Implementation report for online public course 'English for Science'

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1. Introduction

Our university's motto is, "Live locally and extend yourself throughout the world." In line with this, and with the advocated importance of the roles of university's in making contributions towards the community under the sponsorship of the Cybermedia Center, Osaka University, free participation courses were held for members of public in Ikeda, Toyonaka and Minoh Cities in November 2014. This course was characterized by the fact that, without receiving any tuition, students used the studying methods they had learned during the preceding orientation, and proceeded to study from the course online at their own homes for the following two weeks. Of the four courses being held, two were English language courses for Japanese learners. The author planned one of the courses, *English for Science*, developed the learning materials, created the curriculum and conducted the course management.

It is claimed by researchers such as Yonaha & Takefuta (2013), that for one to effectively acquire a foreign language, the most optimal effect is observed through consistent daily study for at least 4 years. A different study conducted by Takefuta (2012) found that most students at this university were not able to effectively continue studying English over the two months per year when they are off for summer vacation. To overcome this situation, we believe an online course to be one method in which students will be able to make practical use of these long vacation periods in order to keep up their English language studies. For that reason, this public course is something that could be said to be intended as an online lesson simulation which may be implemented in the future.

2. Course outline

2.1 Course requirements and student recruitment

Participation in the *English for Science* course is outlined by the following three requirements, designed to open the doors for participants as wide as possible: 1) Must be a citizen of one of the cities Ikeda, Toyonaka or Minoh. 2) Must be able to attend the orientation held on November 1st. 3) Must possess a computer with an operating environment which is capable of displaying online learning materials. Furthermore, we required that the participants be at the level of *Eiken* 2nd grade at the time of application, checking to make sure that their level is appropriate by viewing the example learning materials that are published on the website.

Guidance for recruitment was published in public relations magazines near the end of September and was distributed to citizens in all three cities. Applications were taken on a first come-first served basis from 1 pm on October 6th, and it took only about 45 minutes to reach the 30-student quota for the *English for Science* class, demonstrating the sheer level of interest that the public holds with regards to English language courses.

2.2 Learning materials

2.2.1 Online learning materials

The course was comprised of 14 lessons and was focused on the aim of building English reading skills. It had a wealth of variety and included topics such as, science, technology, biotechnology, biochemistry and astronomy, thus allowing the participants to read topics which tickled their intellectual interests. Table 1 shows the lesson titles, numbers of words, topics, FS (the Flesch Readability Score calculates the basic readability of a text through the number of words, sentences, syllables, etc.), and FKG (the Flesch-Kincaid Grade Level corresponds to the Flesch Readability Score of American grade levels). By looking at the FKG values, it is possible to determine the equivalent level of difficulty of a text when read by an American high school

Table 1 Difficulties of each lesson

Lesson title	WC*	Topic	FS*	FKG*
Lesson 1 Healthy Chocolate 1	132	Chemistry	43.2	12.1
Lesson 2 Healthy Chocolate 2	351			
Lesson 3 Foreign Language Learning 1	149	Humans & Heredity	57.1	10.2
Lesson 4 Foreign Language Learning 2	370			
Lesson 5 Fuel-efficient Airplanes 1	154	Technology	55.8	10.3
Lesson 6 Fuel-efficient Airplanes 2	337			
Lesson 7 File Sharing 1	168	Computer Technology	57.7	9.6
Lesson 8 File Sharing 2	311			
Lesson 9 Drake Equation 1	76	Astronomy	48.4	10.8
Lesson 10 Drake Equation 2	311			
Lesson 11 Brain-computer Interface 1	223	Bio-technology	55.7	10.8
Lesson 12 Brain-computer Interface 2	420			
Lesson 13 Kopi Luwak 1	246	Biology	56.3	9.9
Lesson 14 Kopi Luwak 2	472			

*WC: Word count, FS: Flesch Readability Score, FKG: Flesch-Kincaid Grade Level

student. As each text does not have a word count exceeding 1,000 words (367 words on average), the FS and FKG counts are somewhat unreliable, but is still possible to use the readability criterion.

Learning was conducted through the complete study of a piece of reading material over the course of two lessons. Firstly, the odd numbered lessons focused on thoroughly understanding the first half of the text, and the following lesson was for understanding the text in its entirety. The position for dividing the reading material into the first half and last half was at about half of the total text. Moreover, by separating the text at a point when the content is changing, we tried to stir up students' curiosity and encouraged them to continue reading the rest of the text to see what comes next.

