

USING AN ONLINE DATABASE TO FACILITATE IMPROVED STUDENT-TEACHER COMMUNICATION

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INTRODUCTION

Communication in an educational setting can take many forms and serves a variety of purposes. The computer-mediated communication project discussed in this article has the objective of facilitating better student-teacher information exchange and subsequently, increased student to student communication and collaboration.

Many projects focus exclusively on meeting the needs of learners, but this one focuses more on the teacher — a participant in the classroom, whose needs are often overlooked. Globally, the working conditions of teachers are deteriorating, negatively impacting not only the teacher, but also the ability of the teacher to meet the students' wants and needs as a direct result. This is no less true in the environment described in this article: the tertiary EFL sector in Japan. This project used the computer as tool (Levy: 180) to make easier, the teacher's task of collecting and analyzing student data and opinions and providing both the teacher and students a means of improving communications, in the face of factors that make such communication increasingly difficult.

It should be noted that the project in its present form and, consequently, this article are not about autonomous learning. Furthermore, the project was not directly about student language learning and although, students did still need to negotiate meaning in their target language (as it was the language of the project environment and the instructions), it is not the principal focus here. Nevertheless, key words such as 'motivation', 'guidance', 'feedback', 'access', 'skills' and 'others' that have been associated with autonomous learning are just as relevant. Issues related to all of these words will emerge in relation to the project throughout this article.

In some ways the cyclical or spiral pattern of Kemmis and McTaggart's 'action research' (1988), can be observed with this project. It was carried out by the teacher as practitioner and was aimed at making changes for the better. That this project was not collaborative should be discounted for the same reasons that Nunan (1992: 18) gives: that collaboration is not always practical or possible. It is important to note that this project was not

conceived as an experiment or conducted for the purpose of research into computer-mediated communication. The research that followed resulted from questions that began to be asked about issues that emerged only during the course of the project. Because work was embarked upon before it was decided to do research, the actions that occurred and the data that was collected happened prior to any decisions about the research methodology. However, in reporting about the project in this dissemination phase, an attempt has been made to follow a sequence in which the context is described, observations are made, data is collected, analysis is conducted and decisions on implications are made that lead to transformations in the approach. Therefore, in Part A of this article, the context is described and by so doing a rationale is set out for the action that the project represents. Part B deals with the observational and interpretational phase by looking at the data that was collected and then an analysis is made in order to draw conclusions. Finally, in Part C, proposals are put forward for transforming the approach by reporting on decisions and actions taken to improve the project as it continues.

PART A : The Context and Rationale

Project Goals

The project goals were threefold: Firstly, the development of Internet-based web pages for students to access as class pages for their course and which; secondly, provided an appropriate environment and mechanism for online student survey pages to collect data submitted by students. Thirdly, that this data would be easy to manipulate and analyze in order to determine student wants and needs. The students were tasked with accessing the web pages in self-access mode from a location and at a time of their choosing and completing the online survey.

Rationale for this Self-Access, Computer-Mediated Communication Approach

The rationale for this approach to data collection and communication is due to the nature of the Japanese tertiary education environment and the role and condition of the average EFL teacher in that environment as well as the nature of the learners. There are a large number of factors that hamper student-teacher and student-student communication. These are outlined as follows:

1. The number of students in classes can be large (usually around 30-40 students per class and sometimes more), classes meet infrequently (usually once per week), and courses are short (12-15 weeks per semester).
2. The great majority (around 90-95%) of EFL teachers in Japanese universities and

colleges are employed as part time instructors and are present at a particular institution usually only one or two days per week. These teachers generally teach at four or five different institutions, teaching between 18 and 24 class sessions per week to a total of between 300 and 600 students.

3. These teachers usually only have contact with the student in one class per week for one academic year.
4. Student absenteeism can be relatively high. (At some institutions up to 20% of students are absent from 30% or more of class sessions.)
5. Many institutions generally do little to encourage a sense of collegiality in terms of communication, coordination or cooperation between teachers.
6. Many institutions seem to have little or no established forum or easily utilizable channel for communication between students and the teachers outside of the classroom.

Moreover, there is also a lot of information about the learners, their background and their educational environment that is potentially useful, but which remains unclear to many of these teachers.

