

7 ICLICE 2017-034 Ho Thi Thao Nguyen

Develop and Implement the Integrated Curriculum at FPT University

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Abstract

The current demand of FPT University is how to develop program learning outcomes responding to industry requirements, as well as to design the integrated curriculum that provides not only knowledge but also personal attributes and professional skills for students. Since 2016, FPT University has been researching and applying CDIO basically and systematically in designing and renovating programs. In the range of this paper, the authors will describe the curriculum design process for both Public Relations program and E-Commerce program. The outputs include program learning outcomes, sequence of skills and integrated curricula. Next, the article shares about the collaboration with industries to design the Introductory Courses in two selected programs. Finally, the article provides the information of faculty development programs to implement CDIO teaching and learning activities during the past year.

Keywords: CDIO, learning outcomes, integrated curriculum.

Introduction

At the beginning of 2016, we approached to CDIO strictly when designing the curricula for the associate degree programs at FPT University. The curricula are outcome-based and integrated. The curricula are designed based on the comments, suggestions, discussion and criticism of several stakeholders including Board of Management (BOM), alumni, employers and industries. In addition, our associate degree programs are designed with On the Job Training (OJT) period. During the internship, students can learn by doing real projects in our partner companies. In terms of curriculum design, this project-based model ensures that the selection of courses and lessons has clear focus and maximizes practical values, equipping students with marketable skills as well as connecting the knowledge and concepts from the previous semesters. Furthermore, courses are developed to link to program learning outcomes accordingly. In a word, this likely helps students achieve expected learning outcomes after completing their programs.

In the range of this paper, we mention the process of applying CDIO systematically and thoroughly to develop and implement the integrated curricula for two associate degree programs: Public Relations (PRs) and E-Commerce at FPT University from early 2016 up to now.

CDIO syllabus includes 4 main parts as following:

1. Disciplinary knowledge and reasoning (UNESCO: Learning to know)
2. Personal and professional skills and attitudes (UNESCO: Learning to be)
3. Interpersonal skills: Teamwork and communication (UNESCO: LEARNING TO LIVE TOGETHER)

4. Conceiving, Designing, Implementing and Operating systems in the enterprise, societal and environmental context – The innovation process (UNESCO: LEARNING TO DO)

12 CDIO standards are as following:

- *Context and goals 1,2*: Context, and Learning Outcomes
- *CDIO curriculum and space 3,4,5,6*: Integrated Curriculum, Introduction to Engineering, Design - Build Experiences, and CDIO Workspaces.
- *Teaching and Learning 7,8*: Integrated Learning Experiences, and Active Learning
- *Faculty development 9,10*: Enhancement of Faculty Competence, and Enhancement of Faculty Teaching Competence.
- *Evaluation 11,12*: Learning Assessment and Program Evaluation.

Methodology

A case study approach was chosen as the research method. We wanted to study and account for basing on CDIO to design the non-engineering programs in some details in the paper.

Table 1

Examples of translation of CDIO standards to non-engineering professional contexts

CDIO standards		Domain	Translation
1	CDIO as Context	Public Relations and E-Commerce	Design, operate and evaluate media outputs
2	Introduction to Engineering	Public Relations and E-Commerce	Introduction to Public Relations, and Introduction to Digital Marketing
3	Design - Implement experiences	Public Relations and E-Commerce	Operate an event in an internal/external PR campaign of any company.

