HOW A WEB-BASED COURSE FACILITATES ACQUISITION OF ENGLISH FOR ACADEMIC PURPOSES

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ABSTRACT

This paper describes an experimental study aimed at investigating the learning effectiveness of a Web-based course called *Academic English* (EAP) for Japanese learners of English. The main focus of the study was to examine the form, function, and impact of interaction in the course. Twenty university-level EFL students participated in this experiment. They were randomly assigned to two treatment groups: a controlled group with *inter-personal task* treatment and an experiment group with *intra-personal task* treatment. Regarding effectiveness of the interactivity dimension in language acquisition, there was one independent variable, *type of treatments,* and two dependent variables, *achievement* and *attitude measurements.* The achievement variable was used to address the extent of learning due to the two treatment conditions. The attitude variable was used to address the degree of motivation towards a Web-based communication platform as well as the enforced interaction functions. Statistical analyses revealed no significant effect of treatment on either comprehension or general L2 development, but significant differences were found with respect to language interaction for task completion under different task treatments. Therefore, it was concluded that this Web-based course was well designed to maximize the students' language learning experience as well as to improve their language abilities in English. Further research is needed to examine the notion of self-repair in students' production in the target language.

INTRODUCTION

The advent of information communication technology has improved the quality of many scientific disciplines, including language education (Chapelle, 2001; Farretti, 2001; Gonzalez-Lloret, 2003; Tsou, Wang, & Li, 2002). Language learning through technology has become a fact of life with important implications for second language acquisition (SLA; Chapelle, 2001). New theories and applications of language learning and teaching are exploring the benefits of information communication technology to facilitate SLA (Chapelle, 1998; Chen, Inoue, & Okamoto, 2001; Chen, Cristea, & Okamoto, 2003; Gonzalez-Lloret, 2003; Okamoto, Kayama, Inoue, & Cristea, 2002). In these activities, instructional design based on the communicative language teaching paradigm has shifted language teaching and learning practices in computer-assisted language learning (CALL) environments (Box, 2003; Chapelle, 2001).

Educational research findings suggest that the success of any educational process should be based on sound pedagogical principles and interactions (Box, 2003; Chapelle, 1998; Day & Shapson, 2001; Ellis, 1999; Gonzalez-Lloret, 2003). During communication, students draw on their abilities to anticipate new information, notice insufficient knowledge, and relate the new information to pre-existing information. Therefore, *communicative language use* is a successful and powerful approach to language learning (Batstone, 2002; Gonzalez-Lloret, 2003; Izumi, 2002; Pica, 1991; Schollaert, 1998; Skehan, 1998).

The concept of communicative task (i.e., a meaning-focus activity), based predominately on the notion of *communicative language use,* creates situations that encourage the production of comprehensible output (e.g., a modified speech, written text) from the students. In support of communicative tasks, Nunan (2000) posits that tasks promoting linguistic/conversational adjustments promote comprehensible input

(i.e., elaborated learning routines). Similarly, Long (1996) found that learners are most likely to notice linguistic form during interaction. According to Hegelheimer and Chapelle (2000), the most useful interactions are those which help learners comprehend the semantics and syntax of input and improve the comprehensibility of their own linguistic output. As stated by Gonzalez-Lloret (2003), interaction facilitates comprehension better than learning conditions without interactions. Moreover, the discourse produced through a task is given its identifiable shape and structure by the communicative purpose of the task (Newton & Kennedy, 1996).

There are a number of experimental studies within the communicative language teaching paradigm that have shown positive evidence of such interactions in CALL environments. For instance, using a task-based course in a CALL environment, Gonzalez-Lloret (2003) showed that second language (L2) interactions between students resulted in considerable high-quality output, although not as rich as the interaction between native speakers and non-native speakers. However, her task-based CALL is more similar to traditional face-to-face interactions: The computer served not as a medium of communication, but as a presenter of materials meant to engage students in conversation.

Tsou et al. (2002) developed an individualized teaching tool for vocabulary learning that employs concept map-mediated interactions based on the idea of linking students' prior knowledge with their new knowledge. The learning tool is designed to help the learner acquire abstract vocabulary. However, this learning tool cannot dynamically adapt the learning path (i.e., the sequence of the course) based on the student-user's learning needs and task results. Therefore, it is easy to stray from the optimal learning path. It was not clear from the authors' findings whether this communication pattern could help learners to transfer their knowledge of the language into their academic lives.

In keeping with these findings, we proposed a communication-oriented framework, a combination of the task-based approach common to communicative language teaching. This framework was adopted to formulate a comprehensive instructional design that provides guidelines for instructional developers to structure learning materials so as to accommodate sufficient situational exposures to language learning in non-English speaking areas.

The main assumption underlying this research is that L2 interaction is necessary for language construction and reconstruction. Each form of instructional interaction is assumed to play a role in the entire educational process. Negotiation of meaning is also assumed to happen either in inter-personal or intra-personal activities. The distinction between required and optional information exchange is operationalized as a distinction between inter-personal (e.g., two-way information gap) and intra-personal tasks (e.g., one-way note-taking). This distinction will be the key factor determining the optionality of interaction in our experimental study.