1. Most institutions do not provide teachers with any basic background data (language ability level, other classes previously or currently being taken, academic history) or contact information for the students they teach.
2. Many institutions generally give no detailed information about the curriculum, students' workloads, patterns of study and students' special needs.
3. Many institutions generally provide no meaningful information about what other teachers are teaching or materials being used.
4. Many institutions generally provide no useful information about why students are enrolled in a class (other than stating a course is required or it is an elective).
5. Where surveys of students are conducted by the institution into students' needs, wants and opinions, the results are often not relayed to the teachers or if the results are communicated, language barriers may hamper that communication. Also, many surveys are often retrospective and may not include questions relevant or useful to the teacher at the beginning of a course.

The main factors that suggest the self-access approach using an IT solution provided by the teacher, rather than by the students' institutions are as follows:

1. Most institutions have some computers with Internet access for students to use, but these are almost never in classrooms designated for ESL courses, but rather

in self-access locations.

2. Many institutions have little or no provision in terms of online forums for student-teacher or student-student communication. Part-time teachers usually receive even less IT provision than students with no allocation of web space, access to a database or even an institutional email account.

The other factors that support the self-access, computer-mediated approach concern the nature of the students. While these points are not true of all students, they are common characteristics:

1. Most Japanese students have low level oral communication skills compared to their reading and writing ability and are often not able to communicate quickly or accurately.
2. Most Japanese students prefer to communicate privately and in writing due to a strong desire to avoid errors when in a group setting.
3. Most Japanese students generally prefer to be seen as part of the group and this leads to a reticence to express views that would make them appear to be in a minority.

It would seem that the previous (paper-based questionnaire) method used to gauge learners' wants and needs and problems was a good way to collect data because the distribution and collection of data is rapid and comprehensive. But there were problems associated with that approach, mainly to do with the lack of individual teachers' time. The high workload left little time to devote to the analyzing of results. Each paper-based questionnaire had to be processed individually to tabulate the results. In order to retrieve and analyze data on both an individual and collective basis, the data needed to be entered into a computer database or spreadsheet programme. It was decided that it would be far less time consuming to have students enter their data themselves. In order to collect the results, the data would need to be submitted to a central database. Given that such an approach is intended to be used at different institutions and in different access environments, this suggests using an Internet-based system.

The Initial Web Site Conception

The web site which was created contains a series of secure, linked pages containing a variety of material that serves several different educational and administrative functions. Appendix 1 shows a map of the site that can be referred to in conjunction with the following explanation. Web pages were produced with Kristof and Satran's guidelines in

mind, to maximize ease of use by presenting a simple, consistent and easy to navigate design. The site was principally intended to serve as a shared communication nexus for students and their teacher away from the classroom. The current implementation of the web site goes part of the way towards that goal and its principal features are outlined below.

1. A login area with separate portals for new and existing users and with a login failure notification and redirection page; the equivalent of a locked front door. (See Appendices 2a and 2b.)
2. A main page, like a hallway, containing a personalized greeting for each visitor and serving the purpose of a master directory with information about and links to different areas within the web site. (See Appendix 2c.) The three areas in operation at this time are the class pages section, the questionnaires section and (to a lesser extent) the contact section.
3. There are 17 separate class pages (one for each class taught by the teacher), which, like classrooms, are freely accessible to all visitors. (See Appendix 2d.) Each class page lists the classwork and homework for each class session that has been completed and contains links to sub pages detailing such items as class rules and advice, academic calendars or course outlines and links to web sites offering self-access opportunities (which at this stage, solely consist of links to companion web sites for set textbooks). One class page (Thursdays, Period 1), for a writing class, also includes a link to a page of student work submissions.
4. There are six questionnaire or survey pages; three each in English and Japanese. (See Appendix 2e.) The questionnaire pages will be discussed in more detail below.
5. Every page has a log out link which, when clicked, allows users to exit the secure site, returning them to the freely-accessible student area.

The Login System

The login system was implemented to satisfy not just philosophical aspects of the design but practical ones as well. The philosophical considerations are the teacher's and the students' desire for security and privacy, while the practical element is that the login system provides the database with information about the user and that data is passed from page to page as the user travels through the web site. As the user does so, user-specific content is passed from the database to the web pages being viewed. The security level is not high or pervasive, however. There is no system validating new users; any individual can create a user profile and select a username and password. But the decision to let

students choose their own security data rather than to assign usernames and passwords was a philosophical one, for it was felt that this would make the site more user-friendly by being more user-controllable. As will be seen, this can have its drawbacks. As has also been mentioned, once past the 'front door', users are free to wander the site as they wish; there are no other 'locked doors'.