Case Studies

At the 1st period of CDIO Project at FPT University, we realize that it is necessary to establish and develop the skills of core values. They are values that we are oriented to during the period of designing and implementing CDIO. An abbreviated concept POLYTECH means:

- P**ersonal and professional skills
- O**pen thinking and innovation
- L**ifelong learning
- Y**oung communication and teamwork
- T**echnical knowledge and reasoning
- E**thical values
- C**ollaborative industry
- H**igh responsibility

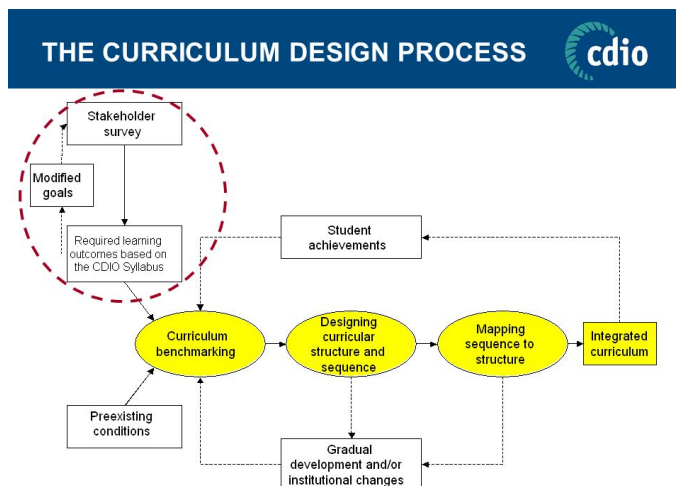


Figure 1. Integrated curriculum design process model

Figure 4.1 illustrates a model for the design of an integrated curriculum. The model calls for a translation of the CDIO vision into a formal set of goals that will provide a foundation for curriculum design. This translation is informed by the desired learning outcomes, pre-existing conditions, and curriculum benchmarking. Curriculum design itself is then defined as the projection of these goals onto the courses and associated learning experiences that formally constitute a curriculum.

Nextly, we based on CDIO integrated curriculum design process model to develop the new process of intergrated curriculum design for FPT University.

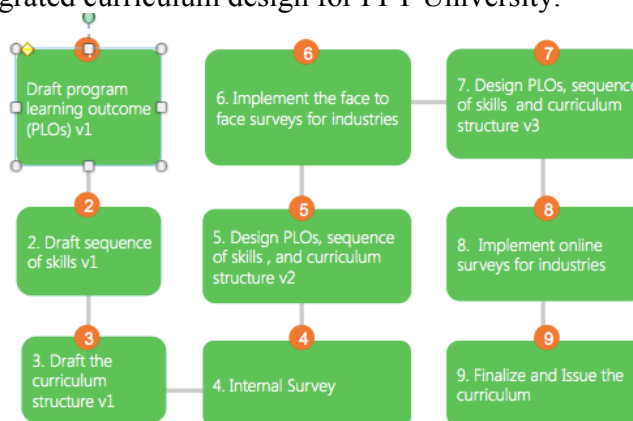


Figure 2. Integrated curriculum design process of FPT University

In the 1st stage, we implementation the face to face and online surveys among faculties, BOD, and industries to finalize the program learning outcomes and curriculum structures within one month.

At the 2nd period of CDIO Project at FPT University, we approached to CDIO Standard 4 (Introduction to Engineering) to design and implement introductory courses for Public Relations and E-Commerce. In the context of PR and E-Commerce professions, introductory courses provide the framework for Public Relations and E-Commerce practices and mention essential personal and interpersonal skills requires in these professions. Specifically, this framework is a broad outline of the tasks and responsibilities of an employee working in the field of PR and E-Commerce, and the use of disciplinary knowledge in executing those tasks. More than that, students engage in the practice of their professions

through problem solving, simple design exercises and assignments, individually and in teams.

Discussion

Now we really come back to respond to a big question “**Why 2 programs were selected**”. First of all, since 2015 and 2016, we have started approaching to CDIO for non-engineering programs. Specifically, FPT University learned CDIO for non-engineering programs from CDIO Asian Regional Meeting in 2015, Vietnam with the theme: **CDIO implementation for engineering education and beyond**. More than that, our CDIO project members also got advice of Application CDIO in non-engineering programs from CDIO experts of University of Economics and Law (VNUHCM) through a CDIO tour at the end of October 2015. Above all, FPT University carefully researched the full paper: **Application of CDIO in Non-engineering programmes – Motives, Implementation and Experiences** (12th CDIO International Conference in 2016, Finland). Such best practices from *International Business Program (VNUHCM, Vietnam)* and *Business Program (Turku University of Applied Science, Finland)* really motivated and guided us to adapt CDIO for two associate programs: Public Relations and E-Commerce thoroughly, systematically and sustainably.