As an illustration of our approach, we developed a Web-based course called *Academic English* aimed at upgrading students' language ability in English for academic purposes (EAP). The prototype of Academic English was designed to support distance learning as well as to supplement traditional classroom-based activities. Various kinds of learning materials and information are stored as digital multimedia in the form of pictures, videos, and sound tracks. Accessing the course from remote sites, students can select their preferred video clips, participate in question/answer sessions, and receive feedback after each interaction. In addition, opportunities for student-student and student-teacher interaction are also available via communication tools (e.g., a chat tool). The Web-based course was built with the purpose of maximizing their language-learning experience.

The main focus of our experimental study was to examine the effectiveness of different forms of interactivity on language acquisition in the Web-based listening environment. In particular, we aimed to examine how the form of interaction was defined by specific course modes (i.e., student-content interaction) in which students' background knowledge of the subject is involved in the communication/interaction processes. The following research questions guided our study:

1. What mode of interaction (i.e., negotiation of meaning in inter-personal versus intra-personal activities) facilitates comprehension better and could lead to more effective language acquisition?

2. Does negotiation of meaning facilitate greater comprehension and production?

The remaining parts of this paper are structured as follows: (a) description of the Web-based Academic English course; (b) experimental study of the Web-based course; and (c) results, discussion, and suggestions for future research.

DESCRIPTION OF THE WEB-BASED ACADEMIC ENGLISH COURSE

The Web-based environment was designed to provide students with an outline of the course content (i.e., Artificial Intelligence, in the case of our pilot version), direct access to additional learning resources, and system functionality. This environment included two types of user interfaces: a student interface and a teacher interface. The student interface is divided into a frameset (i.e., five frames), as shown in Figure 1.
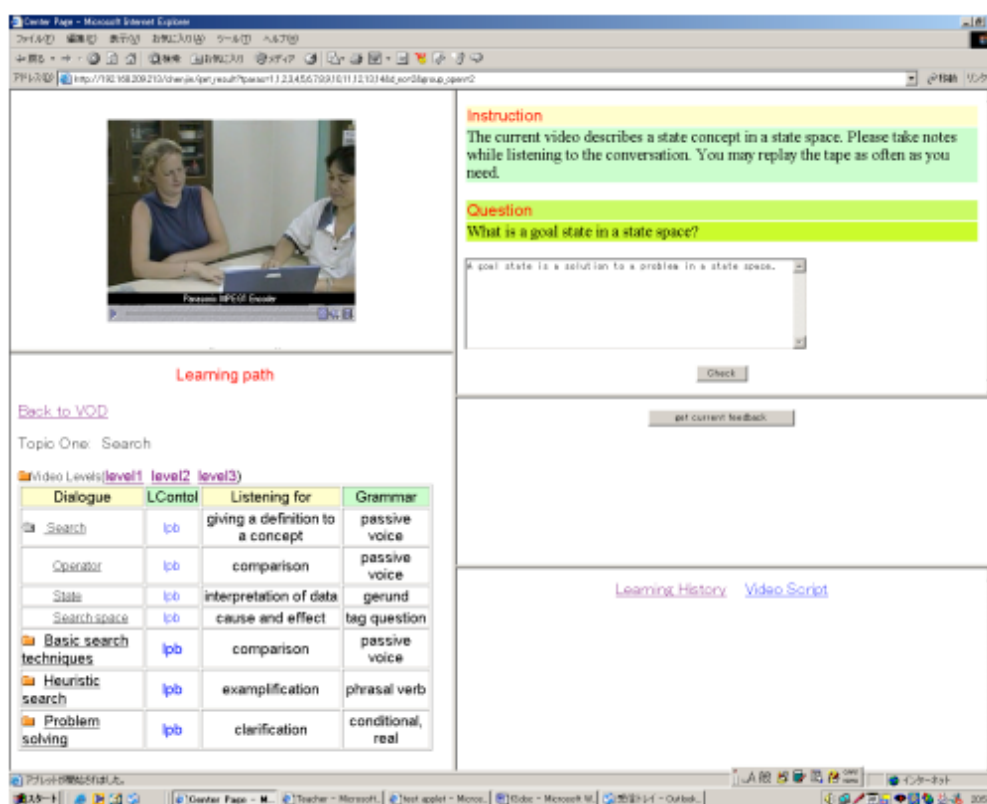

Figure 1. Main screen of the learning environment

The functions of the framesets are as follows:

1. The upper left frame displays a *video-on-demand* (VOD) presentation.

2. The lower left frame displays the *learning path* (i.e., the structure of the lesson, which allows students to control the sequence and pacing of learning).

3. The upper right frame displays the *question/ answer function* and *instructions* for each task.

4. The middle right frame displays feedback from the teachers or other students.

5. The bottom right frame displays other tutorial functions including video script and learning history of a student.

In the following section, we will explain how learning content is specified and structured to support interactivity.

