

# English ICT Contents Program Development Through Collaboration at Iwate University

Mark deBoer

Iwate University

Natsumi Onaka

Iwate University

Takahiro Nakanishi

Iwate University

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This paper introduces various new ideas to make effective videos and content material accessible to teachers and students throughout the faculties at Iwate University, which in turn serves to increase their contact hours with English in general. We will outline the workings of the ICT Project at Iwate University (deBoer, 2011) and will show that this project demonstrates how English education can be remodeled using the database stored in the ICT LMS Platform (Moodle) through the setup of the LMS. This requires collaboration from the International Center (IUIIC) as well as the Super Computing and Information Sciences Center (ISIC). In this paper, using an example course, collaborative efforts will be highlighted and how this university-wide collaboration results in a different style classroom will also be demonstrated.

本稿では、岩手大学の全学部の教員や学生が活用できるビデオや教材提供に関する新しい事例を紹介する。この事業により、全体的な英語の使用時間の増加を図る事が可能となる。筆者らは岩手大学におけるICT（情報通信）事業の概要を解説するとともに、本事業によりICT LMS (Moodle)（学習管理システム）プラットフォームに保存されたデータベースの活用やLMSの設定作業を通して、どのように英語教育を改革できる可能性があるかについて論評する。この事業を推進するためには国際交流センターと情報処理センターの協働が必須であった。本稿では、サンプルコースの事例を挙げながら、協働のあり方について焦点をあてるとともに、大学全体の協働事業がこれまでとは異なった授業スタイルをもたらす効果についても明らかにする。



**T**HE DEMAND for English proficiency is becoming higher for university graduates trying to find employment. Some newer companies have announced that the language they will use for business meetings and daily interactions will be English and that they will increase the number of non-Japanese employees. In addition, companies require a certain TOEIC score for prospective candidates at the time of job application. In other words, English proficiency is more crucial than ever. The Ministry of Economy, Trade and Industry (METI, 2010) released a report regarding the types of students that are needed for “Global human resource development”. Communication ability in English, ability to understand different cultures and fundamental competencies for working people are three main areas needed for the workforce emerging from universities. Ability to take action, ability to think and ability to collaborate are regarded as the fundamental competencies for working persons (METI, 2010).

At Iwate University, English proficiency of the graduates is not very competitive due to the structure of the English program. After general education English during the freshman year, the opportunity to take English courses is extremely limited, especially for science majors. To respond to this demand for English, each faculty has made attempts to increase the number of courses taught in English, but instructors cannot afford to spend the time or energy to prepare additional course materials in English due to increasing workloads on faculty members.

To respond to this reality, this ICT contents program (deBoer, 2011) was launched. There are courses on-line for student self-study as well as courses collaboratively designed with faculty to be used as supplementary material in the classroom. The core of the project is to provide broad-based English curriculum across the faculties and to supplement the lectures to provide the students exposure to English that directly relates to their chosen field of study. In most cases, the concepts and the vocabulary

have already been studied in their native language, Japanese, so the cognitive level required to understand both new concepts and a new language is greatly reduced. Bogaert, VanGorp, Bultynck, Lanssens, and Depauw (2006) state that language proficiency may be stimulated in some way through tasks and that the language doesn’t have to be the “subject” but instead a medium of instruction. At the same time, in order to set up a system as robust as this, strong technical support is needed. This support is provided by the Super Computing and Information Sciences Center (ISIC) (Computer Department) which handles all of the server and wireless access points throughout the university.

The purpose of this paper is to identify the collaborative efforts of the Iwate University’s International Center (IUI) and Super Computing and Information Sciences Center (ISIC) that have assisted in bringing this project to fruition. An outline of how a specific course is implemented and executed will also be discussed as a part of the explanation of the university wide collaboration.

## Project Introduction

The ICT contents project was made possible through a special grant called The Special Operational Grant-In-Aid and the period for this grant allocation is from 2010 to 2013.

This project consists of two sub-projects: one is to develop the English platform (ICT Contents project) and the other is to develop the Short-term Content-based International Program (SCIP). The project manager is responsible for the database development, construction of the platform using Moodle to make it available to anyone at the university and the tryout of the contents in class. In this paper, only the English platform (ICT Contents project) will be discussed.

## Roles of the ISIC and IUIC in the ICT Contents Project

There are two main departments involved in the development of the project; the International Center (IUIC) and the Computer Department (ISIC). The roles of each department are shown below.