The composition for each lesson are based on a concept of 8 steps (as shown in Table 2). Through these steps the participants were able to take note of their own reading speed, as well as paying consideration to deepen their understanding of the English readings gradually and without exertion. For steps 2 and 6, participants were made to learn the words which appeared in the reading, including their pronunciation, and developing their bottom-up processing of

Table 2 Lesson composition

Step No.	Learning content
Step 1	Learners listen to an explanation of the topic covered by the reading material.
Step 2	Learners learn the difficult academic vocabulary (10 words) which appears in the text beforehand. After seeing the spelling, they check the pronunciation and meaning of the words.
Step 3	After reading the text, learners determine their reading speed. After that, they listen to an English native speaker read the text at natural speed (roughly 180 wpm).
Step 4	Learners read the text once more and answer the questions about it. As the questions are multiple-choice, they automatically graded upon submission and are able to check your answers with an explanation.
Step 5	Learners read the Japanese translation of the text and confirm that their understanding of the contents is accurate.
Step 6	Learners review the vocabulary they learned during Step 2. This time they look at the Japanese word and try to recall the English equivalent word and pronunciation.
Step 7	Learners read the text one final time and try to determine reading speed.
Step 8	Learners read the published information and associated websites (external websites) and acquire the relevant knowledge relevant to the reading materials.

information. Furthermore, the final step introduced students to websites with information related to the English reading and developing their practical effectiveness for reading comprehension. In terms of relevant websites, we introduced external websites written in Japanese as eighth step for the first half of the reading materials, whereas we introduced English websites as eighth step after students have finished reading the entire material, adding a slope to the difficulty level of the teaching material. For the first lesson, we made the participants study using the steps in order from Step 1 to Step 8, and from the second lesson, we allowed them to return to any previous steps and repeat them as many times as they liked.

2.2.2 Printing textbooks

Although the primary learning resources are on the internet, we also distributed printed textbooks during orientation. The textbooks contain teaching material outlines, learning schedules, learning methods, usage methods of the Learning Management System (LMS), lists of advanced or technical vocabulary used in the reading materials, teaching material compositions and queries to questions.

2.2.3 Resource downloading service

In order for students to continue reviewing content after the course has ended and can no longer access the online material, we made it possible for them to download the reading materials (PDF files) and speaking materials (mp3 files) after completing each lesson.

2.3 Lessons

The course was carried out for two weeks, starting on November 1st, 2014 and finishing on November 15th. Orientation was carried out for the course participants on the first day, and the course outline, learning materials, learning material usage methods and learning schedule were all explained, along with an introduction of the course instructors. Out of the 25 participants who attended the orientation, 19 had no experience in taking an online course, so we were anxious as to whether they would be able to continue the course until the end. In order to dispel this anxiety, we carefully taught the students how to use the LMS, as well as supplying them with contact information for when they were unable to understand something and telling them to make sure they don't simply ignore the things that they don't understand.

After two weeks, following the criterion from the learning schedule (Table 3), the participants learning took on the form of self-study for 30 minutes to one hour a day, in a location of their preference. Questions regarding the learning material content or the use of the LMS for the online course were handled by the person in charge by email 24 hours a day. As a result, the two-week course completion rate was 92.0% (23 out of 25 participants were received a certificate of completion), and the online course could be considered to have an unexpectedly

Table 3 Course schedule

Date	Content	
Nov. 1	Orientation (on campus)	
	Lesson 1 Healthy Chocolate 1	
Nov. 2	Lesson 2 Healthy Chocolate 2	Quiz 1
Nov. 3	Lesson 3 Foreign Language Learning 1	
Nov. 4	Lesson 4 Foreign Language Learning 2	Quiz 2
Nov. 5	Lesson 5 Fuel-efficient Airplanes 1	
Nov. 6	Lesson 6 Fuel-efficient Airplanes 2	Quiz 3
Nov. 7	Lesson 7 File Sharing 1	
Nov. 8	Lesson 8 File Sharing 2	Quiz 4
Nov. 9	Lesson 9 Drake Equation 1	
Nov. 10	Lesson 10 Drake Equation 2	Quiz 5
Nov. 11	Lesson 11 Brain-computer Interface 1	
Nov. 12	Lesson 12 Brain-computer Interface 2	Quiz 6
Nov. 13	Lesson 13 Kopi Luwak 1	
Nov. 14	Lesson 14 Kopi Luwak 2	Quiz 7
Nov. 15	Closing exercises (on campus)	

high effect.

3. Lesson evaluation

For the 25 participants who took the *English for Science* course, we carried out an anonymous survey at the time of course completion (23 participants responded, a retrieval rate of 92.0%). The question sheet was comprised of items requiring a specific response, and free description responses for 5 principles. The aggregate results to the questions were collected and are written below.

3.1 General impressions

Firstly, to the question, "Would you like to attend similar courses if we offer in the future?" the responses were graded in 5 levels, ranging from "5. I would definitely like to," to "1. I wouldn't like to." All participants showed an interest in continuing, with 91.3% of participants choosing 5 and 8.7% choosing 4 ($M = 4.91$, $SD = 0.29$).