Instructional Strategies

Two instructional strategies (i.e., course strategies and dialogue strategies) were defined for the course as a whole. *Course strategy* represents a method based on the theory of learning styles (i.e., student preferences in learning) and is used to determine an appropriate dialogue strategy for a given instructional goal (e.g., listening comprehension). For instance, a student with a sequential learning style prefers to learning step by step. For such a student, a step-by-step course strategy would be selected to optimize the learning process. A *dialogue strategy,* which is based on a specific teaching objective (e.g., defining a concept), is used to determine the basic video input and the corresponding response modes to be used so as to best situate the learning task. A single teaching objective may be achieved via one or several dialogue strategies. The dialogue strategies in Academic English are categorized into three dimensions:

D_1. Conscious induction,

D_2. Sub-conscious induction from structured language input materials,

D_3. Sub-conscious induction from unstructured language input materials.

Figure 2. The interface of Learning Path with lesson content

Course Structure

The bottom frame in Figure 2 shows an example of lesson content. In Academic English, the overall course was structured into *lesson layers* and *dialogue layers,* where one or more dialogue components constitute a lesson layer. The *topics* and the *concepts* which comprise the learning content (i.e., Artificial Intelligence) are defined as the name/value of *lesson* and *dialogue.*

Around the topic-concept relationship, the input material in each lesson is generated for a particular instructional goal (i.e., the selection of the concepts for a specific dialogue are to be included as part of the topic of the overarching lesson). We defined two selection methods, Strategy A and Strategy B, to generate the lesson contents. In Strategy A, the lesson is dynamically selected according to the student's current knowledge level and a particular course strategy. For Strategy B, the students have the freedom to select their learning tasks based on their own learning goals. An illustration of Strategy B is given in Figure 3.
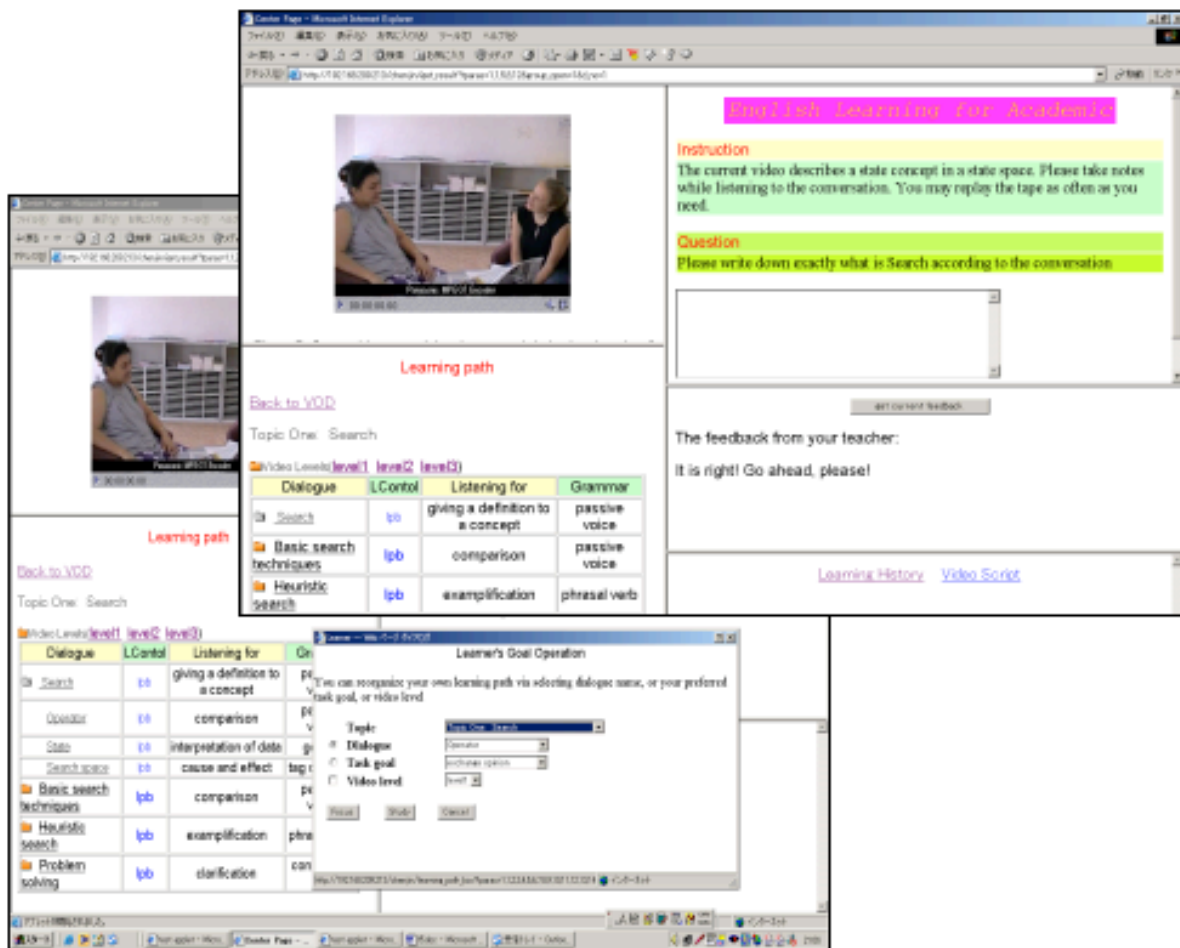

Figure 3. The interfaces of two different Learning Paths after opening the Lcontrol dialogue box

Course Content

The course content in each dialogue is specified following different dialogue strategies. In order to optimize the learning process for individual students, a number of teaching techniques were utilized for each instructional goal within the defined strategies. The content of each dialogue for a specific instructional goal is organized into different knowledge modules (i.e., *input resources* and *response*

modes) by systematically following a simple-to-complex structure. Tables 1 and 2 show the organization of defining features for input resources and task types, respectively.