### *ISIC (Computer Department)*

Consultation for system planning

System Architecture

(Version Upgrade, including maintenance work for operation)

Hardware management and operation

Maintenance of the environment

Wireless LAN access points

Maintenance of software in the computer rooms

### *IUIC (International Center)*

Production of contents

Configuration of Learning Management System (LMS) (Moodle)

Promotion of utilization

Implementation of the project

Computer room architecture and setup

In order to fully explain the collaboration from a university wide perspective, we will discuss one aspect of one specific course and how it operates within the realm of the entire ICT project workings. The courses are taught in classrooms in Student Center Building A, General Education Classrooms. These classrooms contain about 50 computers each and in the past have been primarily used for rote English study. In order for the ICT Contents project to be reliable and effective, the ISIC is responsible for setting up and maintaining the server and the computers. This will be discussed now.

## Server Set-Up

The server is configured redundantly with the system disk and the data disk for contents storage, so that the failure of the server hardware doesn't affect the classes and students' study. The Apple Xserve is employed as a server and the Hard Disk Drive for the system has three disks. Two of them are mirrored, so the system won't stop if either of the hard disk drives fails. The third one is a spare ready to work if both drives fail. Therefore, the drives can be changed without shutting down the system. Each drive is one Terabyte (TB) in size where one TB is equal to one trillion bytes. In selecting the hardware, we roughly estimated the amount of hard disk space needed to hold the videos planned to be used, and ordered the hardware based on that.

## Campus-Wide Wireless LAN Internet Access

Throughout the campus there are 52 access points that were set up by the ISIC on campus prior to the project. See figures 1 through 3.

- Faculty of Engineering - 8
- Faculty of Agriculture - 11
- Faculty of Education - 12
- Faculty of Humanities and Social Sciences - 11
- Others(Cafeteria, Library, etc.) - 10

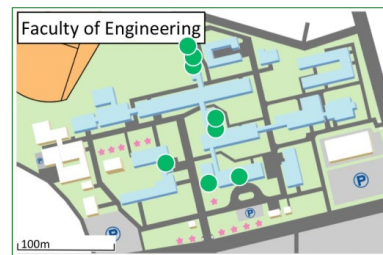


Figure 1. Faculty of Engineering access points

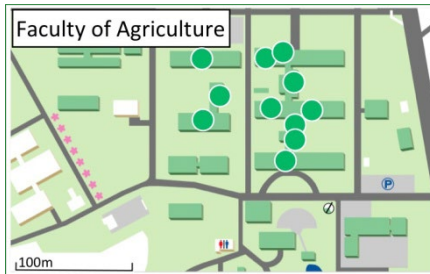


Figure 2. Faculty of Agriculture access points

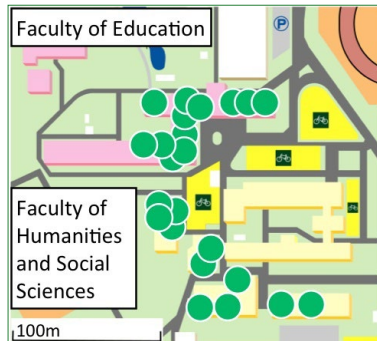


Figure 3. Faculty of Education/Humanities & Social Sciences access points

In conjunction with those access points, additional access points have been set up in the Student Center A building classrooms for potential 1,500 users (see figure 4). This set up allows wireless access throughout all the classrooms, although realistically 1,500 users do not have simultaneous access. The purpose for the creation and maintaining of these access points is to allow for students to be able to access Moodle and complete their assignments on their own computers or Internet devices. It also

allows for future development of classrooms where students can use their own computers for in-class study.



Figure 4. Student Center A Building classrooms access points (green areas)

### Classroom Set-Up

For effective collaborative learning to occur within the classrooms, desks and monitors need to be conveniently arranged so that students can easily move around the classroom during class time. The layout of the classroom was designed for lecture style but not suitable for students to have discussion or work collaboratively on projects. During March 2012, two of our computer rooms were remodeled with new desks. The desks allow the monitors to be stored easily within the desks and have the desks entirely clear so that students can have discussions and work without the computers and monitors separating them. When the students work on-line, the monitors can be easily pulled up from the desks allowing the students to begin working right

away on the computers (see Figure 5). These two rooms total 100 computer stations.