In addition, I will give a few excerpts from the participants' free-description responses about their general impressions of the course.

I didn't expect that I'd have so much fun engaging in voluntary English learning. It's completely different to the kind of learning I had when I was a college student. I'm happy because I feel like I've gotten a bit smarter by learning English with some freedom, and by not having to compare myself with other people. I was nervous about the quizzes, but felt happy after achieving 100 scores. After not having experienced anything for a long time, it was a fulfilling 2 weeks.

I had the desire to study, but up until now I hadn't given myself a chance to learn a foreign language. As a citizen of Minoh, I was able to get the chance to participate in the open English course, and make use of the enriching learning resources. For that opportunity I am extremely grateful.

3.2 The learning and system support frameworks

Nearly 90% of all the questions asked by students involved the usage and indication of malfunctions of the LMS which was introduced at this public course. Therefore, it was necessary to immediately respond to and explain the situation. One of the motives for taking this course was for busier students who claimed, "As it's an online course, it's available for me to take it anywhere and at any time." Although study hours and inquires usually occurred after 10:00 at night, the author made sure to respond within 30 minutes of receiving a message, and strived to promptly clear up any questions or complaints that students might have had. As a result, when questioned about the Q&A by professors, 95.7% of students answered with either "5. Very Satisfied," or "4. Satisfied" (M = 4.48, SD = 0.59). In the free-description column, opinions like the following were observed:

I'm grateful to the professor for responding to all kinds of questions in a timely manner, and for paying close attention to minute details.

Thank you for providing me with 200% support!

3.3 Courseware

In the items inquiring about the content or structure of the materials, 95.7% of students answered with either "5. Very satisfied," or "4. Satisfied" (M = 4.39, SD = 0.72). However, questions regarding the difficulty of the material showed only 39.1% of students responded "just right," while a majority of 60.9% claimed it to be "slightly difficult" or "too difficult." Among these statistics, the majority of students that chose "slightly difficult" also wrote, "it was a difficulty worth challenging oneself with. I was able to enjoy learning without becoming bored." The student who answered "too difficult" appeared to be out of their league, so we ascertained

that the student was incompatible with this course. Takefuta & Suiko (2005) have proven that in cases where the difficulty of the material and a student's English proficiency didn't match, the effect of learning diminishes greatly. Therefore, it's suggested that we need to reconsider the way in which they choose the materials in advance.

> The volume of daily material was appropriate and the English content was interesting, so I enjoyed the learning process.

> I made it to the end and received my certificate diploma, so I'm very satisfied. The English content was interesting, and I read all the Web sites which were written in Japanese, so I was able to gain a lot from this course.

3.4 Curriculum

In the case of online courses without any schooling, they are made to be difficult to continue taking. For example, the completion rate for MOOCs (Massive Open Online Courses), a university lecture distribution service, is said to be from only 10% to 20% (North, Richardson & North 2014). Therefore, we've taken the following measures so that every student in the *English for Science* will make course completion their goal: 1) Making the necessary requirements to be issued with a certificate diploma for the completion of every lesson, as well as receiving 100% on every quiz (the quizzes are criterion-referenced tests and are designed to be available to be taken unlimited number of times). 2) We help our students to keep a fixed studying pace by revealing quizzes the day before the standard day, which is listed on Table 3. 3) By making quiz questions multiple-choice and not particularly difficult, we allowed students to feel a sense of accomplishment in their studies. 4) Every 2 to 3 days, we inquired about our students' studying progression, and sent them encouraging messages. Comments from our students towards this course's curriculum with these policies are written below:

> I'm pressed with work, housework, and child raising every day, so it's very tough for me to find the time to study, but having material that I could study at any time for 30 minutes a day was the reason I was able to continue studying for two weeks.

> Thanks to the quizzes, I always felt that I "had to study," and I was able to continue to the end.

3.5 The form of the online course

One of the characteristics of this course was that was an online course without schooling, and when questioned about learning structures that aren't restricted by time and location, every student chose either "5. Very Satisfied," with 65.2%, or "4. Satisfied," with 34.8% (M = 4.61,

SD = 0.50).

Out of 25 students, 19 had never experienced an online course before and held doubts about being able to complete a 2-week course. Regardless, 23 of those 25 students managed to complete the course. We then inquired as to why they thought they were able to continuously study for two weeks. The answers and results have been compiled below in Figure 1.

