CLIL 教室での基本的な ICT スキルの教育

マレー・アダム[†1]　パッソス・アンデルソン[†1]

概要：本大学では、英語のみを使用できる教室環境（CLIL）で授業科目を学ぶという困難な課題に学生が直面しています。本論文では、いかにして私たちが基本的な ICT スキルの指導することと、授業の内容である環境問題を教授することのバランスを達成できたかについて説明します。さらには、本学の学生の一部は授業を学ぶ上で必要な英語のスキルに欠けているため、英語指導もこの授業における不可欠な要素となっています。こうした学習目標を達成するために特に重要であるのは、課題を与えることで ICT スキルを向上させることであり、それには教員が作成したリーディングテキストからの情報を学生が記憶することが必要となります。

キーワード：ICT、CLIL、環境問題、EFL

Teaching Fundamental ICT Skills in a CLIL Classroom Environment

ADAM MURRAY [†1] ANDERSON PASSOS [†1]

Abstract: At our institution, students are faced with the challenging task of mastering course contents in an English-only classroom environment (CLIL). In this paper we describe how we successfully balanced the teaching of fundamental ICT skills with the course content of environmental issues. As some of our students lack the necessary English skills to cope with the content, English instruction is also an integral part of the course. Of particular importance to the meeting the learning objectives was the use of tasks to develop ICT skills which required the retention of information from the instructor-created reading texts.

Keywords: ICT, CLIL, environmental issues, EFL

1. Introduction

Many undergraduate students in Japan are ill-equipped to be successful university students. One possible explanation for this is the low birthrate which has forced many universities to accept students that are not suited for higher education. One educational writer, Taiji Yamauchi commented, “There are university students who don’t know how to multiply” [1]. Of particular concern is Japanese university students that do not possess basic ICT skills. The Organisation for Economic Cooperation and Development (OECD) reported that nearly 25% of Japanese youth and young adults between the ages of 16 and 29 years lack basic ICT skills [2].

2. Institutional setting

At our institution, proficiency in the four language skills (reading, writing, listening, and speaking) in English are required in order to successfully graduate. In order to enroll in upper-division courses (3rd and 4th year), all students need a minimum TOEIC score of 500 points. Far from being an arbitrary number, there are two main reasons why this benchmark has been made an official university requirement: a) upper-division courses are delivered exclusively in English with minimal language support, and b) graduation theses are required to be written in English. In order to help with this transition, all lower-division courses are team-taught by a content-matter expert (CME) and a language expert (LE) in courses that utilize Content and Language Learning (CLIL) teaching methods. To be specific, CLIL courses are “taught through a foreign language with dual-focused aims, namely the learning of content, and the simultaneous learning of a foreign language” [3]. Even with motivated students, CLIL courses can be challenging for both the students and instructors.

3. Classroom environment

In order to understand how we taught basic ICT skills in a CLIL classroom environment, a brief description of the classroom environment is necessary. This course, “IT and the Environment” is a 15-week course with two 110-minute classes each week. In 2014, our institution was awarded with an Acceleration Program for University Reform (AP) grant [4]. Starting from the spring semester of 2015, all first-year students were assigned tablet computers and learned how to use an electronic portfolio system (e-Portfolio). This initiative provided us with two useful capabilities: the ability to teach IT classes outside of computer classrooms, and a system to systematically document the progress of our students both inside and outside of the classroom.

There were also benefits for the students. By being assigned tablet computers, the students were able to take both literal and physical ownership of their computing devices. Instead of perceiving computing as something that takes place in a computer lab, students could work anywhere and anytime. For students who experience anxiety when working with computers as a result of low levels of computer literacy, this may alleviate the problem. The second benefit for the students is the ability for the

†1 Miyazaki International College

ⓒ2016 Information Processing Society of Japan

instructors to recognize the efforts of their students. An example of recognition is the awarding of digital badges when certain benchmarks or learning objectives have been met. This recognition may help keep students engaged and motivation.

The first problem we faced was the fact that many students enrolled in the course had low levels of computer literacy and lacked familiarity with computers. Many of them could perform basic tasks on smartphones such as searching for information and writing e-mails but had difficulties using Microsoft Windows. Also, the operating system on the assigned tablet computers was Microsoft Windows 8.1, which has been widely criticized and there are even detailed instructions of how to remove the new user interface improvements on specialized Internet websites [5]. Our strategy to overcome this problem was to instruct students to use their tablet devices with a keyboard all the time (some of the students even purchased a mouse). This helped to minimize the additional difficulties created by the operating system so the focus could be on the syllabus and the class content.

By design, the first class of each unit is when the instructors focus on ICT-related training and vocabulary, while the second class is dedicated to knowledge reinforcement and language activities. As shown in Figure 1, each of unit of instruction follows the same procedure. In the first class, the focus of the class is on text editors. For homework, the students read a text on a specific environmental issue such as climate change. In the second class, the focus of the class is on the environmental issue itself.

