

# Cognitive Content Engagement of College EFL Learners in Content and Language Integration

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**Abstract.** For decades content-based language teaching has been implemented in teaching a second or foreign language in different countries to attain the maximum instructional effects. College EFL learners, teachers and even educators in China have always been focusing on the learning of foreign language skills, which leads to the problem of learners' single knowledge structure with a failure to adapt to complicated social demands. To settle this problem, content and language integration (CLI) as a new teaching philosophy has emerged in China. This paper provides a case study of the instructional design of cognitive content engagement of college EFL learners through the CLI pedagogical philosophy in China. Two components of cognitive content engagement, academic content level and depth of processing, are used to facilitate the integrated teaching of content and language in the course of *Comprehensive English I* for college learners. This paper argues that the implementation of CLI would be more appropriately conducive to college learners' language proficiency and academic success as well.

**Keywords:** Cognitive content engagement; Content and language integration (CLI); EFL

## 1. Introduction

With multilingual or bilingual speakers in great demand for international communication in an increasingly globalized world, innovations of curriculum teaching design have become a necessity for learning an additional or foreign language in education of different countries. The instructional approach of content and language integration (CLI) has, therefore, aroused widespread interest among linguists and educators in China. CLI is "an educational philosophy or approach in which a target language is expected to be used as much as possible and as appropriately as possible for the teaching and learning of both content and language in integrated ways for multiple educational purposes." [1]

CLI is examined in relation to different models of content-based language teaching (CBLT) in Europe and North America; however, CLI, with its distinguishing features in China, has just been implemented for lesson and curriculum design in teaching foreign languages, especially English, to achieve its maximum benefits. Despite the fact that the investigation into "the interface of language and content [is] the most important pedagogical issue" in teaching design [2], to realize the dual-focused objectives of disciplinary content learning and the second or foreign language learning in classroom interactions is quite challenging and complex.

This paper is organized by first reviewing aspects of CLI literatures which focus on the dual aims of language and content learning in foreign languages teaching in unique Chinese context. Then, the paper moves on to examine how one CLI teacher brings about "cognitive content engagement" in classroom interactions through the teaching design of unit 4 "Go, Robots!" in the course of *Comprehensive English I* for college EFL learners. This teaching material is an excerpt from the textbook published in Foreign Language Teaching and Research Press in Beijing, China. In doing so, the curriculum teaching design provides the potential for the pedagogical issues relating to the content and language integrated instruction.

## 2. Key Features of the New Approach CLI in China

There exist different teaching approaches in curriculum innovations worldwide such as Immersion Program (IP), Content-based Instruction (CBI), Content and Language Integrated Learning (CLIL),

English for Specific Purposes (ESP), English for Academic Purposes (EAP), and English-Medium Instruction (EMI); however, they share the same duality of the second or foreign language learning and curricular content learning within relative emphasis put on language and content in certain socio-political contexts. In specific Chinese context, CLI has been examined for over a decade as a new approach of unique characteristics in China's foreign language education reform.

**2.1 Language Teachers in CLI.** A review of relevant literatures on foreign language educational innovations suggest that teachers and their approaches to changes are one of the most key factors influencing the chances of the innovation success [3]. In China, foreign language teachers, usually non-native, have long been taking the responsibility of the implementation of content and language teaching, while in other countries the percentage of multilingual teachers or native teachers is high in CBI and CLIL. In western countries, therefore, "CBI/ CLIL teachers are content teachers except in the cases of weak CBI/ CLIL programmes in which the language teacher follows a content-oriented language syllabus." [4] But CLI teachers in China are largely non-native language speakers who have to continue their professional development through self fulfillment.

For a long time foreign language teachers in China have been focusing on the input of language knowledge such as vocabulary, grammar and textual analysis, and on the improvement of language skills such as listening, speaking, reading, writing and translating. However, confronted with the increasing globalization and especially the emergence of ChatGPT, China's language teachers are trained to respond actively to such situation which brings about great challenges to language teaching. In other words, facing the changes of the present era, these language teachers are expected to renovate their knowledge, especially disciplinary and interdisciplinary knowledge, and teaching philosophies and approaches, with the new approach of CLI included.

**2.2 Cognitive Content Engagement in CLI.** The dual-focused teaching of CLI is theoretically depicted as "a continuum of content and language integration" to accommodate alternative forms of the concurrent programme. One end of the continuum is observed as the most content-driven while the other end as the most language-driven. The former takes the form of total immersion, which is followed by partial immersion, and the later present itself in the language classes, which might be implemented through the frequent use of content and theme-based courses. [5, 6]

At the beginning of Chinese opening and reform, foreign language teachers on tertiary level have focused on the cultivation of college EFL learners' language skills. That programme is taken to be located at the language-driven end in the continuum. However, just as what is mentioned above, language teachers in China are expected to take the challenges of the current situation, developing college EFL learners' language proficiency as well as achieving multiple educational aims including cognitive engagement and disciplinary literacy, with the content-driven end taken into account. This is one of the key features of China's foreign languages teaching at present time, corresponding to the pedagogical philosophy of CLI.

Cognitive content engagement (CCE) has been identified as a key factor in learning. "At the most general level, learning occurs through the cognitive engagement of the learner with the appropriate subject matter knowledge". [7] Based on the fact that CCE is conducive to learning, the paper focuses on cognitive engagement, one of the language teaching objectives in CLT in China. The paper takes what Stella Kong and Philip Hoare defined as the fundamental framework: CCE refers to "the cognitive interaction of the student with an appropriately challenging academic content level through activities that require sufficient depth of processing". [8] CCE presents itself as two components, namely academic content level and depth of processing, each with two indicators.