Figure 5. One computer room showing the new desks

## Moodle as the Learning Management System ICT Contents Project Features

The basis of the project is to provide content-based curriculum for English education to all the faculties within the university. The curriculum is set up in a number of different formats, depending on the use of curriculum and the people using it. The content is delivered through Moodle (Dougiamas & Taylor, 2003), an online Learning Management System (LMS) that has multiple functionality to deliver simple as well as complex courses. The Project Manager (Mark deBoer) has been involved in research and training in international conferences related to the pedagogy of e-learning and tool-mediated learning.

## Tool-Mediated Learning

Tool-mediated learning is a term that defines an environment where students use tools such as computers and language to mediate their learning. Although Blended Learning is a popular term for an environment that “combines face-to-face instruction with technology-mediated instruction” (Graham & Dziuban, 2008, p. 270), in this paper we will be using this more Vygotskian appropriate term *tool-mediated learning* (Bonk & Cunningham, 1998; Engeström, 1991; Li, 2010; Vygotsky, 1978) in lieu of *blended learning*.

## Courses and Materials

For the purposes of this paper, courses are defined as “the spaces on Moodle where teachers add learning materials for their students. Courses are created by admins [sic], course creators or managers” (Dougiamas, 2011b). Throughout this paper it will be explained how the contents are created through collaborative efforts between the ISIC and the IUIC. In all cases, the content that is developed is close to the students’ area of interest; for example there is chemistry curriculum for the students studying chemistry. Since the students already have some background knowledge in their major, it is easier for them to do the work in English by using prior knowledge as a clue. At the same time, they will learn frequently used technical terms and expressions. Following are the types of content that are being developed for use within the Moodle platform for both the teachers and the students.

## Supplementary Teaching Material Useful in any Faculty

Content can be used as supplementary teaching material such as a review of what is taught in class or as material to review

previously studied items. The teachers have access to this material and can create on-line courses with it or add it to existing on-line courses.

### Order-Made Contents

In order to make the contents ideal for each course intended to be used for, the program manager works closely with the teacher to meet the requirements. Even if the Japanese teacher is not fluent in English, s/he can add some activities or tasks that increase the opportunity for the students to be exposed to English.

### Contents for Self-Study

The students can access the Moodle to do exercises in the self-study areas by selecting contents similar to their study interests and basic skill building sections as well. Teachers can also direct their students to these self-study areas. An example of self-study material is the TED (Technology, Entertainment, Design) video series. Students watch a segment of a TED video and take a quiz that helps them learn the vocabulary and content. TED videos can be accessed at TED.com. TED videos are not only a great source of information, TED is a global organization, so students can view videos that exemplify different cultures which can help them understand the different views of people around the world. This will also give them a different global perspective (METI, 2010).

### Contents Database and Reusable Resources

The database is a resource “bank” for teachers to draw from when they want material to build or supplement their classroom material. They can also use the database to produce material for students to use for self-study. Teachers looking for material can

search the database and when they find something they would like to use in their course, they can put it directly into their course. It is simply the database activity inside Moodle (see Figure 6).

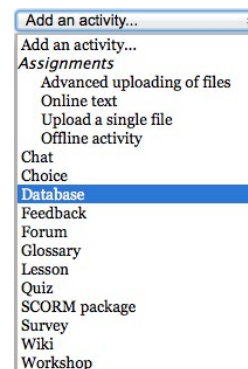


Figure 6. The database activity inside of Moodle

A database activity was created inside of Moodle and that database activity is linked through an icon from the front page. Each video that is put into Moodle has a quiz associated with it and each of these is made into a database entry (For example a TED video segment). Each video that is used in Moodle as a part of a course is linked to an entry in the database (see Figure 7). The template for the database was built directly in the database activity and contains links to all videos and quizzes in the system. To facilitate searching, key words are added to each entry in the database. The main purpose for the database is to provide a “package” for the teachers who are interested in using a specific video and quiz in their own course. Instead of directing their students to specific video and quiz that are in another course, they can put that video and quiz directly into their own course. The video and quiz package is made into a backup file

(Moodle's backup and restore functions) and inserted into the database as an entry (see Figure 7). When a teacher searches the database and chooses a video and quiz package, the video and quiz are automatically "restored" into their course.