The input material used for each task is delivered in the form of short video clips. Each video clip is associated with a predefined task (e.g., a question/answer teaching technique is used for each interaction task). In Figure 1, an example of a video clip is displayed in the top left frame and the instructions, questions, and answer boxes for the corresponding task are displayed in the top right frame.

Table 1. Defining Features of the Input Resources

Text feature	Slot-name	Slot-value
Complexity	Information familiarity	D 1
	Information complexity	D 2
Difficulty	Number of propositions	D 3
	Syntactic difficulty	D 2
	Explicitness of language functions	D 2
	Subject-specific vocabulary	D 3, D 1

Table 2. The Defining Features of a Task

Task types	Descriptions	Features
Dictation	Relating structure to language functions	Noticing of form
Note-taking	Relating language to specific meanings	Intra-personal negotiation
Information gap	Relating language to academic activities	Inter-personal negotiation

Learning Flows in the Course

Registered students receive the video presentation and associated predefined tasks when they click on the dialogue name in the learning path frame. The lesson contents are displayed through a Web browser.

The student is required to study the lesson in the sequence generated by the course software. However, the software does allow students to manipulate this sequence in two ways: by selecting a learning goal and by choosing certain features of the learning path. The learning goal function (see Figure 4) allows students to skip the current dialogue or return to the previous one based on their learning goals. The learning path control function (see Figure 3), called Lcontrol and labeled LPC, allows students to re-define their lesson contents according to two operation functions: focus or study. The *focus* function allows students to study the tasks they learnt before. The *study* function allows students to redefine the lessons based on their learning needs.
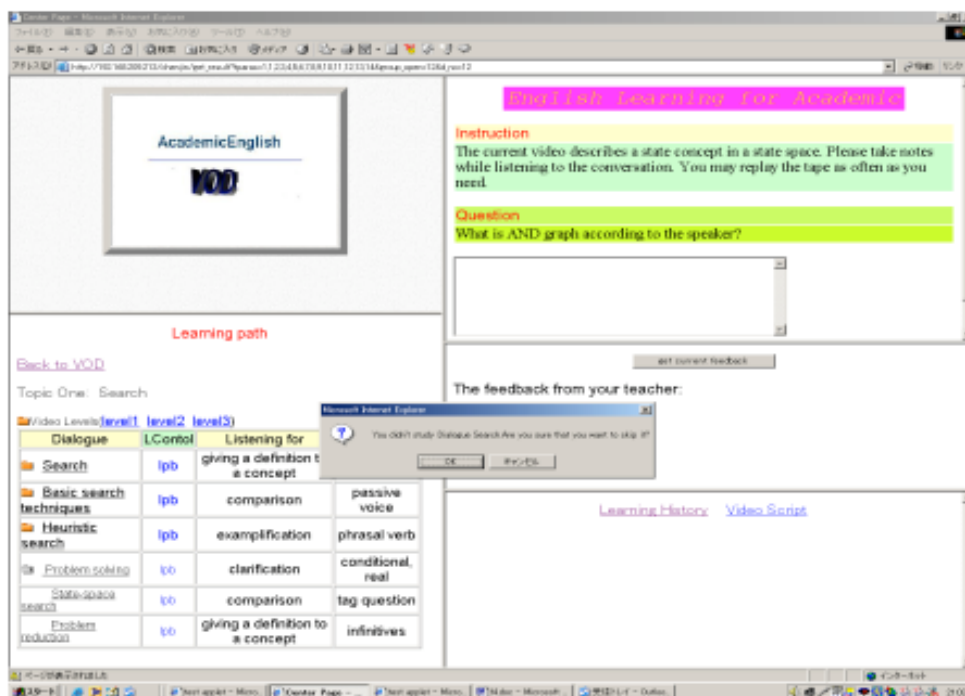
Figure 4. The interface of the main window with a pop-up dialogue box

Before performing a task, students read and accept the embedded instruction by clicking the "Chcck" button (see Figure 1). They can also replay the video content until the task is accomplished. Furthermore, after students input and submit their answers for each task, feedback information is displayed by either a human teacher (in information-gap tasks) or the system (in dictation and note-taking tasks; see Figure 5, middle right frame).

Afterwards, the students can review the current video script and re-visit the course via the recorded learning history. A sample of the information contained in a learning history is displayed in Figure 5.