We start the face-to-face survey with these questions:

1. Can you remark on the program learning outcomes (knowledge, skill and attitude)?
2. Please evaluate the integrated curriculum basing on the following factors?
 - *Educational goals and job orientation*
 - *Curriculum Structure and Content*
 - *Teaching and Assessment Methods*

Let us show the feedback from industries on the learning outcomes and integrated curricula of two associate degree programs: Public Relations and E-Commerce.

Table 2

Feedback on Learning Outcomes (3rd level) of Public Relations Program

Learning Outcomes	Reviewer N1	Reviewer N2	Reviewer N3	Reviewer N4	Reviewer N5
1. DISCIPLINARY KNOWLEDGE AND REASONING	- Replace Principles of Accounting course by a Financial Management course (LO 1.2.2) - Supplement the Writing Skills course so that PR employees can	- Add more knowledge of stage design, sound, lights, games in event operation, eg: Suggest adding the Entertainment skills	- LO1.1: Remove the course – Adobe Photoshop - LO 1.2.2 should be revised as following: <i>Understand and make use of the fundamental knowledge of marketing for building</i>	- Core fundamental knowledge is sufficient and reasonable. - For Communications Crisis Management, the developer carefully considers about the appropriate contents for	Considering about replacing Principles of Accounting course

Learning Outcomes	Reviewer N1	Reviewer N2	Reviewer N3	Reviewer N4	Reviewer N5
	represent and publicize for their organization (LO1.3.3)		<i>the PR campaign and produce events.</i>	the associate degree students	
2. PERSONAL AND PROFESSIONAL SKILLS AND ATTRIBUTES	Supplement “ Problem Estimation ” (LO 2.1.1).	Totally agree	Supplement professional skills as following: Negotiation Skills, Creative Thinking Skills, Public Speaking Skills etc	No comment	Add more skills: Sales Skills, Personal Branding Skills
3. INTERPERSONAL SKILLS: TEAMWORK AND COMMUNICATION	LO 3.1.5: Design an entrepreneurship plan listed in this section is not correct	Totally agree	That’s fine	I agree that these skills are important for PR program. Keep in mind that let student experience and learn through real practices Suggest a new course: Communication in Public Relations	Agree
4. CONCEIVING, DESIGNING, IMPLEMENTING AND OPERATING SYSTEMS IN THE ENTERPRISE, SOCIETAL AND ENVIRONMENTAL CONTEXT	Should separate applying CDIO skills in the field of Public Relations and Marketing to ensure	Matching the requirements of industries and markets Should integrate event operations	Agree	CDIO skills are so necessary in PR programs	Future PR employees are expected to negotiate with customers directly and call for event

Learning Outcomes	Reviewer N1	Reviewer N2	Reviewer N3	Reviewer N4	Reviewer N5
	the original training objectives	with marketing and advertising campaigns			ships

From results mentioned on the Table 2, it is realized that the enterprises highly appreciate the curriculum design as FPT University approached to CDIO to develop learning outcomes such as personal attributes and professional skills, interpersonal skills (teamwork and communication) as well as conceiving, designing, implementing and operating in enterprise, and societal context. As a result, graduate students can qualify for the job requirements in the context of international integration nowadays.