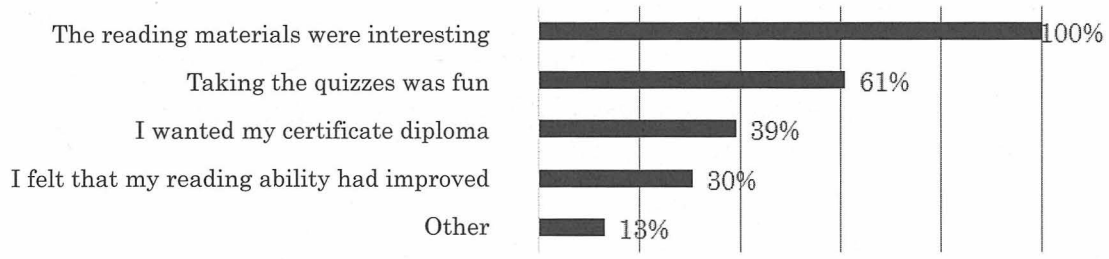

Figure 1 Reason for being able to continue studying (multiple answers allowed) (*n* = 23)

By observing Figure 1, it is possible to see that every single student chose "The reading materials were interesting." Even in the free-writing column, most of them wrote long comments about how interesting the text presented in the material was, and how the content brought out one's intellectual curiosity. This made us once again feel the importance of the selection of English readings when creating teaching materials.

In addition, those who chose "Other" gave comments such as "I knew that the other students were doing their best, so I never felt alone, and I could enjoy pressing on," and "The professor supported me a lot." Also, the following free-description comments imply that the feeling of one's reading ability improving is connected with a desire to continue studying:

> By checking the pronunciation and meaning of vocabulary, and by reading the text after listening to it in its entirety, my reading speed certainly increased from when I first started reading, and I could feel myself understanding everything that I read.

> The first time I read the text I couldn't understand it at all, but after reading it for the second or third time, I felt overjoyed that I was beginning to grasp the content while I read.

3.6 Requests

For requests concerning the course, some students displayed feelings of dissatisfaction towards LMS malfunctions. Since there were no faculty staff present for the online course, finding a cause for LMS malfunctions and discovering a solution for that trouble was difficult to do. Therefore, we again recognize the importance of using a highly practical, stable system is all the more in demand when dealing with an online course.

I've finished all the study material, but the "completed" icon won't display, or when I'm listening to vocabulary twice at a time, I can't hear the playback halfway through.

This LMS's completion level is quite low. Some points that should be improved are; the test scoring not working well (I tried logging back in many times.), and the test results not being displayed.

4. Summary

In November 2014, an online course was held for the citizens of Ikeda, Toyonaka and Minoh cities under the sponsorship of the Cybermedia Center, Osaka University. In this paper, only the *English for Science* course, one of the 4 courses that were held, was reported about. This was a two-week online course aimed at improving English reading ability and had 25 participants with one instructor. The course had a 92.0% completion rate and according to the results of the questionnaire, the participants who had completed the course all responded that they would like to continue taking the course in the future, showing that the course was generally well received.

Most of the requests received by the participants were related to the LMS. In order to respond to the participants questions, the author dealt with queries 24 hour a day for 2 weeks. Therefore, although the dissatisfaction with regards to the problems of the system were dealt with to some extent, if the learning course were to become longer, or the class size larger, then there is a high chance that dealing with complaints will become impossible. In the first place, the flaws of the LMS are outside of the teacher's scope, and because the stability and operation of it is the very minimum lesson requirement, it is my opinion that this point is the biggest problem apparent on this public course.

On the other hand, it is clear that even with the instabilities apparent with the LMS, if the students feel that the reading materials comprised in the courseware are interesting, or that their reading ability is improving, then they will feel a strong desire to continue their studies.

Using the things that I have learned from this course as a reference, I would like to design online lessons in the future which university students can meaningfully utilize during their long vacation periods.

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References

North, Sarah., Ronny Richardson & Max North. 2014. To Adapt MOOCS, or Not? That is No Longer the Question, *Universal Journal of Educational Research* 2(1): 69-72.

Takefuta, Junko. 2012. A course review based on a case study of English language learning of first year engineering students, 言語文化共同研究プロジェクト 2011 英語教育の新たなる展開: 13-22.

Takefuta, Yukio & Masanori Suiko. 2005. *Korekarano Daigaku Eigo Kyouiku* (The future of English education at universities: Building a curriculum based on CALL). Tokyo: Iwanami Shoten Publishing.

Yonaha, Nobue. & Junko Takefuta. 2013. *Eigo Kyoiku Sogo Shisutemu ni Motozuita Eigo Gakushu no Kouka no Kenshou* (Efficacy of Teaching English Using a CALL System Based on the Three-step Auditory Comprehension Approach: An Answer to a Question "What Can College English Teaching Accomplish?"). *Studies of Language and Culture*, 7: 43-59.