Figure 5. The interface of the learning enviornment with feedback and learning history information
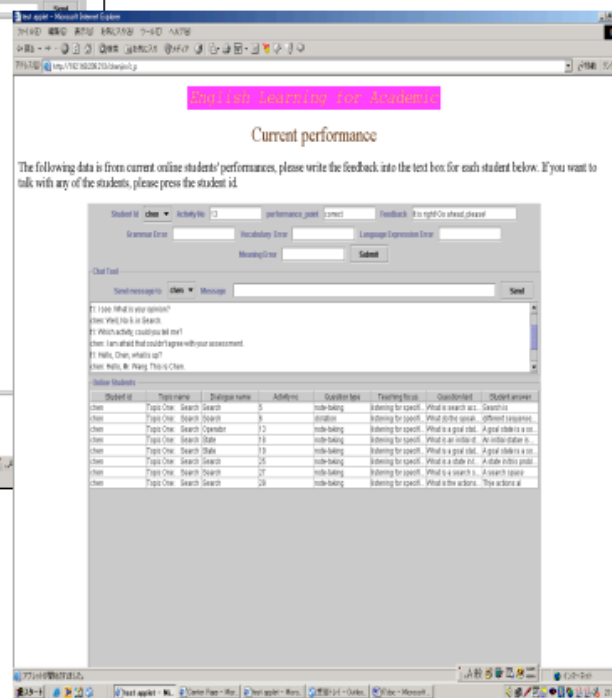

Figure 6. The interface of the learner chat tool

Figure 7. The teacher interface with chat performance evaluation tools

Besides the student-content interaction in the learning process, student-student and student-teacher interaction is also possible during task completion. Whenever needed, the environment provides an opportunity for the student to interact with the other students or his teacher in real time. Figures 6 and 7 show student-teacher interaction data. Figure 6 shows a student chat tool that is activated when a registered student selects his/her starting dialogue in the learning path frame. Figure 8 shows the teacher interface, which also includes a chat tool.

Teacher Interface

The human teacher's interface allows teachers to talk with on-line students, access the students' answers, and provide feedback on the students' performance either synchronously or asynchronously. As Figure 7 shows, this interface consists of three parts:

1. several text boxes for teachers to input their assessment of student performance (the upper part of the interface);

2. the chat tool, displaying messages from on-line students (the middle part of the interface); and

3. a display of the student's current performance data (at the bottom of the interface).

EXPERIMENTAL STUDY OF THE WEB-BASED COURSE

Twenty university students (non-native English speakers, majoring in Computer Science) from Southwest Normal University in China participated in this experiment via the Internet. The participants were randomly divided into two groups and assigned to different treatment conditions (see Table 3). The first group was assigned to the intra-personal treatment (i.e., where language is used for a functional purpose) comprised of a note-taking task and a dictation task (abbreviated as N + D). The other group was assigned to inter-personal treatment (i.e., where language is used for a communication purpose) comprised of an information-gap task (abbreviated as IG).

Table 3. The Two Treatment Groups

Treatment	Exchange Information	
	Required	Optional
N + D		O + N + D
IG	R + IG	

The N+D task was set up under an optional information exchange condition (annotated as O + N + D), while the IG task was structured to require information exchange (annotated as R + IG).

Furthermore, two environmental conditions were defined: in one condition students were able to manipulate their learning path while performing the task (abbreviated as the LP condition); in the other condition students were not allowed to manipulate the learning path while performing the task (abbreviated as the NLP condition).

Materials

The prototype course consisted of 20 dialogues. Each dialogue contained three videos from simple to complex (specified to support the same instructional goal, though by different dialogue strategies)[1] and a set of *questions* in different task types as described in the Course Structure section, above. The structured or unstructured input video clips are based on the topic "Search.." The task types are defined as dictation, note-taking, and information-gap. The lesson contents were selected based on the participants' current knowledge level and course strategies. The selection of level of the video for each dialogue was left to the

students themselves. The default level was based on the participants' progress. However, if the participants were not satisfied with the default level, they were able to select their own preferred level (see video levels in Figure 2).

The instructional treatment provided in this study focused on the target forms of subject-specific vocabulary and language functions (e.g., defining, categorizing). The participants were instructed to try to acquire the target forms by listening to the video clips.

Instrumentation

The independent variable was defined as *type of treatment.* The dependent variables were *achievement* and *attitude.* The achievement variable was used to address the extent of learning associated with the two treatments, N + G and IG, respectively. The attitude variable was employed to address the degree of motivation reported for the Web-based communication platform as well as the different tutorial functions.

The tracked data (i.e., the participants' written responses to each question) were used to measure the participants' levels of achievement. The first session was used to acquaint the participants with the training process and was therefore not scored. Three of the remaining 19 dialogues were randomly selected to be scored and were used to measure the participants' achievement in L2 learning in the Web-based CALL environment.

Finn's (1977) *type* and *token* analysis was employed to score participant responses. Hunt's (1977) T-unit[2] word count was also used to measure their syntactic complexity. *Types* are the number of different words used in the participants' responses. The *tokens* are the total number of words written. The number of *types* reflects a direct measure of the breadth of subject-specific vocabulary items acquired. The *token* analysis was conducted on T-units. The assumption is that the length of the T-unit increases as learners mature or develop intellectually (Hunt, 1977).