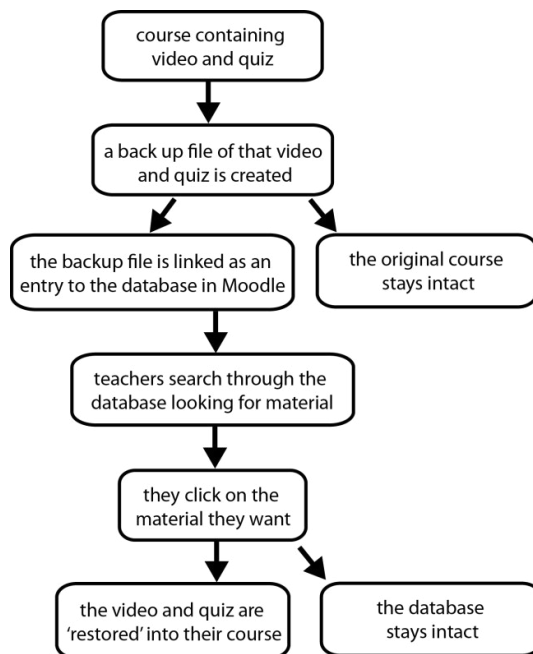


Figure 7. Flowchart I: The process of setting up and using the database

We have not changed anything inside of Moodle. Moodle is being used "out of the box" so this makes the database package maintenance very easy for the Project Manager and the ISIC department doesn't need to do any programming.



Number in Series: 2 of 8  
 Name of Course: Salman Khan - Let's use video to reinvent education  
 Course link: Let's use video to reinvent education  
 Name of Topic: YouTube Feedback  
 Topic link: Click here to go to the topic  
 Name of the video: Salman Khan TED Video 2  
 Watch the video: Click here to watch the video  
 Subject: Education  
 Self Study

Select this video and quiz package: Click here for the video and quiz package

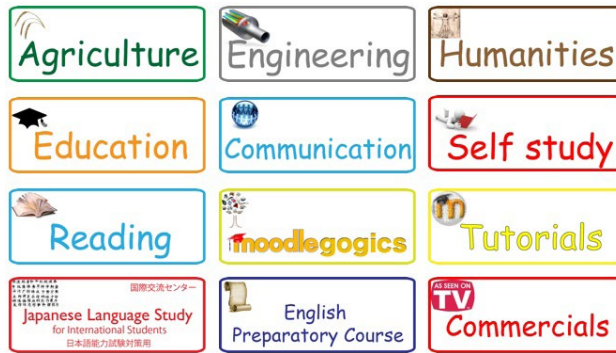
Select this sound package:

Key words, tags for searching: TED, education, videos, Bill Gates, Khan, collaboration

Figure 8. Database entry with links to the various components

### ICT Contents Project Moodle User Interface

Currently we are using Moodle 2.1 (Dougiamas, 2011) and have completely reconfigured the user interface in Moodle so that the students only encounter visual links to the courses. All areas of Moodle are visually linked directly to all the courses or self study areas (See Figure 9).



All Courses

Figure 9. Front page of our Moodle LMS

### Extract of a Course: Student Poster Presentations

As part of the International Center's (IUC) mandate to produce the contents, promote utilization and implement the project, we will show a simple example of how student poster presentations through tool-mediated learning requires collaboration between the ISIC and IUC. The course used to demonstrate the university-wide collaboration is a freshman class of 37 students that is taught twice a week. There are two teachers who work collaboratively to teach these classes. Each teacher is responsible for 15 classes in the semester for a total of 30 classes. The classes are taught in a face-to-face environment as well as with on-line assignments using Moodle. This 4 week - 8 lesson section of a course will be outlined. The course is a general English course and the content is primarily focused around environmental issues. Following is a list of the functionality of Moodle that was required to set up this section of the course.

### Moodle Activities Used for the Poster Presentations

Within Moodle there are both resources and activities that can be used by a teacher to structure a course. The resources are for items that you want the students to see (such as videos or PDFs) and activities are for things you want the students to do (such as take a quiz or add to a forum). In order to give the students the most opportunities for collaboration and to put the onus on the students to learn, the teachers minimized the resources and increased the activities. This provides an arena for the students to create from the knowledge that they have not yet acquired. In other words, students must learn something that is not yet there; they essentially build their own future of learning (Engeström, 1987). For order-made courses, faculty have a wide range of requests for the set up of their courses, so it is necessary that the IUC has the expertise to assist faculty in their individual needs for building the courses. Outlining the types of resources and activities used aids the teacher in designing a course that is both increasing in complexity and increasing in student collaboration. Using Table 1 as a reference, producing a course with increasing complexity and collaboration can be done easily by adding specific components as the course progresses.