The Survey Pages

The online survey was developed from work done earlier for an English for Specific Purposes project. The original questionnaire was a double-sided B4 sheet of paper containing the same 24 questions and used for students' needs analysis. (See Appendix 3.) English or Japanese versions were distributed to students during their first or second class session, were usually completed in class (within twenty minutes) and collected during the same session. Although collection of the data was comprehensive and rapid, analyzing the data was not.

The on-line version of the questionnaire was modified as follows: It was segmented into three sections (Parts A, B and C). Appendix 2e shows one of these. This was done in order to create more easily manageable amounts of material to: allow students to avoid spending long periods of time working through a lengthy page of questions; avoid database time-outs caused by long delays between opening connections and receiving input and; enable the teacher analyzing the data to avoid dealing with large, unwieldy data files. Whenever possible, radio buttons were used rather than text entry fields and users were given hints for text entries through the use of default text. The reason for this was to simplify the process of data collection and manipulation, by controlling the range of answers as much as practicably possible. Although, the questionnaire pages exist in both English and Japanese versions, the data from each is sent to the same database table. The teacher can then export and download the collected data from the database to view, manipulate and analyze it in a spreadsheet programme.

The Students' Task(s) - Outline and Presentation

Students were to work in a self access setting of their choosing and visit the web site following the instructions they were given. Having located the correct page, students were to create a new user profile and log in to the password-protected area. Once inside, they were to navigate to reach the questionnaire pages and answer a three-part questionnaire. Students could elect to complete all parts of the task in one session or do the work in stages. They were also invited to visit their specific class page whenever they wished to

check for any information related to their class.

The author's time frame for the project was from 8 May 2003 to the end of the semester (in mid-July), but students were given no specified time limit for completion of the task, other than the request that they 'do the work soon'. No penalty was stated for failing to complete the task, to minimize any feelings of compulsion to do the work, as unnatural impetus would not fit with this optional, supplementary element to their regular courses. Students were also told that the purpose of the survey was to gather information about them in order to improve the teacher's knowledge of their background and interests, and that the information gathering was secure, confidential and to be used solely for research purposes.

As there was no Internet access in any of the classrooms, the task explanation was presented to each class in the form of a lecture-demonstration by the teacher in front of the class (during the regular class session between 8 and 14 May 2003), using a paper handout (see Appendix 4) containing all of the instructions in sequence and computer screen shots, necessary for doing the task. A question and answer session followed, along with a request that any student encountering any difficulties should contact the teacher by email or communicate orally at the next opportunity.

Following this, periodic checks were made of the user profiles created and questionnaires submitted. This data provided a guide for assessing how the project was progressing, prompting follow up activities to the initial presentation in the form of weekly or bi-weekly reminders from late May until late June, wherein the teacher repeated information about the task, gave further encouragement to undertake the task, redistributed the instruction papers, re-explained the procedures to follow, reiterated that help was available and the privacy and the confidentiality aspects of the project. The aim was to not just to remind students present at the initial presentation, but to inform absentees as well. Again, no indication of compulsion or negative consequences for failure to do the task were voiced.

Finally, in mid-July, a paper-based, follow up survey was conducted class by class to obtain further information regarding students access to technology at home and within their institution. The results of this survey will be discussed in the next section of this paper.

PART B : The Performance

This section deals with the analysis of data collected during the project as part of a process of trying to gauge the performance of the students in undertaking the tasks, identification of successes or problems encountered and design 'after thoughts'; these

interpretations will then be taken forward in the final part of this article which deals with ideas for transformation of the approach.

There are a number of fundamental questions that suggested themselves in relation to this project:

1. Did the students use the system?
2. Were the students enthusiastic about the system?
3. Did this technology-based system work more effectively than the previously used paper-based system?
4. What might account for any negative aspects of student performance of tasks?

As will become clear, the degree to which these questions are answerable is debatable. Analysis and research findings regarding this project have been based on both quantitative and qualitative methodologies. An effort was made to triangulate the data by using observations of different types. The biggest problem in conducting the research was that the self-access environment of the task and the fact that the teacher's part-time employee status, meant that there was almost no opportunity to directly observe students on task. Several other research methods were possible, however. These were as follows:

- * In-class observation of student reactions to the task;
- * In-class observation of student to student communication about task;
- * Remote observations of student performance through analysis of input data;
- * Direct observation of the system's operational performance;
- * Teacher reflection on oral and written communication between student-teacher;
- * Follow-up, paper-based survey results and analysis.