Two seperate questionnaires were used to measure participant attitudes and prior knowledge. A pre-treatment questionnaire was used to examine the participants' background knowledge. Responses were totaled to yield individual scores for prior knowledge about the topic of artificial intelligence. The data extracted from this survey were used as a reference for interpreting achievement scores.

A post-treatment questionnaire consisted of five-statements which participants were to rate on a 5-point Likert scale according to their level of agreement. Values on the scale were *strongly disagree, disagree, undecided, agree,* and *strongly agree.* To facilitate scoring, these values were converted to numbers, from one to five, respectively. The participants' attitudes toward the Web-based course (i.e. their language-learning experiences) were measured using the following five statements:

1. Communication over the Web was as effective as in face-to-face situations.

2. Each of the automatically generated video and questions were suitable for my current individual understanding.

3. I liked being able to manipulate my learning path (to create an individualized lesson).

4. The chat tool was an effective way to get information from other participants.

5. Getting feedback from a human teacher was helpful.

Finally, qualitative data regarding attitudes toward the two treatments and opinions on individual improvements in listening comprehension ability were collected using an open-ended questionnaire (five open questions), which was provided to the participants at the end of the experiment.

Procedure

The study consisted of six one-hour sessions and took place over a 2-week period. The participants were required to access the course at the same time each session. The first three 1-hour sessions were placed in the NLP condition; the second three 1-hour sessions were with the LP condition. The experiment procedure was set up as follows:

1. Pre-treatment Questionnaire: Before the lab-test session, a questionnaire was administered. Participants were asked to complete a questionnaire to assess their background knowledge.

2. Experimental Session: Participants in this study were asked to access the course three times a week, for at least 1 hour per lesson. Each time, the participants were allowed to select their preferred video clips. While listening, they participated in question and answer sessions and received feedback from remote sites after each interaction. Afterwards, they could choose either to exchange comments with the teacher and/or other students in the same group, to continue the lesson, or to end the session. The basic options participants could choose in manipulating task complexity (which were triggered according to the participant's progress) are shown in Table 4.

Table 4. The Basic Options

Option 1	amount of attention to meaning required for task completion
Option 2	amount of explicit explanation given prior to practice
Option 3	amount of attention to form practice required for task completion
Option 4	degree of complexity of content knowledge
Option 5	degree of difficulty of target language
Option 6	modes of L2 interaction

3. Post-Treatment Questionnaire: The participants were asked to fill out a 5-statement questionnaire after each course. It was expected that the participants' attitudes would gradually change as they got more familiar with the Web-based course.

At the end of the experiment, they filled out an open-ended questionnaire (e.g., Did you experience any communication problems? If yes, what were they? If no, please elaborate on the advantages of the course.). The data from the post-treatment questionnaire were used to measure the participants' attitudes towards our Web-based course.

Results

Data collected from the three dialogues via the student-users' profiles were transcribed and coded to examine the L2 interactions. The discourse was then analyzed following the type and token method described in the Instrumentation section above. For the different dependent variables (i.e., achievement and attitude), the values of the means and standard deviations (*SD*) were calculated for the 10 participants in each group. For the independent variable (i.e., treatment condition), the Mann-Whitney's method was used to compute the rank sums and two-tailed probability (*p*) values. In the following, the main experimental results were presented in terms of achievement and attitude.

Achievement Measures

Table 5 shows the means of types, standard deviations (*SD*), rank sums, and two-tailed *p* values. In relation to the task completion, there is no significant difference between the two treatments (*p* value for the three dialogues is not significant in R + IG). By comparing the proportion of different words used by participants in both groups, the task was well constructed to elicit language from both participants. This revealed that the number of target language forms elicited through negotiation of meaning in the (N + G) treatment is as much as that in the (IG) treatment.

Table 5. Mean Scores of Types in Each Dialogue

	Treatment	Types			Mann-Whitney	
		n	Mean	*DS*	*RankSums*	*p*
Dialogue 4	O + N + D group	10	31.15	10.59	102	
	R + IG group	10	36.26	7.76	118	.43
Dialogue 8	O + N + D group	10	40.25	12.59	97	
	R + IG group	10	36.26	7.76	119	.43
Dialogue 12	O + N + D group	10	23.25	11.19	106	
	R + IG group	10	27.76	8.06	114	.79

Table 6 reports T-unit token values (i.e., length of sentences/utterances) for each dialogue (each task contained four questions). Analysis of the data revealed, as indicated in Table 6, that the T-unit token values in R + IG were statistically significant. The *p* value for each dialogue is 0.080, 0.060, and 0.030, respectively. This result confirms Newton's (1996) findings that language interaction elicited via optional information exchange is not as much as that via required information exchange. The difference may result partly from the different purpose of each task, and partly from the different level of the participants' language ability. This result also supports Gonzalez-Lloret's (2003) findings that the purpose of the task has a significant effect on the elicitation of negotiation of meaning in task completion.