Table 1. Strategies in Course Development in Moodle

		Strategies in course development in Moodle									
Course	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	
activity type	log in	profile									
	video	video	video	video	video	video	video	video	video	video	
	quiz	quiz	quiz	quiz	quiz	quiz	quiz	quiz	quiz	quiz	
		groups	groups	groups	groups	groups	groups	groups	groups	groups	
		lesson	glossary	glossary	glossary	glossary	glossary	glossary	glossary	glossary	
			journals	journals	journals	journals	journals	journals	journals	journals	
				wiki	wiki	wiki	wiki	wiki	wiki	wiki	
					forum	forum	forum	forum	forum	forum	
						file upload	file upload	file upload	file upload	file upload	
								chat	chat	chat	
Language	Japanese	Japanese	Japanese	Japanese	English	English	English	English	English	English	

easy → more complex

Increased collaboration ↓



There are additional activities inside Moodle that can be used (not listed in Table 1), but for the example course outlined in this paper, the resources and activities used are explained in Table 2.

**Table 2. Outline of the Functionality Used in Moodle**

Resource / Activity	Details
Feedback activity	Used to give a survey to the students.
Choice activity	To allow the students to choose a video and assessment criteria.
Workshop activity	To set up the peer-assessment for the presentations and for practice assessment in the PowerPoint course.
File resource	To give the students access to the videos and to the assessment criteria template.
Forum activity	To give students a place to discuss both the video content and their posters (PowerPoint slide).
Groups settings	To put students in groups for both video discussions and feedback on their posters.
File upload activity	For students to upload their final poster to the teacher and to upload their assessment criteria forms.
Quiz activity	In the PowerPoint course students took quizzes that helped them understand the basics of creating slides.

### **Class Procedures**

In this 8 lesson section (4 lessons from each teacher) students were required to give a poster presentation in English on a specific topic.

The students were then given seven videos to watch. Each of these videos was less than five minutes in length. As part of this ICT Contents project, it is imperative that we keep the videos

as short as possible. By exposing the students to shorter videos containing specific content, comprehension is made easier and the language and vocabulary is easier to grasp. The video content dealt with environmental issues. Students needed to choose one of the videos as their theme for the basis for their presentation.

In order for the videos to be device-friendly, we make the videos quicktime (.mov) files. This ensures that the videos can be viewed regardless of the device being used. Students in some cases use iPads to view the videos and as we are introducing the use of iPads into the classroom starting in April 2012, flash (.flv) files were not used. The ISIC has configured all of the computers on campus to work with the Firefox browser as the Moodle LMS is best viewed with this browser and the videos are also best viewed within this browser. We have not yet experimented with HTML 5 since not all browsers are HTML 5 compatible. Also, due to the sheer number of videos on the site, creating multiple file types for a single video based on the use for different browsers would be extremely time consuming.

Once the students have chosen their video, they are placed into online groups based on their video choice. These online groups are part of Moodle and therefore various collaboration tools such as the forums are available to the groups based on the structure of the course determined by the teacher. The collaboration that occurs is done both online and face-to-face. This social interaction in the classroom and online provides an added resource for language acquisition and for language development (Bonk & Cunningham, 1998; King, 2010; McConnell, 2006; Newman & Holzman, 1993; Selinker, 1972; Vygotsky, 1978). The ability to collaborate is also regarded as fundamental for students entering the workforce (METI, 2010). The face-to-face component is done in the classroom. Students have had access to the videos and have taken notes and now get into their groups and discuss the videos, sharing vocabulary, concepts and information. McConnell (2006) states,

...the collaborative student has to reconsider their approach to learning and move away from seeing learning largely as an individual cognitive process, to one that is socially based, that requires dialogue and negotiation with other students and tutors, and which is about developing new ways of building knowledge. (p. 61)

The structure of the classroom then becomes a vital component to this part of their learning. For students to be able to have effective discussions in the classroom, the computer monitors can easily be stored in the desks and the desks then closed, leaving a clean open space for students to discuss and take notes without having to talk over the monitors or crowd around one desk (See Figure 5).

Once the discussions are finished, the students can pull the monitors back out of the desks and return to the online world. The forum in Moodle can be used then to electronically record their notes for future reference. The forums can also be used to share information such as web sites, pictures, additional vocabulary and concepts.

### Self-Study Courses

As part of the ICT Contents project, self-study courses for the students also play an important role for not only English development, but in other skills too such as creating PowerPoint slides and making presentations.