It is fair to say that the research process included several different techniques, some of which appear complementary and others contradictory: inductivism, deductivism, interpretive research, statistical inference, programme evaluation and introspection.

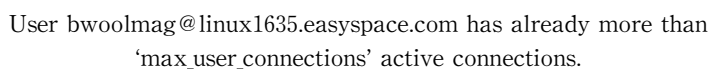
The most objective measure of the extent to which students were able to complete the task successfully comes from examination of the user profiles created and questionnaire submissions received, and can be analyzed in terms of its quantity and quality. Appendix 5 shows a graph of the user profiles and questionnaire submissions received over time. From the starting point of the task period, it is possible to see that data was rapidly submitted and then tailed off. It also shows that the number of user profile submissions substantially exceeded questionnaire submissions at all times during the task period. Of course, the technical constraints of the system mean that user profiles can never be less

than questionnaire submissions, but this does give weight to the inductive assumption that students were attempting the task in stages, whether out of choice or out of compulsion. (This question of volition will be discussed later in relation to some of the other factors that were observed.) Appendix 6 shows the same raw data as in Appendix 5 but in numerical form.

At first glance, it would appear that there was a very high completion rate for user profile submissions (95.3 percent). This is misleading and the numbers of submissions needs to be adjusted to account for such factors as duplicate and dummy submissions. The notes accompanying Appendix 6 detail and explain the rationale for the adjustments that were made. After adjustment, however, the profile completion rate stands at 85.4 percent.

More significant is the low number of students who submitted questionnaires (ranging from 56 to 63 percent for each part). Why should this be? Perhaps the most important factor is the operational success (or failure) of the technology involved. Understanding this helps to suggest a reason for several of the other features noticed during the project. Because the author is working as a part-time employee without any institutional technical support, the project was run on a web site offered by a commercial service provider and funded by the author rather than one operated by an educational institution. The significance of this only became apparent when large numbers of students tried to access the database to view the pages and submit their data. The author's Internet service provider (ISP) offered provision of a MySQL database and related technology support, such as PHP. Unfortunately, access to the database was limited to ten simultaneous connections. Moreover when a user makes a connection to the database, it remains open for up to ten minutes at a time. (By contrast, an institution, free of the constraints imposed by an ISP can configure their own server to allow up to 1000 simultaneous connections.) It appeared that the database was often easily overloaded (especially at certain peak self-access periods such as lunchtimes and late afternoons after class sessions had ended), with the result that students were unable to gain access. Moreover, the accompanying error message displayed by the system was probably unintelligible to the students as it read as in Figure 1.

Figure 1 Default Message Displayed When Simultaneous Connections Limit Reached:



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User bwoolmag@linux1635.easyspace.com has already more than
'max_user_connections' active connections.
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If, as Dickinson (1995: 166) argued, ‘those learners who believe success or failure results from an external cause, tend not to persist’, the ISP’s restrictions probably had a negative effect on task completion, with students experiencing frustration and/or confusion and perhaps leading some to postpone or abandon the task. This idea is supported by student communications (both oral and by email).

Another factor influencing student success in completing the task was the data entry errors by students. For the login system to work properly and grant access to the questionnaire pages, students must re-enter their user profile data exactly. A fundamental potential problem exists with users who utilize computers operating primarily in languages that require double-byte text entry, such as Japanese, Chinese, Korean, etcetera. All machines that the students would have used for this project fall into this category and often default to this mode of text entry. Text entered in double-byte mode on the computer and submitted to a database not set up to handle double-byte text entry (as this ISP’s database appears to be), would appear to be unreadable when downloaded and, if there was a subsequent login attempt using single-byte text entry, the database would fail to recognize the user attempting a login. Despite the fact that students were repeatedly warned to check that their data entry was in *hankaku romaji* (i.e. roman letters entered in single-byte mode), a significant number of errors did occur (82 of 486 student user profile entries; 16.9 percent).