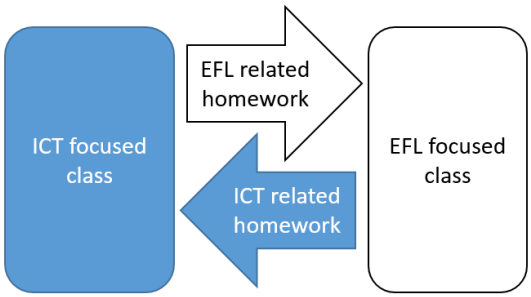

Figure 1 - Classes with different focuses are tied together by assignments

4. ICT skills

Because the priority of the course is the mastery of basic ICT skills, the instruction is focused on the following areas: basic computer concepts, text editors, spreadsheet applications, and presentation software. The first class of each unit of instruction, begins with instruction and follow-up activities with a focus on a single ICT skill. For example, when the students were working with spreadsheets, they completed a task that required them to collect primary data, input the data into the spreadsheet, and create appropriate graphs. To be specific, the students collected information about the automobiles in the student and faculty parking lots. Although this is totally unrelated to environmental issues, this task helped them prepare for their individual research projects about environmental issues. As a side benefit, we hoped that critical thinking skills will be developed as the students apply the knowledge and skills learned in the classroom task while working on their research projects.

The keystone project for the course is a short research paper on an environmental issue. In order to satisfy the requirements of the project, the students need to be able to use each of the applications and the ICT skills learned throughout the course. For example, to make the charts to describe their research findings, the students use the skills they developed while working with spreadsheets. To make the paper document to accompany their presentation, they learn various functions of word-processing software such as how to use headers, styles, and captions.

5. Environmental issues

Although the primary focus of our course is not on environmental issues, they are of global importance and should not be overlooked. In that context, and with respect to our university's mission of raising global citizens, the course explores and exposes students to a wide range of environmental issues. As we are not experts on environmental issues, we focused on the issues covered by Esty and Winston [6].

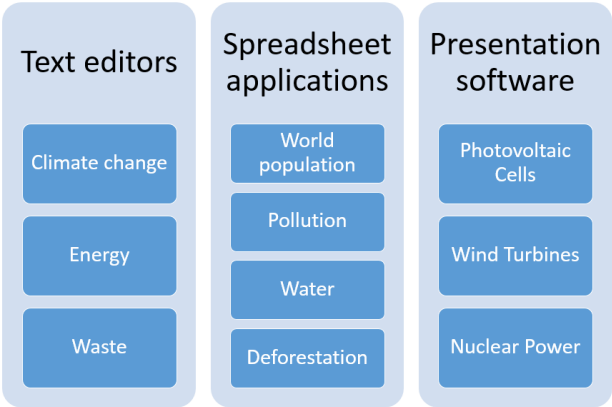

Figure 2 – Relationship between ICT skills and environmental issues

6. English skills

As stated in the syllabus, the development of English skills is an essential element of this course. At the outset of the fall 2015 course, the TOEIC scores of the students ranged from 285 to 800 points. In the case of the students with higher levels of English proficiency, minimal language support is necessary. However, for those with relatively low scores, extensive language scaffolding is essential.

As previously described, a major form of support in a CLIL environment is the use of a language expert. The primary role of the LE is ensure that the course contents in both written and spoken forms are comprehensible to the students. In order to do this, the course materials were carefully prepared by the SME and the LE. For each of the environmental issues, the instructors wrote original texts which were between 270 and 345 words in length. To help the students understand the reading, a series of vocabulary activities were used. The first activity, as shown in Figure 3, was a vocabulary activity in which the students match 12 keywords from the text with their dictionary definitions. These definitions were the meanings of the words in the text and were not always the most common meanings.

ⓒ2016 Information Processing Society of Japan

Water

MATCHING

Match the words (1-12) with the correct definitions (a-l)

1.	____ available	*a.*	process by which something is cleaned
2.	____ debris	*b.*	a small flash of light produced by hitting two hard substances together
3.	____ dump	*c.*	Garbage; pieces of something after it has been destroyed
4.	____ irrigate	*d.*	to become completely wet
5.	____ mankind	*e.*	to get rid of something
6.	____ priority	*f.*	a statement in which you tell somebody that you will punish or harm them, especially if they do not do what you want
7.	____ proposal	*g.*	something that you think is more important than other things
8.	____ scarce	*h.*	the fact that something is possible to get or find
9.	____ soak	*i*	there is not enough of it and it is only available in small quantities
10.	____ spark	*j.*	all humans, thought about as one large group; the human race
11.	____ threaten	*k.*	a formal suggestion or plan
12.	____ treatment	*l.*	to supply water to an area of land through pipes or channels so that crops will grow

Figure 3 – Keywords matching activity

In an effort to promote deep mental processing [7] and vocabulary retention of the 12 keywords, the students completed a gap-fill exercise (Figure 4). This activity required some mental effort on the part of the students. First, not all of the 12 keywords were used. Also, to make some of the sentences grammatically correct, the word form of some words needed to be changed. These two things were intentionally done to prevent students from completing the exercise through "brute force" of grammatical knowledge and the process of elimination.

GAP-FILL EXERCISE

Complete the sentences with the words from MATCHING.