Table 3
Feedback on the curriculum of the associate degree program: Public Relations (PRs)

Evaluation Criteria	Reviewer N1	Reviewer N2	Reviewer N3	Reviewer N4	Reviewer N5
1. Educational goals and job orientation	The curriculum is researched and developed basically. Besides, it is practical responding the demands of industries in the field of PR and Event Management	The curriculum link the educational goals to human resource demands and the professional trends of the society	The curriculum defines the clear job titles, job description for graduate students. However, you need to consider the ways to describe the general and specific goals of the program.	The curriculum provide students with the insights and clear goals of careers, expected learning outcomes after they complete the program	Educational goals and job orientation is rather good.
2. The Curriculum Structure and Content	- Focus on major courses - Leave out the course: <i>Principles of Accounting</i> because the course of <i>PR Strategic Planning</i> mentions the content of <i>Financial</i>	- Appreciate the curriculum including more than 80% related to practices. - Suggest the course of <i>Cheerleading Skills</i> , putting game shows into event	- Emphasize on the advanced knowledge and professional skills so that students can find jobs after their graduation - Add the course “	Appreciate the priority arrangement for practices so that students apply knowledge and experience during the periods of learning	Supplement the courses of skills: Sales Skill, Graphic Design, Negotiation Skill

Evaluation Criteria	Reviewer N1	Reviewer N2	Reviewer N3	Reviewer N4	Reviewer N5
	<i>Management</i>	operations and PR activities	Public Understanding” helping students understand public behaviors. As a result, they can develop reasonable plans and messages		
3. Teaching and Assessment Methods	- Blended learning method is appropriate for the program emphasizing on the practices - Highly appreciate the project based learning	Highly appreciate the approaching to CDIO in teaching and assessing the student performances	The current educational methods are rather difficult for students graduating from high schools. So, at the beginning period, the school needs to support students to get on well with the blended learning	The educational methods focus on the practices and encourage students to self-study	

Table 3 mentions that the Board of Reviewers appreciates the curriculum because it is outcome – based. Besides, reviewers also have good feedback on teaching and assessment methods.

Table 4
Feedback on Learning Outcomes (3rd level) of E-Commerce Program

Learning Outcomes	Reviewer N1	Reviewer N2	Reviewer N3	Reviewer N4	Reviewer N5
1. DISCIPLINARY KNOWLEDGE AND REASONING	Principles of Accounting is not essential Consider the E-commerce law course,	Revise the learning outcomes as following: LO 1.3.3 Summarize and select	Supplement many courses related to practical trends and market	Quite satisfying	Principles of Accounting is not essential

Learning Outcomes	Reviewer N1	Reviewer N2	Reviewer N3	Reviewer N4	Reviewer N5
	let it alone or integrate with another course.	effective Google Analysis tools to analyze the consumer behaviors, serving for organizing effective marketing campaigns. LO1.3.8 Explain and solve problems related to hosting and server.	needs: Content Marketing, Consumer Behavior		
2. PERSONAL AND PROFESSIONAL SKILLS AND ATTRIBUTES	Illustrator skills are quite tough for associate degree students. In reality, industries can employ employee majoring on graphic design	Sufficient	Quite Satisfying	Agree	Sufficient
3. INTERPERSONAL SKILLS: TEAMWORK AND COMMUNICATION	Add more skills: Negotiation, sales	Sufficient	Quite Satisfying	Agree	No comment
4. CONCEIVING, DESIGNING, IMPLEMENTING AND OPERATING SYSTEMS IN THE ENTERPRISE, SOCIETAL AND ENVIRONMENTAL CONTEXT	No comment	Sufficient	CDIO skills mostly satisfy industries demands, however, the university should adjust and improve	Quite Satisfying	No comment

Learning Outcomes	Reviewer N1	Reviewer N2	Reviewer N3	Reviewer N4	Reviewer N5
			continuously to approach closely to practical situations and fill the gap between industries and universities		

From the results on the table 4, companies point out that at first FPT University has to identify the goals of E-Commerce associate degree program mainly majoring in Business or Information Technology (IT). Then, FPT University can develop expected learning outcomes including knowledge, skills and attitude accordingly and match these learning outcomes with industry demands in the field of Digital and Online Marketing.