The other type of data entry error is where the data is simply wrong, such as incorrectly entered student registration numbers. 10 such errors are noticeable in the user profiles. Additionally, there were many problems with capitalization or lower case, hyphens or underscores and digits or letter text entry on subsequent logins, which caused problems for students, even though the majority of students appear to have recorded their login data that they had entered when they created their user profiles. This conclusion is also supported by the student communication to the teacher.

It is also possible to observe some cognitive errors with some students misunderstanding the data that were supposed to enter. This is particularly true in the ‘university/college’ field when students were creating their user profiles and occurred despite students being given the precise data to input on the Instruction sheet (see Appendix 4, step 5). Appendix 7 is a table showing the number of such errors for each of the students’ institutions and the different deviations from the correct data to be entered. This particular error with the entry of the name of the students’ institution was not critical in terms of creating a login failure, but is indicative of the variety and number of errors that are possible, and should serve as a warning of the extent of the problem that may be experienced with text fields. It also indicates the large number of students who did not follow specific written instruc-

tions fully. The high number of errors by Bunkyo students compared to those students at other institutions is probably due to confusion caused by the wording ‘university/college’ which was used to label the institution name field on the user profile creation page and because Bunkyo operates a 2-year college (*tandai*), as well as a 4-year university (*daigaku*), at the same campus, while the other institutions only operate universities at the campuses where students took part in this project.

Email Messages and Face to Face Student-Teacher Communication

If, as has been argued by Voller, the teacher’s role is largely as facilitator or counsellor in successful self-access situations, it should be noted that few of the students involved in this project took advantage of their teacher in this capacity and this leads to questions regarding the students’ overall level of motivation and engagement.

The option of contacting the teacher by email in case of problems was stressed during the task introduction/explanation session and on the Instruction sheet. In total, the teacher received 20 email messages from students regarding the project task. Each email received a reply from the teacher within 24 hours. A log of the (incoming) messages is included as Appendix 8. The following is noticeable regarding these communications: First, there was a relatively small number of messages received. Second, no communications continued beyond a student’s request for help and the teacher’s response (except for some ‘thank you’ messages), suggesting that most problems were solved once the requested information (usually previously submitted login data), was sent to the student by the teacher. Third, the kind of problems encountered by students supports the conclusions drawn from the analysis of the user profile login data files. Fourth, as Slaouti has noted, the email content makes sense in relation to the other events occurring.

An approximately equal number of students chose to communicate face to face with the teacher regarding the task. These mainly occurred at the beginning or end of class sessions, often following a reminder by the teacher to students regarding the task. Such communications were conducted in a mixture of students L1 and L2 and were more time-consuming than email communication, for reasons explained when describing the context. Face to face communication was, however, more useful in allowing the teacher to ask students questions in relation to the Instruction sheet, in order to identify precisely where and in what circumstances the problems had occurred. Again, the principal issue was in regard to logins or the cryptic message seen in Figure 1 (above) with database access denial identified as the main problem.

The other kind of communication that was readily noticeable came from ad hoc class-

room observation of students by the teacher. This was peer to peer communication, which occurred exclusively in the students' L1 and largely consisted of comprehension questions and answers regarding instructions, login procedures, and associated problems to do with task completion. This was the most widely observed kind of communication taking place. It is indicative of a sizeable number of students being unsure of the instructions they had been given, but preferring to consult other students rather than the teacher and is, as Nozaki has pointed out (Nozaki: 28-9), fairly typical behavior.

What could not be determined was the students' attitudes towards this self-access, Internet-related activity. Including it in the follow up, paper-based questionnaire would seem to be the best way to have found out students' views, but that is an after thought now and was not done at the time.

Remaining Questions

Some other unanswered questions that have suggested themselves and which should be examined are:

1. To what extent did students use the class pages?;
2. What other factors could be attributable for students not doing the tasks?;
3. Is it a worthwhile use of teacher time to set up such a system?

The first question is difficult to answer. No system was set up to log student visits to the class pages in the initial design of the web site. A redesigned version of the web site (which will be discussed later), will have such a system, but given the limited content of the original web site and the fact that development work soon switched to the second web site, this was not implemented. Although information on class page hits could be extracted by analyzing the data from automated web logs sent by the ISP to the teacher, this would not give any indication of exactly who was visiting any particular class page and how frequently, so does not seem to be very useful for research purposes.

