ANALYSIS ABOUT THE INFLUENCE OF VIETNAMESE CULTURES AND VIETNAM’S GENERAL EDUCATIONAL SYSTEM ON CDIO IMPLEMENTATION

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ABSTRACT

Vietnam is an oriental-culture country with 4,000 years of history and many unique attributes in its educational system. Therefore, the human characteristics, habits and psychology of Vietnamese students are very much different from those of Western countries. In addition, the knowledge and learning methodologies they acquire from high school are also different, which greatly affect the quality of their higher education adaptation, especially when it comes to CDIO implementation? This paper analyzes the difficulties of adopting CDIO in Vietnam with regards to certain shortcomings of Asian students in creativity, adaptability and flexibility. Generally speaking, the major shortcoming of Asian as well as Vietnamese students is their passivity and warriness against new ideas. This usually leads to passive learning which is the opposite of what CDIO is asking for: active learning and teamwork. In high school, Asian and Vietnamese students rarely have the chance to express their ideas about the learning subjects - they simply accept and memorize whatever their teachers have to say. The high schools also lack courses which help develop their personal and interpersonal skills. And yet, Asian and Vietnamese students also have certain good qualities in that they usually study very hard, having strong knowledge of basic sciences, and possessing the ambition of “lifelong learning”. With this type of students, more than often, we have to employ certain techniques and approaches to promote their qualities and at the same time, to help them overcome their shortcomings in terms of Asian cultures and their high school background. In order to implement CDIO in Asia in general and in Vietnam in particular, the universities need to pro-actively set up additional coursework or add-on modules to help guide and train their students about active learning, teamwork, creativity, etc. College instructors, on the other hand, need to encourage students to present themselves in class, to share ideas, and to show appreciation for the ideas of others. After two years of CDIO adoption at our university, we have managed to come up with a great number of techniques and approaches to help our students become more active, creative, and teamwork-oriented. Our sharing of different experiences will be useful for universities and colleges in Asia or for those under the same cultural setting like that of Asia, which are attempting to implement CDIO.

KEYWORDS

Culture, General Education, Learning Method, Passive Study, CDIO Implementation, Standards: 5, 7, 8
1. OVERVIEW OF VIETNAMESE CULTURE AND VIETNAM'S GENERAL EDUCATION

a. Overview of Vietnamese Culture

The culture of Vietnam is one of the oldest in East Asia; which has been shaped by many different civilizations throughout history. Through many long struggles, the Vietnamese have created their unique culture. Besides its own unique local Vietnamese culture, Vietnam's culture was influenced over a long period of time by elements from three forces — East Asia culture with its agricultural civilization, Chinese culture from the neighbor country, and Western cultures which were introduced to Vietnam since 19th century. As a result of its central geographical location, a long history of interacting with foreign cultures especially French, America and Japan, Vietnam is quite adept and open to adopting foreign ideas, values and practices into its own norms [Christopher Runckel].

Because of the limitation of this paper, we only mention some aspects that maybe impact to the implementation of CDIO. According to the American Institute of Social Research, the Vietnamese people have 10 major characteristics:

(1). First, they are hard working but easy to satisfy.
(2). Second, they are smart and creative to cope with short-termed difficulties, but lack long-termed and active reasoning abilities.
(3). Third, they are dexterous but hardly pay attention to the final perfection of their products.
(4). Fourth, they are both practical and idealistic, but don’t develop either of these tendencies into theories.
(5). Fifth, they love knowledge and have quick understanding, but hardly learn from the beginning to the end of things, so their knowledge isn't systemic or fundamental. In addition, Vietnamese people don’t study just for the sake of knowledge (when small, they study because of their families; growing up, they study for the sake of prestige or good jobs).
(6). Sixth, they are open-hearted and hospital, but their hospitality doesn't last.
(7). Seventh, they are thrifty, but many times squander money for meaningless reasons (to save face or to show off).
(8). Eighth, they have solidarity and help each other chiefly in difficult situations and poverty; in better conditions, this characteristic rarely exists.
(9). They love peace, and can endure things, but they are often not frank for sundry reasons, so sacrifice important goals for the sake of small ones.
(10). And last, they like to gather, but lack connectivity to create strength (one person can complete a task excellently; 2 people do it poorly, and 3 people make a mess of it).
Although, above assessments do not reflect perfect correctly all of Vietnamese people’s characteristics, but they have partly described the behavior and working manner of Vietnamese people.

b. Overview of Vietnam’s General Education

Vietnam’s education system is divided into three stages. The first one is preschool education for children from 3 to 6 years old. The second one is the basic education which includes three levels: primary school, which goes from first to fifth grade, usually for children from 6 to 11; junior high school from sixth to ninth grade, usually for teenagers from 12 to 15; and high school from tenth to twelfth grade, for teenagers from 16 to 18. After 12 years of basic education, one can continue with advanced studies such as university, college, or vocational schools [Huu Ngoc].