Table 6. Mean Scores of T-Unit Lengths from Data in Each Dialogue

	Treatment	T-Unit Lengths			Mann-Whitney	
		n	Mean	*DS*	RankSums	*p*
Dialogue 4	O + N + D group	10	4.30	.71	89	
	R + IG group	10	8.70	.50	131	.080*
Dialogue 8	O + N + D group	10	5.05	1.2	85	
	R + IG group	10	9.69	.88	135	.060*
Dialogue 12	O + N + D group	10	6.1	1.05	80	
	R + IG group	10	10.31	.72	140	.030*

*$p < 0.1$

Table 7 reports the type totals produced in the three dialogues. The *mean* difference for the type totals between the two groups is only 64 words. This indicated that the O + N + D group (mean = 448.90) performed nearly as well as the R + IG group (mean = 512.30) on the tasks.

Table 7. Mean Scores of Total Types in Data from All Dialogues

Treatment	Types			Mann-Whitney	
	n	Mean	*SD*	Rank Sums	*p*
O + N + D group	10	448.90	12.34	104	
R + IG group	10	512.30	8.26	116	.58

In terms of the correctness of responses to each question in a task, there is no significant difference found between treatments (see Table 8). Therefore, it can be concluded that there is no difference in comprehension of meaning and vocabulary acquisition between groups. Although the information gap seemed to have a greater impact on the number of attempts at language use, the two groups behaved similarly in their overall success at reconstruction of their target language.

Table 8. Mean Scores of the Correct Responses to Questions on Each Dialogue

Treatment	*n*	Types		Mann-Whitney	
		Mean	*SD*	Rank Sums	*p*
O + N + D group	10	4.6	8.1		
R + IG group	10	4.9	6.4	.56	.084*

The results of the experimental study also revealed a variety of comprehension indicators involved in the interaction process for intra-personal task completion (see Table 9). In the intra-personal task, the participants used the chat tool for target form request and comprehension check during the negotiation of meaning process. The use of the chat tool indicated that a breakdown had occurred in student-content interaction during task completion. As can be seen in Table 10, unknown content knowledge accounted for most of the triggers of the chat tool, followed by target form (i.e., subject-specific vocabulary and language function forms). These results revealed that the task types in this study were well structured to promote both comprehension and L2 acquisition.

Table 9. Chat Tool Triggers During Intra-Personal Task

Indicator		Total Number
Language difficulty	Language function	16
	Vocabulary	12
	Syntax	5
Text complexity	Domain knowledge	20
Task complexity		3

Attitude Measures

Responses on the attitude measures were converted to numeric scores and ranged from 1 (negative attitudes) to 5 (positive attitudes), with 3 indicating neutrality. All attitude scores in both groups were above 3, indicating generally positive attitudes. Composite scores were calculated for attitudes toward language learning experiences, participant's autonomy, and instructional strategies in the Web-based environment and are reported in Tables 11, 12, and 13, respectively. The mean difference in attitude values toward language learning experiences was significantly higher for both groups under the LP condition: mean = 4.7, *SD* = .61, *t* (10) = -2.23, *p* = . 001. Moreover, positive attitudes were also found towards participant's autonomy over the Web-based environment, as shown in Table 10: mean = 4.7, *SD* = .51), *t*(10) = -1.34, *p* = .003.

Table 10. Comparison of Means on Attitude toward Teaching Strategies

Treatment	*n*	Mean	*SD*	*t*	*p*
O + N + D group	10	3.90	.33		
R + IG group	10	4.8	.89	.12	.23

Table 11. Comparison of Means on Attitude toward Learning Autonomy

Treatment	*n*	Mean	*SD*	*t*	*p*
O + N + D group	10	4.5	.67		
R + IG group	10	4.7	.51	-1.34	.23

Table 12. Comparison of Means on Attitude toward Language Learning Experiences

Treatment	*n*	Mean	*SD*	*t*	*p*
O + N + D group	10	3.5	.71		
R + IG group	10	4.7	.614	-2.23	.001*

*p<0.1

Opinion Questionnaire

The open-ended questionnaire solicited interpretive comments on the effectiveness of the Web-based course concerning the instructional treatments, learning, and communication. Responses revealed a range of opinions.

Communication Problems. Almost all of the participants under the NLP condition indicated that there were problems with the form of communication/interaction in this environment. The complaints were generally of two types: conflict with traditional way of communication and conflict with freedom in their learning paths. Two subjects specifically stated that they did not feel comfortable using the limited form of communication/interaction and that the lack of sufficient guidance impeded their ability to work effectively. Specific comments regarding interactivity problems from both groups included, "to chat with peer students is a good idea, but sometimes I couldn't find a student who could provide me the correct knowledg" and "I don't like communication over the Web, because I cannot see the facial expression of my communication partner." These comments revealed a conflict with traditional ways of communication. The findings supported Chapelle's (2001) hypothesis that the multi-modal features of electronic text as well as its interactive nature require significantly more than the ability to read and write in a functional way. Thus, we can say that in the information age, language learners are entering a world where their communication abilities should include electronic literacy, that is, communication registers associated with electronic communication (Warschauer, 2000).