In trying to answer the second question as to why some students did not do the task at all, it may just be, as Nozaki (28-9) argues, that those students simply could not be bothered or did not have time. Dornyei (145-6) cites work by Oxford, Chambers and others suggesting that demotivation is a particular problem with L2 learners. Comparison of the completion rate of this project's task against the completion rate of other tasks (such as a more conventional homework assignment and which very approximately averages 50 to 60 percent), indicates that this project's task completion rate may have been the same or even have exceeded the regular assignment completion rate, perhaps due to the length of the time allowed for task completion and the number of reminders which students received

about it.

This is a vague but plausible explanation for many students non-completion of the task. But as Altrichter et al noted (cited by Slaouti), ‘plausible explanations cannot necessarily be trusted’. Consequently, it was decided to examine some other possible factors. These were: the degree to which computers with Internet access were available at each institution for students to use; the degree to which students possessed computers at home with Internet access and the type of Internet access available. The presumption was that a lack of access to the Internet freely or cheaply might have negatively influenced students’ inclination to complete the task, especially if they were or had experienced technical problems in connecting to the database. A three-question, paper-based questionnaire in English was distributed in early July 2003, covering all of the groups of students involved in the project, except for one (who were unavailable as they were away on a class excursion). The questions in the survey were as follows:

1. How many computers with an Internet connection are there at this campus which you can use?
2. Do you have a computer with an Internet connection at home?
3. If your answer to question 2 was ‘yes’, what kind of connection do you have (dial up, ISDN, cable, ADSL, Fibre-optic)?

Appendix 9 shows the results of the survey arranged by group and institution. What we can deduce is that there is no clear correlation between the variables of availability of technology either at the students’ home or institution, the type of Internet connection technology available and whether or not students completed the task.

Not all groups were asked to complete question 1, with only select groups being requested to do so. The reason was for asking this question in the first place was simply because the full extent of Internet provision for students at all of the institutions was not known. It was thought that to ask this question of all students would be redundant. That was a mistake, however, because it soon became apparent that there was a significant degree of uncertainty over the answer to this question and the wide range of answers demonstrated that many students were largely unaware or had a false impression of what computer facilities were available to them at their institution. In reality, all institutions have computers with Internet connections designated for student use and this provision is broadly similar. So, although the actual provision of computers at the institutions can not be a factor in students not completing the task, knowledge of the facilities available may have been an influence.

When viewed by groups or as a whole, the answers to questions 2 and 3 proved more

useful in terms of confirming that although a large percentage (35.4%) of respondents do not have a computer with an Internet connection at home, a slightly larger percentage (37.4%) have a computer with a broadband connection. Also, it should not be taken that the first figure is those students that do not have an Internet connection, since close to 100 percent of tertiary-level students in Japan have a mobile telephone capable of sending and receiving email communication and this is often the preferred technology for email messaging. Also of note, broadband has been heavily advertised and fiercely marketed in Japan; it has a large installed base and so the high percentage (17.3%) of students who have no idea what technology is used for their home Internet connection is somewhat surprising.

In looking at the technology available to the students at home in relation to task completion, the following was found: Of the 266 students who did 100% of the task, 69 students (26% of respondents), reported that they had no home connection, compared to 80 students who had a broadband connected computer. To look at this another way, of the 255 students who reported having a broadband connected computer, only 143 (56.1%) completed 100% of their task. But the completion rate of the 136 students who reported having no Internet-connected computer at home was only slightly lower (50.7%). 128 students (24.8% of the total) did no part of the task, of these 22 students (17.1%) were those who had a broadband connection at home. Of a further 62 students (12% of the total) who only completed their user profile and no parts of the questionnaire, 24 (38.7%) had home broadband.

As data drawn from this survey does not, when looked at as a whole or by groups, clearly indicate a correlation between technology and student performance, it was felt necessary to compare the status of each student's task completion to their overall academic record in order to see if there were any connections between the two. Of the 128 students who completed none of the task, 31 students (24.2%), had a class session absence rate of 30% or more and 35 students (27.3%), had an absence rate of 0%. When looking at the profiles of the 265 students who had completed 100% of the survey, 151 (56.8%) were never absent from class sessions. This is only a simplistic basis on which to make a comparison, however. The only other data that could be used is a student work performance score. A semester performance score was only calculated for those students assessed on a semester basis (345 of the 516 students on roll), so the data is incomplete. If student performance scores are compared to their task completion for this project (see Appendix 10), the results are far from conclusive, but it can be seen that those students having lower performance scores were also more likely to have zero or low task completion, while high scoring students were more likely to have greater task completion.