As a consequence of studying step, students who complete secondary schools can study in high schools. High school streams are implemented into 3 types: 1. Basic, 2. Natural sciences requiring advanced levels of 4 subjects: Mathematics, Physics, Chemistry and Biology, 3. Social sciences: major in 4 subjects: Literature, History, Geography and Foreign Languages.

Besides learning knowledge, students are also trained life skills and physical exercise. In Vietnam’s education, the viewpoint of learning to be a real human, which means knowing how to behave properly in life, has been considered one of the crucial objectives of education. Therefore, education has provided learners with necessary knowledge, attitude, and skills to enter social life.

In 15 years of renovation, Vietnam’s education which has made a number of efforts and achieved initial changes has created some necessary factors for future development. Nevertheless, it is facing weaknesses and difficulties in many aspects. The quality of education at all levels is still low. The teaching, learning and assessments and evaluation are mainly for the purpose of driving learners to mechanical memory, paying little attention to training independent and creative thinking abilities and applying knowledge and skills into real life. In order to be successful in the examinations, learners have to take extra lessons inside and outside schools which cost a lot of time, energy and money without bringing realistic benefits. The physical conditions of most of students are usually weak but are not paid much attention to improve. The stressful learning activities and examinations right from the very low level of those students make them have little time for entertainment, playing games and physical training [Vietnam Population and Housing Census 2009].

2. INFLUENCE ANALYSIS OF VIETNAMESE CULTURE AND VIETNAM’S GENERAL EDUCATION

a. Influence Analysis of Vietnamese Culture on CDIO implementation
Vietnamese students are hard working, this is an advantage when we deploy CDIO programs. Most of works we deliver they make with hard working attitude. Nevertheless, when they meet difficulty during working, they will give up easily.

The second advantage is they are smart and creative. They have a lot of initiatives and ideas, this leads the implement of Conceive stage easy to complete. However, they usually propose the ideas that are difficult to design or impractical.

They are dexterous to make small products with high aesthetic. There are a lot of things we can not buy, so we only make it by ourselves. These things they can make very well, for example handmade print circuit boards for electronics courses, filters for environmental course and so on. Nevertheless, they give up easily before finishing the final products.

Due to the characteristics of Vietnamese, students are weak at presentation skills, verbal skills, interpersonal skills, teamwork, the ability to apply knowledge to practical situations, and professionalism. Vietnamese people are taught not to disobey adults from a young age. It is a signal that you are not allowed to express your opinions in front of elders or authorities. This collective behavior is rooted deeply in Vietnamese culture and harms the development of soft skills by students. Restrained by tradition, creativity is hampered along communication skills, negotiations skills and critical thinking. Ironically, this culture of yielding in teams, ultimately leads to poor teamwork.

b. Influence Analysis of Vietnam’s General Education on CDIO implementation

There are four advantages of Vietnam’s general education: first, providing a large knowledge to learners; second, learners have theoretical basis very well; third, creating the habit of lifelong learning and finally, respected to teachers. However, there remain some problems that impede the deployment of CDIO.

After years of experience in teaching CDIO, the majority of our qualified students are still weak in communication skills. In our opinion, the pusillanimity and passivity is partly formed from early age at schools. The main reason is their passive learning habits. One of the explanations for dictating - writing in lecture halls nowadays is from teachers. However, passive studying habits of students contribute mainly to the situation.

In addition, high-school teaching staffs are insufficient in numbers, inconsistent in structure and low in quality. Most teachers apply old and passive method which can be described: teacher is the speaker and student is the listener. These methods are heavy on imparting knowledge and do not emphasize on training students the independent and creative thinking methods as well as an active attitudes towards learning and life.

The capacity of practical training for students is very weak. The curricula and textbooks are heavy on theory, insufficient in application knowledge and practical skills, inadequate in training thinking methodologies and do not make their active contributions to the formulation and development of necessary abilities for people in real life. This usually
leads to passive learning which is the opposite of what CDIO is asking for: active learning and teamwork.