Communication Effectiveness and Advantages. Regarding communication effectiveness, comments from both groups under the LP condition were similar. The comments supported the results of the attitude questionnaire. The overwhelming majority of subjects stated that such an environment provides an effective setting for SLA. One of the benefits is that the fear of making mistakes in face-to-face situation can be avoided. The advantages to the interactivity of this environment most often cited by both groups under the LP condition were (a) having someone available to provide help when needed; (b) having greater control of one's own learning path; (c) besides the dialogue with the tutor, it is possible to find a peer student to talk when needed; (d) the questions in the Q&A&F educational communication forum give both hints and purposes while listening.

Effectiveness of Instructional Treatments. The differences between the two groups were most apparent in opinions. They supported the results of the achievement measure (see Table 6). However, two participants in the O + N + D group expressed negative feelings toward the instructional strategies. They were not pleased with the strategy and cited the lack of peer students to talk with as the primary disadvantage. Positive comments were given from the R + IG group under the LP condition, such as, "it is a quite nice learning environment, I always felt confident in performing the task," "it is good that I can control what to learn, i.e., my lesson path and the level of video, I don't need to wait for the slower classmates," "I found it useful to replay the video as many times as I wanted," "I found my vocabularies enlarged after two weeks," and "I can get clarifications and confirmations when I needed them."

The finding confirms the place of individualization as one of the basic features in language education. The bipolarity of opinions in the individualized treatment may account for the significantly more positive attitudes toward the Web-based course by both groups under the LP condition.

Under the NLP condition, the number of positive and negative responses was equally split. Negative opinions centered on not having enough chances to interact within the learning environment and not having enough opportunities to access the learning path. Those who positively commented on this treatment cited greater concentration when alone and the benefits of individualized learner control of the video. Typical comments included, "I like the time spent apart is good in that I can think on my own for a period of time then get with my online classmates or teachers to get confirmation when I felt uncertain or to discuss what I obtained and what my problem is."

Attitudes Towards Human Teacher's Interference. The number of positive and negative responses on human teacher's interference varied. Some participants stated that they didn't care whether the human teacher was available or not, because there were enough alternate tutorial functions, such as the learning path function, learning history information, and the chat tool for talking with online students. On the other hand, positive opinions on the interaction with a human teacher mainly stated that the teacher can give them positive reinforcement on their language knowledge and that this type of support can greatly reduce the fossilization of errors. All participants expressed positive feelings towards the simultaneous feedback.

DISCUSSION AND CONCLUSIONS

Regarding research question one (What mode of interaction [i.e., negotiation of meaning in inter-personal versus intra-personal activities] facilitates comprehension better and could lead to more effective language acquisition?), we can say that the modes of interaction (negotiation via inter-personal or intra-personal tasks) were equally effective in promoting listening comprehension and L2 development. From the achievement measures, we deduced that the task was constructed well enough to elicit language meaning and form from both groups by comparing the proportion of types (T-unit token) and correct response values. Negotiations via intra-personal tasks do offer a considerable amount of quality data, although it was not as rich as the negotiations via inter-personal tasks. From the attitude measures, we found that the students' attitudes were positive towards the initiate/response/feedback interaction form. These results confirm the benefit of negotiated interactions in the production of comprehensible output as shown in earlier SLA research. The main conclusion is that self-initiated clarification attempts and self-negotiated comprehensible output involved in the learner-content interaction should be encouraged as one of the preferred instructional strategies in a CALL environment.

In relation to research question two (Does negotiation of meaning facilitate greater comprehension and production?), there is no data revealing that negotiation of meaning facilitates comprehension and production, although the negotiation of meaning does occur with the purpose of task completion or information exchange.

Despite the acknowledged importance of interaction in the language acquisition process, more research is necessary to examine whether there is a difference in the extent of self-repair between inter-personal and intra-personal tasks. Another challenge, in relation to interaction via production in a Web-based environment, is to examine whether there is a difference between the dictation, note-taking and information gap tasks in terms of ability to draw the student's attention to linguistic form.

Our research is motivated by the increased need for student cooperation both with the system and within the system, where language acquisition can be assisted by various meaningful modes of L2 interaction in a Web-based language learning environment. The task types that were widely used in traditional classrooms to generate L2 interactions were effectively transferred to the Web-based CALL environment. This paper represents a contribution to our understanding of Web-based course interactions and implementation for language acquisition in general and EAP learning in particular. To illustrate the theory and design of our system, we have presented and commented upon some actual screenshots from communicative task application during language acquisition via listening comprehension training.

In conclusion, while these technological innovations foster changes in SLA, facilitate computer-based learning activities, and encourage student autonomy, they are ultimately tools in the hands of course authors who must use them creatively to maximize the students' language learning experience and to enhance their language acquisition for communicative purposes. Although learning language through communication has been proven to be successful in face-to-face language learning situations for facilitating the restructuring of the student's linguistic knowledge, it has not yet been successfully transferred to the new educational environment, the Web. In this paper we demonstrate how such a transfer is possible. Such developments will form part of the research agenda for the 21st century.

NOTES

1. The three videos in one Dialogue were labeled as three levels according to their text features (i.e., information complexity and language difficulty).

2. T-unit was defined by Hunt (1977) as the single main clause plus whatever other subordinate clauses or non-clauses are attached to, or embedded within, the one main clause.

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