The third question on the effort involved in setting up such a system can be answered more easily. The time required to set up this system was considerable. Work started in mid February 2003 and continued until early May. Most of this development time was not taken up with research of the field to choose the most appropriate technology or even the production of working web pages and code. The most time consuming element was troubleshooting bugs in the principal software programme used (Macromedia Dreamweaver MX), identifying the mistakes in several badly-written tutorials and reference books, and waiting for replies from the technical support of the ISP. Apart from Dreamweaver MX, which is a commercial product, almost all of the software is open-source and fairly robust. Nevertheless, in a project like this, the teacher is a partial novice working independently of any institution. Technical support for the teacher is volunteered and comes from the open source community accessible via the Internet. The financial cost to the teacher can also be significant and is, in part, ongoing. On the other hand, future work will be far less time consuming and will almost certainly be more productive, so it is worth continuing with this approach, not least because of the potential that it provides.

Dealing With the Data

The data that was collected is useful and can be easily manipulated, providing the teacher with information about those students that submitted it. To illustrate this, some sample data has been extracted and is presented as a series of tables in Appendix 11 . The process of sorting and enumerating this data was much more rapid than would be possible using the previous, paper-based method. The answer to a question can be found in a few minutes rather than the hours that it would take using the old method. There are a few limitations with the way the questionnaires were set up, however. This means that, at present, data can be collected and analyzed on an individual submission basis or by institution, but it is more difficult to look at data within one group. This situation needs to be improved, but requires making the database perform to its full potential by making it more relational.

Modification and further development

Almost as soon as the online class pages and questionnaires started being used by the students, ideas for improvement began to emerge and these were acted upon from early June onwards. As stated earlier, the heart of the technical problems encountered by students (and the teacher) lay with the ISP being used. Consequently, a new ISP was chosen that offers a far more robust database (250 simultaneous connections) and much

better technical support. A duplicate website was created using this new ISP, followed later by incremental modification of parts of the new web site (woollerton.org). The first web site (woollerton.com) was left unchanged, so that it is now possible to directly compare one with the other.

The first improvements were made to the new user profile creation page. (See Appendix 12a.) Here more select type of input methods (pull down menus, radio buttons, etcetera), were used in place of text input methods. Additionally, profile and questionnaire updating has been introduced, which allows users to make corrections or work on the questionnaire parts over multiple sessions. (See Appendices 12b and 12c.) Form validation should also be introduced to make sure that the type of data input is correct. This has not yet been done as it is not straightforward to implement well.

The other major re-design idea is for the the web site look, feel and experience as a whole. Worked has started on this, but is far from finished. The concept is for the user to find the experience of visiting the web site much more personal and friendly. In addition to salutations on various pages that currently exist, what the user sees will depend on who is visiting the site, with the user's data used to determine what content is presented. Instead of seeing 17 separate class pages, the user will see just one or two and the content (in terms of its topic area and language level) will be geared towards the individual user. It is the database that will enable this and, theoretically, the more student data that is input (either by the teacher or the student), the more individualized the user experience would be.

For the teacher's benefit, many web-based administrative features will be enabled. These will allow the updating of the database by the teacher wherever an Internet connection exists rather than the method used with the first web site, which relied on access from the teacher's home or portable computer. This reliance sometimes meant that a backlog in the uploading of data built up. A screenshot of one of the administrative pages on the new web site is included as Appendices 13a and 13b, with this particular one allowing class session records to be added.

Perhaps the most important improvement in terms of fostering communication is the idea that by using the database, a user will be able to view all kinds of content relevant to the class that the user is a member of and the user's individual interests. It is hoped to automate the submission and retrieval of all kinds of data: student assignments, teacher feedback, student-student comments and coursework collaboration, attendance records, survey results, as well as peer to peer and student-teacher communications.

Such features as are seen with course bulletin boards, usually require access to and use of an Internet server, but most EFL teachers in Japan, have no such technology available

to them. Using online relational databases hosted by ISPs to store and then serve data to dynamic web pages that present the user with a personalized environment, is a solution that gets around this problem. What is also required is content supplied in response to the user's data. Amassing this content will ultimately be the biggest ongoing task. Ultimately, the degree of personalization of the learning will be a factor of the quality and quantity of content in the database, the amount of data linking and the quantity of dynamic elements built into the web site's design.