Figure 10. Self-study course for creating PowerPoint slides

One benefit to this type of learning is the ease of making slides, making changes to the slides and being able to distribute the PowerPoint presentation easily to other students. There is no need to make copies. The posters the students create can be shown on the overhead projector from the teacher console. Students are required to use PowerPoint to create one effective slide. There is a self-study course available on creating effective slides. Although this self-study course is not required for credit, students are encouraged to work through this course to learn how to make effective PowerPoint slides and presentations. In this course, students watch videos that give tips on how to create effective slides, and then are required to take quizzes that reinforce the vocabulary and concepts. This course is available to any student and faculty and has been used extensively as both self-study and supplemental non-credit course material.

As self-study classes are not done during class time, students need to either use their own home computers or access Moodle on campus. The ISIC has made sure that all computers on campus have the correct settings for viewing the videos and also, through the access point areas on campus, students can also access Moodle wirelessly on their own devices. Self-study is encouraged as students need to learn to take action to find and retrieve information as this is a very important process in their education (METI, 2010). The self-study areas contain a lot of information that can help them with other areas of their education.

As part of the language learning process, the students can work on their posters in class and they can either receive help from the students in their group or they can call on help from the teacher. Another key element to the face-to-face classroom dynamics is the role of the teacher. The teacher is available to walk around the classroom, ask questions, answer questions and overall provide much more effective one-on-one support to all groups. Kumaravadivelu states that promoting learner

autonomy is a matter of helping learners to “discover their learning potential”, and “understand that autonomy is a complex process of interacting with one’s self, the teacher, the task, and the educational environment”. But it must also be realized that “autonomy is not independence, that is, learners have to learn to work cooperatively with their teachers, peers and the educational system” (2003, p. 133).

The forums are then used for gathering feedback on their posters from other students as students can upload them and have the other students in their group access them. The file upload area is for the students to submit their posters electronically. This keeps the classroom paperless, provides a record of submission for the teacher and also allows for electronic grading of the poster. The teacher can also download the student submissions to the teacher console in the CALL classroom and display them on the front screen for student presentations. In the workplace, employees share documents and materials electronically which can be accessed and shared by co-workers. This kind of classroom described here is similar to the workplace that students will encounter after graduation. Receiving feedback from co-workers as well is not uncommon in the workplace.

### Peer-Peer Assessment

Students were responsible for creating the assessment criteria and using the assessment criteria to grade their peers. During the presentations, students used the online workshop activity in Moodle and assessed each presentation. By integrating assessment into the assignment, the students are exposed to a much different type of experience, as Stahl states that by integrating the creation of assessment criteria and peer-assessment into tasks, the process reflects real-world assessment in the workplace rather than simply an assignment with artificial assessment attached at the end as encountered in the traditional classroom (2006). Each presentation was video taped and the

video files were put into a folder (Add a resource -> folder) in Moodle. Students were able to view their presentations and make critical evaluations of themselves and their classmates in the forum area. Learning reflective skills in collaborative groups helps students become more aware of what is happening in the group and also indicates to the group that thinking and learning is taking place. This can be very beneficial to the workings of the group (McConnell, 2006). This can also have benefits for learning working relationship skills. “In fact, the participants in collaboration need to make their evolving understanding visible to each other; this is the very essence of collaborative interaction” (Stahl, 2006, p. 365). In terms of file size, each presentation was about a 20Mb movie (.mov) video file. For 37 students, this is roughly 740Mb worth of files. Since each hard disk on the server is 1 TB, disk space is not an issue at this time. At the end of each semester these courses are reset, so the files are deleted and the disk space becomes available again. The IUIIC is responsible for the resetting of courses and course management.

### Conclusion

To create a system that encompasses university-wide needs for English education requires the efforts of a number of departments within the university. The number of contact hours for English studies needs to be increased to make our students more competitive nationally and internationally. This system meets the needs of the faculty and provides a much needed resource for students who want to study English in an environment that allows them to track their progress. The self-study areas provide both the students with this kind of resource and the faculty who can use it to supplement their own course material. The video package database is a key to the sustainability of the system giving faculty access to a system that easily allows them to provide students with curriculum in English that is specific to their field of study.

## Bio Data

**Mark deBoer** is the ICT Contents Project Manager at Iwate University. He is a Ph.D. student at the University of Birmingham and his research is in language acquisition through social interaction in a tool-mediate learning environment. He is interested in Vygotsky and Activity Theory in English education.

**Natsumi Onaka** is an Associate Professor at Iwate University and she is in charge of the ICT Contents Project.

**Takahiro Nakanishi** is an Associate Professor of the Super Computing and Information Sciences Center at Iwate University. He is a committee member of the ICT Contents Project.

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