdio/cdio-syllabus/cdio-syllabus-topical-form