Table 5.
Feedback on the curriculum of the associate degree program: E-Commerce

Evaluation Criteria	Reviewer N1	Reviewer N2	Reviewer N3	Reviewer N4
1.Educational goals and job orientation	The curriculum is oriented to the job positions for students after they graduate	Need to describe the jobs and job titles more clearly	Clear program goals help students understand the curriculum and their future careers	The human resources for E-Commerce are insufficient while E-Commerce is essential for many fields of business and commerce. Thus, FPT University has a correct approach as developing this curriculum
2.The Curriculum Structure and Content	The curriculum builds the basic contents for Digital Marketing. However, FPT University should consider adding more trendy courses: Content	- The curriculum is rather sufficient appropriate, and partly responds to the demands of industries - Leave out the course: Principles of Accounting	- Divide Email and Social Media Marketing course into 2 courses: Email Marketing, and Social Media Marketing - Add the course:	- The curriculum lacks of the content of Content Marketing, Customer Behavior - Photophop and Illustrator are merged in a course

Evaluation Criteria	Reviewer N1	Reviewer N2	Reviewer N3	Reviewer N4
	Marketing, SEO& Search Engine Marketing		Integrated Marketing Communications (IMC)	
3. Teaching and Assessment methods	Highly appreciate the student learning basing on the course learning outcomes	The teaching and assessment methods are updated and modern. For example, Blended Learning, Project Based Learning	The assessment methods include summative assessment and formative assessment	- Apply blended learning to encourage students to study at home before coming to class - In the project based learning, FPT University evaluates student learning through project outputs, report and presentation in each course

From the results mention above in Table 5, we find out that FPT University needs to revise, and update our curriculum to satisfy industrial expectation and requirements. Specifically, we have to both leave out some unreasonable courses and add more reasonable courses for the E-Commerce Associate Degree Program. Besides, we rearrange the orders of courses and distribute the content in courses more appropriately.

After having two curricula finalized and approved, we invited the representatives from industries to engage in designing and implementing the introductory courses. We would like to orient students to the future career since the semester 1 in their programs. Our aims are stimulate students’ interest in and strengthen motivation for the fields of Public Relations and E-commerce. In addition, introductory courses can provide an early start to the development of essentials described in the Program Learning Outcomes (PLO). In the figure 3 and figure 4 below, we illustrate the relationship among program learning outcomes (PLO), course objectives and course learning outcomes.

<p>Main objectives</p>	<p>G1.Understand and apply the fundamental knowledge of Public Relations (PR) to identify PR activities in companies, recognize the importance of PR and investigate the process to build the relationship among companies and medias. (PLO1.2.1) G2.Understand and make use of the fundamental knowledge of marketing for building the PR campaign and produce events.(PLO1.2.2) G3.Explain the issues of communications and globalization, describe essential knowledge in crisis management, as well as offer estimations, recommendation and prevention unexpected crisis. (PLO1.3.6) G4.Demonstrate professional ethics and responsibility, Plan career paths. (PLO 2.3.1, 2.3.4) G5.Communicate orally: Telephone communication, Face to face communication (PLO 3.2.1) G6.Display written communication through emails, reports, newspapers (PLO 3.2.2) G7.Show the roles and responsibilities of people designing advertising, PR campaigns and producing events. (PLO 4.1.1) G8. Relate to the sustainability and sustainable development of Public Relations profession. (PLO 4.1.4)</p>
<p>Learning Outcomes (LOs)</p>	<p>G1.1 Present the nature and basic concepts of Public Relations G1.2 Explain roles and importance of Public Relations to organizations and individuals G1.3 Compare the differences between Public Relations and advertising, the relationships of PR and Marketing Communications tools G1.4 Outline a 7 step process of Public Relations strategic planning G1.5 Recognize the characteristics and roles of Internal Public Relations G1.6 Describe main activities in Internal Public Relations G1.7 Identify the relationship between Journalism and Public Relations G1.8 Build a journalist relationship plan for organizations and individuals G2.1 Operate event planning G2.2 Find the roles of community relations for organizations G2.3 Contrast core External Public Relations G3.1 Identify and prevent the risks of communication crisis G4.1 Listen and follow the career paths and professional codes in the profession of Public Relations G5.1 Compare the forms of interviews and how to respond to these interviews G5.2 Perform roles in interviews G6.1 Discuss of publications and the way to write each publication G6.2 Write a specific publication G7.1 Identify the necessary knowledge, skills and attitudes for students to pursue PR professions G8.1 Define a process, method to build relationships for an organization G8.2 Practice developing a specific relationship</p>