SOME CONCLUSIONS

On the question of whether this project improved student-teacher and student-student communication, it is clear that there was an (albeit limited) increase. Task-related problems prompted student-teacher communication both orally and by email and oral student-student communication. On the other hand, there is no evidence (at this time) of the class pages increasing communication. Also, data collection as a result of the computer-mediated task, fell short of the former method of data collection. This was probably partially because of problems associated with technology, but could equally be due to the self-access nature of the project or the lack of 'intrinsic motivation' (Hutchinson & Waters: 48) of the students themselves. What is clear is that the data that was collected is useful (see Appendix 11), can be easily manipulated and, if the limitations with the way the questionnaires were set up is addressed, these data files will be more valuable than the 500 sheets of paper annually collected previously. Improvement requires making the database more relational. This is also at the heart of making the class pages fulfill their true potential for increasing students' opportunities to access material and communicate better with the teacher and their peers.

APPENDICES

All appendices are available from the following Internet locations:

woollerton.com/edu/resources.shtml
woollerton.org/edu/resources.shtml

1. Site Map of Original Web Site
- 2a. New User Profile Page (Original Web Site)
- 2b. User Login Failure Page (Original Web Site)
- 2c. Students' Secure Area Main Page (Original Web Site)
- 2d. Students' Class Page (Original Web Site)
- 2e. Sample from Online Questionnaire Pages (Original Web Site)

3. Previously Used Paper-based Questionnaire (English version)
4. Instructions Sheet for Accessing Students' Secure Area (Original Web Site)
5. Graph of Number of Logins & Questionnaire Submissions Over Time
6. Table of User Profiles & Questionnaire Submissions Over Time
7. Errors in Student Entry of Institution Data
8. Log of Incoming Email Communication from Students to Teacher
9. Summary of Responses to Follow-Up Survey
10. Semester Performance Scores & Project Task Completion
11. Tables Showing Samples of Results of Data Collected by Online Questionnaires
- 12a. New Web Site User Profile Creation Page
- 12b. New Web Site User Profile Update Page
- 12c. New Web Site Questionnaires Top Page
- 13a. New Web Site Teacher's Administrative Menu Page
- 13b. New Web Site Teacher's Administrative Sample Input Page

BIBLIOGRAPHY

- Altrichter H, P Posch & B Sopmekh (1993) *Teachers Investigate Their Work*. London: Routledge
- Benson, P and P Voller (eds) (1997) *Autonomy and Independence in Language Learning*. London: Longman
- Dickinson, L (1995) 'Autonomy and motivation: a literature review' *System* 23/2: 165-174
- Dornyei, Z (2001) *Teaching and Researching Motivation*, Harlow: Pearson
- Hutchinson, T & A. Waters (1987) *English for Specific Purposes*, Cambridge: CUP
- Kemmis S and McTaggart (eds) (1988) *The Action Research Planner*, 3rd edition. Geelong, Australia: Deakin University Press
- Kristof, R & A. Satran (1995) *Interactivity by Design*, Mountain View: Adobe
- Levy, M (1997) *Computer-Assisted Language Learning – Context and Conceptualization*, Oxford: Clarendon
- Nozaki, K (1993) 'The Japanese Student and the Foreign Teacher' in Wadden P (ed)
- Nunan, D (1992) *Research Methods in Language Learning*, Cambridge: CUP
- Slaouti, D (2003) 'MD363 - Computers Language & Context', Manchester: University of Manchester, School of Education.
- Wadden, P (1993) (ed) *A Handbook for teaching English at Japanese Colleges and Universities*, Oxford: OUP
- Voller, P (1997) 'Does the teacher have a role in autonomous language learning?' in Benson, P and P Voller (eds.)

Technical Reference:

- Downes-Powell, D., T. Green & B. Mairlot (2002) *Dreamweaver MX: PHP Web Development*, Birmingham: Glasshaus
- Lowery, J (2002) *Dreamweaver MX Bible*, Indianapolis: Wiley
- Stephens, R & R. Plew (2002) *SAMS Teach Yourself SQL in 24 Hours*, Indianapolis: SAMS
- Williams, H & D. Lane (2002) *Web Database Applications with PHP & MySQL*, Sebastopol: O'Reilly