1. Using less fossil fuels is a _____ in Japan.
2. _____ must collectively change its lifestyle in order to alleviate its impact on the environment.
3. The new product will become _____ next month.
4. Using too much water to _____ crops may affect lake's equilibrium and lead to fish death.
5. Contamination of fertile soil by _____ hazardous chemicals may lead to infertility.
6. The hijackers _____ to kill the passengers.
7. Fertile soil for growing crops is becoming _____.
8. His _____ for a new railroad was received with skepticism.
9. You should _____ the beans in water overnight before cooking them.
10. A _____ ignites the fuel in a car engine.

Figure 4 – Keywords gap-fill activity

In addition to the two vocabulary activities, spaced repetition [8] was a prominent feature. In both the gap-fill activities and in the texts themselves, keywords from previous units were repeatedly used.

7. Extra-class activities

In order to cope with ICT, environmental issues and language instruction, students are required to do a lot of work outside of class. To maximize content instruction, a series of additional activities were developed. Figure 5 is an example of a typing practice worksheet given to the students. This was an ongoing class assignment performed by students during the first weeks of the course. The data created this activity was then used during spreadsheet software instruction to generate the first student graphs. Also, regarding EFL instruction, students were instructed on specific vocabulary for describing charts.

Extra-class activity: Typing Practice Results

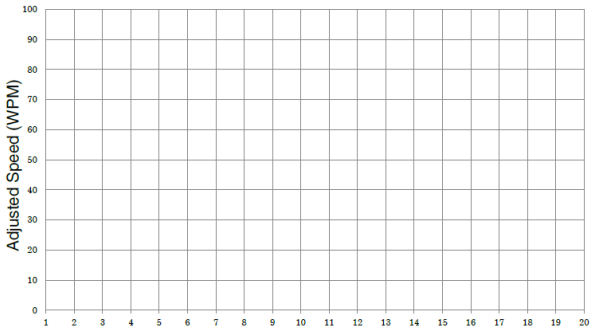

Figure 5 – Typing performance worksheet

The typing speed activity illustrates how we managed to engage students in critical thinking and active learning inside and outside classroom. As explained before, the final project for our class is a fully-featured research project on an environmental issue chosen by each student. Starting with a sheet of paper to record their scores, students learn how to make a chart, describe it and later, apply that knowledge to create charts for their final projects based on data retrieved by themselves outside the classroom. All of this was done with little or no intervention from the instructors.

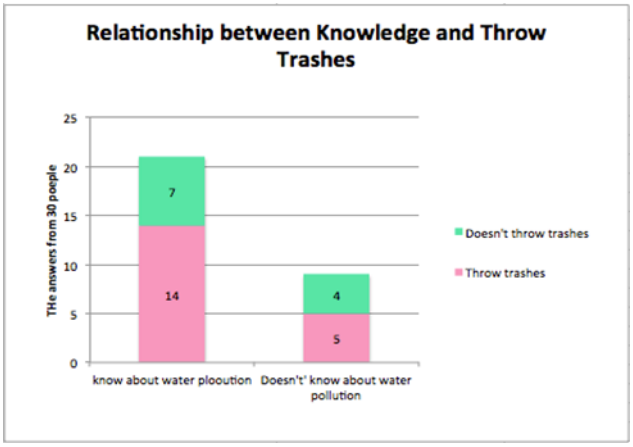

Figure 6 - Student graph describing interview results about waste management

8. Concluding remarks

We are confident that with adequate planning, it is possible to successfully to integrate the instruction of basic ICT skills such as the use of text editors, spreadsheet applications, and presentation software along with course contents in a CLIL classroom. Although our course incorporated environmental issues, we are confident that this approach to ICT instruction could be replicated with a variety of content areas.

References

[1] Aoki, M. (2012). Mismatch: Universities on rise but students in decline. *The Japan Times*. Retrieved from <www.japantimes.co.jp/text/nn20121204i1.html>

[2] OECD. (2015). *OECD Skills Outlook 2015: Youth, Skills and Employability*, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/9789264234178-en

ⓒ2016 Information Processing Society of Japan

[3] Marsh, D. (2002). *LIL/EMILE –The European Dimension: Actions, trends and foresight potential*. Public services Contract EG EAC. Strasbourg: European Commission.
[4] 文部科学省「大学教育再生加速プログラム」(http://www.mext.go.jp/a_menu/koutou/kaikaku/ap/ 現在)
[5] PC World. (2015). How to banish Metro from you Windows 8 PC Forever (http://www.pcworld.com/article/2027945/how-to-banish-metro-from-your-windows-8-pc-forever.html)
[6] Esty, D., & Winston, A. (2009). *Green to gold: How smart companies use environmental strategy to innovate, create value, and build competitive advantage*. John Wiley & Sons.
[7] Murray, A., & 藤井哲郎. (2009). Developing Vocabulary Depth with Deep Processing Tasks (Vocabulary, College English Curriculum Innovation in the 'New' Age of International Exchange). *JACET 全国大会要綱*, *48*, 180-181.
[8] Ausubel, D. P., & Youssef, M. (1965). The effect of spaced repetition on meaningful retention. *The Journal of General Psychology*, *73*(1), 147-150.

ⓒ2016 Information Processing Society of Japan