Figure 3:

<p>Main objectives</p>	<p>G1.Explain and make use of principles of marketing, introduction to Digital Marketing to build online advertising campaigns. (PLO 1.2.3) G2.Understand and apply web and mobile tools to develop online marketing campaigns. (PLO 1.3.6) G3. List and demonstrate the ways to research markets, identify market needs, and point out target customers in order to develop advertising and communications plans. (PLO 1.3.1) G4. Select different tools for different phases (PLO 4.3.3)</p>
<p>Learning Outcomes (LOs)</p>	<p>G1.1 Understand and present the fundamental concepts in Digital Marketing. G1.2 Explain the roles and importance of Digital Marketing to publicize brands, products of companies. G1.3 Demonstrate a Paid-Owned-Earned Model in Digital Marketing. G2.1 Recognize the goals, roles of Social Media tools (Marketing and interacting with online users through social medias). G2.2. List the forms of social medias (blog, video..) and how they operate. G2.3 Define goals, roles of Email Marketing tools (Marketing to the users through email systems). G2.4 Present the usages of Email Marketing efficiently. G2.5 Explain some measurement criterion for Email marketing campaigns. G2.6 Recognize the goals, roles of Mobile Marketing tools and benefits for companies. G2.7 Present the ways to develop an efficient Mobile Marketing campaign. G2.8 Recognize the goals, roles of SEO (Search Engine Optimization) and SEM (Search Engine Marketing) G2.9 Understand and illustrate the differences between long term SEO and short term SEM, then applying them to optimize efficiency and costs for companies. G2.10 Recognize the goals, roles of Content Marketing. G2.11 Present the forms of content marketing, common content trends and how to operate content marketing. G2.12 Recognize the goals, roles of Online PR. G2.13 Outline main Online PR channels. G2.14 Recognize the goals, roles of tools designing homepages and landing pages for marketing campaigns. G2.15 Find the usages of Digital Marketing in E-Commerce. G3.1 Interpret marketing concepts of target customers, customer behaviors to utilize in building Digital Marketing plans. G3.2 Explain the ways to implement a campaign basically in which employees make use of Digital Marketing channel for companies. G4.1 Select Digital Marketing tools suitable for a specific field/business</p>

Figure 4. Introduction to Digital Marketing Course ‘s Objectives and Learning Outcomes

Before implementing two introductory courses, we also provide the Training Workshop of Instructional Techniques. These techniques include *Demonstration, Guide learning, Student learning, Group work, Role-play, Simulations, Games, Case studies, Independent practice and Reflection*. With active learning methods, our instructors can help students make connections among key concepts and facilitate the application of this knowledge to new settings.

Conclusion

With the training orientation “Well-learn, Well-work” for the associate degree programs, FPT University surveys and gets feedback from industries on program learning outcomes, focuses on developing the integrated curricula as well designing learning materials, specifically two introductory course for Public Relations and E-Commerce approaching to CDIO. These will help students not only have more experience during the period of studying at school but also are confident in keeping up with the real working environment after they graduate. Specifically, students can qualify for required knowledge, skills and attitude in the field of Public Relations, and E-Commerce.