### **3. The Instructional Design of Cognitive Content Engagement of College EFL Learners**

The paper takes one unit in the course of *Comprehensive English I* for undergraduate English majors in colleges and universities as an example to illustrate how to design a lesson involving cognitive content engagement of college EFL learners. The original Text A and Text B are reverted in the teaching design for the purpose of the construct of CCE. This course focuses on the topics of science and technology, education and emotions, which are closely related to college learners' study

and life, to cultivate students' international vision and cultural self-confidence. In the pedagogy of CLI, emphasis should be placed on the improvement of cognitive engagement of English learners beyond the teaching of language proficiency.

**3.1 Academic Content level.** Academic content level affects learning within the following extent: “the extent to which students are expected to focus on technical academic knowledge rather than commonsense knowledge; the extent to which students are expected to focus on knowledge relationship in content rather than unrelated facts.” [8] In the following lesson, a focus on “technical academic knowledge” and “knowledge relationship” is recognized as conducive to English language learning in practical use.

Unit 4 Text A *Robot Husband Haier* in the course of *Comprehensive English I* narrates the “family life” of human beings through the first-person perspective of “I”, the robot Haier. “Three Laws of Robotics” are selected in CLI pedagogy as academic knowledge to be introduced to English learners as robotics has become an important subject in modern science and technology. Besides, learners are guided to have an understanding of an advanced technological innovation in Korean, Greek, Italian and other enterprises in that human superiority has been subverted and deconstructed in the era of artificial intelligence. Then, they are inspired to have activities of critical thinking about the ethical relationship between man and machine in the 21<sup>st</sup> century, and express their own perspectives. In this pedagogical process, learners are required to master technical academic knowledge of robotics and language skills concurrently. The instructional integration of academic content and language ability in this text *Robot Husband Haier* is shown in the following Table 1.

Table 1. The Improvement of College EFL learners' academic content level in CLI

Academic content level	Language ability: to infer word meaning
Knowledge Content: Three laws of robotics and Technological innovations	Definition clues: that is, means, is known
Critical Thinking: the ethnical man-machine relationship	Examples clues: including, such as, for example

One of the language skills is to infer word meaning in context. In the process of interactive activities in CLI pedagogy, learners in group are required to figure out word meaning based on definition clues and example clues while exploring the ethnical man-machine relationship in modern times. In a definition clue, the unfamiliar word is always recognized through such clues as “that is”, “means”, “is known as” and other signals. In an example clue, examples are usually listed through expressions like “including”, “such as”, “for example” to suggest the meaning of the new word. In such lesson planning learners develop high levels of academic language proficiency and have a better understanding of the man-machine relationship.

**3.2 Depth of processing.** Learning also occurs when depth of processing moves to “the extent to which students have process knowledge and (re-)produce it in different ways; and relate new knowledge to prior knowledge.” [8] The prior knowledge schemas of learners are revisited to construct a higher level of understanding.

Unit 4 Text B *Robot Tax* in the course of *Comprehensive English I* is taken from Kumar Sakhidanandan's book *Should Robots Be Taxed?* This lesson requires CLI teaching to provide learners chances of discussion about the social problems associated with artificial intelligence. For example, will the replacement of human beings by more intelligent robots lead to unemployment? How do we view the social problems brought about by robots? The purpose of this discussion leads to a higher level of understanding of new knowledge: while new tools in each historical stage will have a tremendous impact on labor force, they also promote new industrial forms, bring more employment opportunities and increase government revenue. The instructional integration of depth of processing and the use of language in this text *Robot Tax* is shown in the following Table 2.

Table 2. The Improvement of College EFL learners' depth of processing in CLI

Depth of processing	The Use of "subject-verb concord"
Social unemployment	Group discussion
Chances of employment	Class presentation
Employment vs. Unemployment	Class debate

When it comes to group work and language reproduction of their views, learners are simultaneously given notice to subject-verb concord in person and number, including concord with the nominal clause acting as the subject of the sentence, concord in the existential sentence, and concord in the sentence with an attributive clause. This design is explored to concentrate college EFL learners on the articulation of their understanding the content through the use of appropriate language knowledge.

#### 4. Summary

The paper argues that cognitive content engagement (CCE) should be one of the keys in teaching foreign languages in China, rather than basic language skills. Two core components of CCE are a priority of teaching a second and foreign language, namely, academic content level and depth of processing. The teaching design of the two texts in the course of *Comprehensive English I* in the paper is expected to integrate the improvement of college EFL learners' cognitive engagement into the output of learners' language skills.

Without academic content level and depth of processing involved in teaching a foreign language, it is difficult to make learner' deep learning of a foreign language occurring. Besides, college EFL learners would have no multiple knowledge structures and capabilities for their further development. Therefore, the paper shows that teachers should concentrate on developing content objectives as well as related language objectives through CLI pedagogy to promote college EFL learners' language development. This planning is urgently needed in English pedagogical context in China, especially relating to CCE proved to be conducive to learning. In the future work, further CLI pedagogical design in other subject-matter disciplines should also be expanded to investigate how to bring about CCE of language learners in different contexts. During this process of design, a variety of elements, such as students' learning styles, the selection and optimization of teaching materials and the professional development of teachers are expected to further the research of learners' cognitive content engagement in CLI pedagogy in China.

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