**c. Investigation Results**

To clarify our analysis, we have carried out the survey over 100 students of three majors: information technology, electronics & electrical engineering, civil engineering. We let them assess the impacted level of four aspects: General education knowledge, skills that nurtured during general education, culture and CDIO quality. In each aspect, we list a number of small issues, each issue we give 1 to 5 points. After survey, we got the results as follows:

![Survey Results](image)

Figure 1. Survey results of general education knowledge, skills on CDIO programs

As the figure shows, the level of knowledge of general education to meet requirement of CDIO is a little above the average. The previous skills are not good enough to run CDIO program smoothly. We assessed the impact of culture via some questions like as: the impact of collective in your decision or your hobby is dependent on the opinions of people around or the level of debate with the teacher when you defend your opinion and so on. Most of them give 3 or 4 points. And finally, there is one thing encouraged us that CDIO have been obtained students’ support. They have highly assessed our CDIO programs at the university.

**3. SOLUTIONS FOR IMPROVEMENT CDIO PROGRAM QUALITY**
Many factors shape the quality of learning. These include the aptitude and motivation of individual students and their own approaches to learning (including to collaborative learning), the quality and diversity of the student body of which they are part, the curriculum they study, the caliber and strategies of those who teach them, the size and nature of their classes, the ways in which learning is encouraged by assessment processes and feedback, the learning resources (such as libraries, laboratories) and so on. To overcome above limitations and improve the quality of teaching CDIO, we propose the following three solutions:

First of all, we have to pay attention on the teaching method. There is near-unanimity on the need for teaching to be focused on learning outcomes, rather than on the teaching process itself, and especially on engaging each individual student in their own active learning, including – especially through discussion and debate - in refining the skills of independent thinking and of clear communication which any university education should encourage.

In addition, we should help students understand the advantages and disadvantages of Vietnamese culture and Vietnam’s general education. From that, we encourage students to participate the activities to overcome the shortcoming of Vietnamese culture and Vietnam’s general education.

Secondly, the role of instructors is very important in CDIO. Compared with traditional roles and responsibilities, instructors have more roles in CDIO to nurture successful CDIO students. Instructors should be proficient with various types of knowledge and abilities to perform new roles and responsibilities. Instructor’s roles contain three main aspects: teaching, research, and service. Generally, instructors impart knowledge and train students’ critical thinking abilities and practical competencies, and have face-to-face interactions with students. Instructors know about students’ learning demands and needs and adjust their teaching approaches to improve students’ learning efficiency according to their specific levels and conditions. They have to improve their research abilities, do some research based on their research interests, and publish books and articles in their fields so as to make their teaching more effective and successful. They actively participate in the activities of students and students can acquire the appropriate knowledge and abilities through multi-dimensional interactions [Edward F. Crawley et al.].

Another important aspect of instructors’ work is helping students develop higher-level thinking skills and problem solving skills through active involvement, guidance and feedback. To do this, they must not always be so quick with answers that students end up relying on them to do their thinking. Instructors’ role is to ask the kinds of questions that will help students think through problems and learn how to solve them. To do this, they must create the climate needed for students to feel safe enough to ask and answer questions and to participate in discussions. Often, students don't participate because they are afraid they will be wrong and look stupid in front of the instructor and their peers. It is important to help
students realize that everyone learns from mistakes, and that working through the mistakes as a group often leads to a much deeper level of understanding and thought for everyone. Sometimes, an instructor will be asked questions for which he or she is not sure of the answers. It is fine to use the phrase, "I don't know." One could use this as a teaching opportunity and tell the class how one would go about finding an answer. In any case, the instructor should find the answer and explain it to the class during the next time.

Finally, the learning resources should be adequate. Good facilities appear to be an important precondition for student learning in CDIO. As you know, CDIO is based on a commonly shared premise that engineering graduates should be able to: Conceive - Design - Implement - Operate complex value-added engineering systems in a modern team-based engineering environment to create systems and products. To train students having those abilities, we should build adequate facilities supporting them implement their ideas perfectly avoid paying too much attention on theory.

4. CONCLUSION

In this paper, we presented some issues of Vietnamese culture and Vietnam's general education that impact on the implement CDIO in our university. Simultaneously, we also point out some solutions to overcome the shortcoming to enhance the quality of CDIO programs.

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