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Appendix

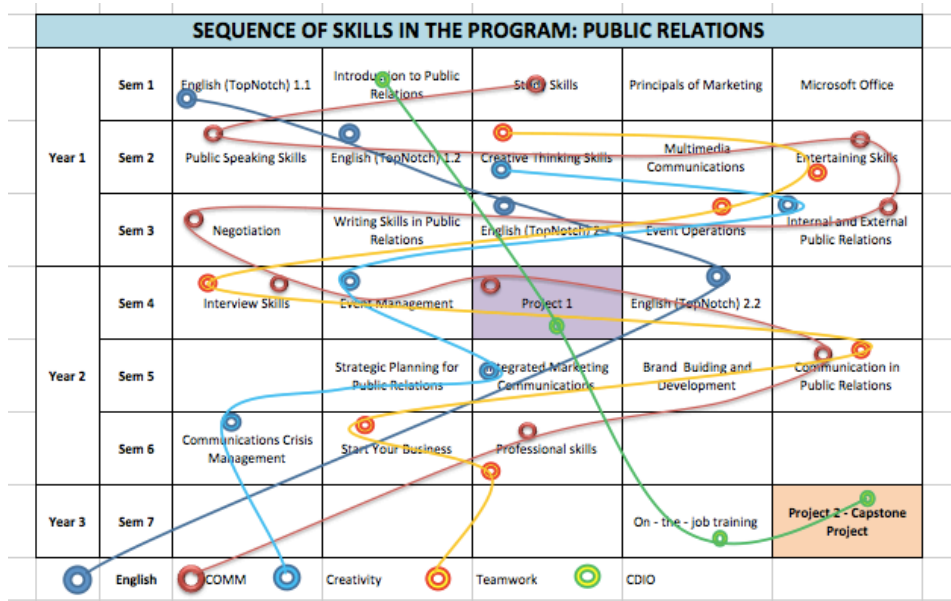


Figure A1. An Example of Integrated Curriculum (Public Relations)

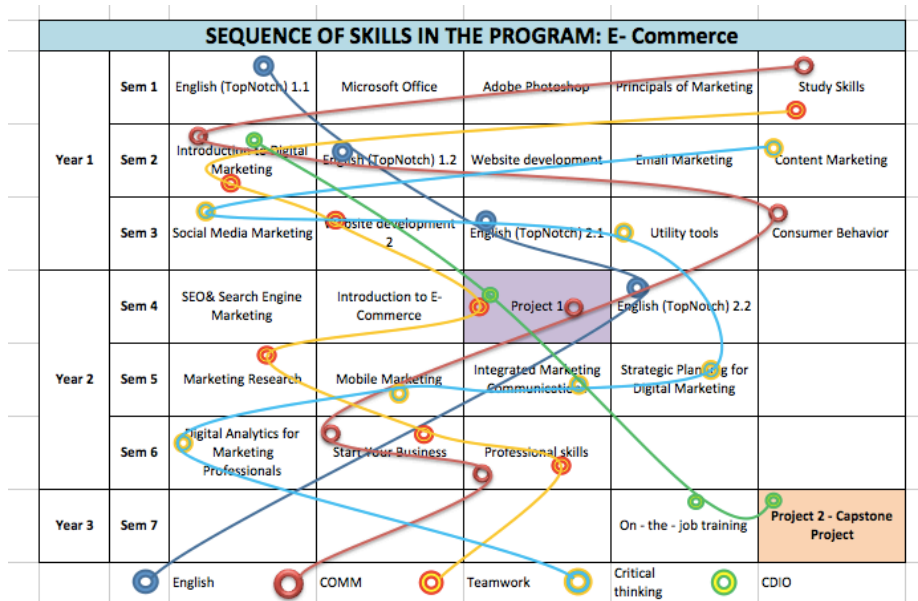


Figure A2. An Example of Integrated Curriculum (E-Commerce)