

WRITTEN GROUP ASSIGNMENTS – EXPERIENCES WITH COLLABORATIVE WEB-SPACES

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Abstract *¾ The cultivation of writing skills is often absent from the syllabus of engineering programmes, despite engineers' apparent exposure to documentation. This is especially a pressing issue in non-English speaking countries including most European and Asian countries, where a large number of organisations have an English language policy for their in-house documentation. English is the de facto means of business-to-business communication even between non-English speaking countries. This paper describes experiments carried out with collaborative web spaces in a teaching environment to catalyse the writing process with the intention to enhance the writing skills of the students. Collaborative web spaces are shared work canvases on the web accessible by groups of students. Students can therefore simultaneously work on the same piece of writing making amendments to the document. All alterations, additions and deletions are logged making it possible to trace who did what and when. The document evolves over time and the opinions and modifications of all the active group members are incorporated into the final product. The document interaction logs were used to evaluate the respective involvement of the group members. Further, the self-regulating mechanisms of group activity and peer-review reduce the workload of the instructors as only minimal inspection is required to monitor the works in-detail.*

Index Terms *¾ collaboration, peer-assessment, writing, web-spaces.*

INTRODUCTION

The cultivation of English writing skills is often absent from the syllabus of non-English major university teaching programmes in Taiwan and most other non-English speaking countries around the world, despite fresh graduates' increased exposure to English-language documentation in their workplace. A large number of public and private companies already have an English language policy for their in-house documentation. English is the de facto means of business-to-business communication even between non-English speaking countries in the European, Latin American, South East Asian and Pacific regions. Graduates are expected to master advanced-level written English immediately after completing their University degrees. Few students, especially in Taiwan, have opportunity to learn

English first hand from staying in an English speaking country.

This work addresses these issues through experimentation with collaborative web spaces in a teaching environment to catalyse the writing process with the intention to enhance the writing skills of the students. Collaborative web spaces are shared work canvases on the web accessible by multiple students. Students can therefore simultaneously work on the same piece of writing making amendments to the document. All alterations, additions and deletions are logged, making it possible to trace what was done by which students and when. The written work evolves over time and the opinions and modifications of all the active group members are incorporated into the final essay. Strong characteristics of the composition are magnified through the collective process and weak attributes are filtered out. Weak students learn from resourced students. The writing process is thus transformed from an isolated writing activity into a socio-cultural experience even when the group members are in different geographical locations.

In addition to being a collective activity-stimulating learning, the web space provides additional benefits. First, the web interface means it naturally serves as a distance-learning platform, and students can collaborate independently, irrespective of their physical location. Second, the collaborative web-space simulates and approximates the multifaceted group work environment encountered by graduates in industry. Third, it is envisaged that the document interaction logs can be used to evaluate the respective involvement of the group members and that interesting statistics describing the working process can be collected. Further, the self-regulating mechanisms of group activity and peer-review reduce the workload of the instructor as only a minimal amount of inspection and effort is required from the teacher to monitor the works in-detail. This strategy is thus a promising approach to handling the increasing student numbers faced by the universities and engineering colleges, providing a cost effective platform for continuous student feedback and evaluation. In this project particular emphasis was placed on uncovering the parameters that stimulates student activity.

BACKGROUND

Many models for second language teaching have been proposed in the past, where the audio-visual method is one

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strategy that has gained wide popularity. Unfortunately, this and other techniques address the students' spoken skills and the cultivation of the writing skills takes a lower priority. This is because writing skills development usually and naturally follows the acquisition of basic reading skills. Often are second language writing skills not truly developed until the students reach undergraduate or even postgraduate level of study.

The typical teaching of English at University level is often performed in medium to large groups. Due to large students numbers the teaching format is usually lecture type style of teaching. For each course the students will have to submit a selection of mandatory essays. It is generally accepted that actual writing is the key to developing writing skills. However, in order to improve their skills students need immediate feedback, encouragement and correction. For large classes the "teacher marks all" scenario is undesirable because the teacher becomes the bottleneck. Individual feedback from the teacher is only feasible with a small number of students. For larger class sizes the marking job becomes a daunting, time-consuming and tedious task that teachers do not voluntarily wish to undertake. Often, it takes around three weeks from an essay is submitted by the students until it is returned by the teacher – it easily takes longer. However, the longer the interval is between the time the essay was written by the student and marked and returned by the teacher, the less impact the corrections have on the students learning process.

To overcome these difficulties it is a common practice to employ peer-review or peer-assessment of essays, where students are arranged into groups and the group members mark each other's essays. This allows the writing and correction process to become a socio-cultural activity [22] that is believed to stimulate learning.

Modern technology such as hypermedia and multimedia are increasingly being used in for general teaching [1, 4, 6, 7, 16, 18, 20] and language teaching [2, 5, 12, 14, 15, 19] contexts to increase learning. Technology can also be used to reduce the workload of teachers, i.e. the task of managing the essays, the students and their associated grades.

This study employs a natural extension of the peer review approach. There are two main differences. Firstly, an electronic medium is used instead of paper. The electronic medium allows activities to be logged and quantified for the purposes of student evaluation [5]. Secondly, the groups are to work on one essay rather than individual essays. The electronic medium consists of a web application – a collaborative web space [21]. A collaborative web space allows the students on the group to collaborate on the same essay simultaneously, irrespective of their physical location – provided they have access to the Internet. The web application is responsible for the coordination and management of the essays, their modification and teacher monitoring services. All alterations are recorded and the students have access to the entire history of modification [23]. Students are forced to

collaborate and will hopefully learn from their peers through the interaction. The geographical freedom combined with freedom of when to work is nicely complementing the emerging trend of students having part-time jobs besides their studies. The collaborative web space application attempts to enhance the sense of social navigation [8, 9, 10, 11, 13, 18] such that the socio-cultural learning aspect can be conserved despite the lack of physical presence. Social navigation is the process of navigating information, or learning, as a collaborative exercise. Social instructions narrow the learning or navigation space and provide contextually relevant information that cannot be acquired easily without prior experience.

At the same time the teacher can at any time monitor the writing activities and extract vital information and statistics regarding the essays, students individual work intensity and time-related work patterns. This can form a basis for efficient student evaluation.

ESSAY WRITING – A KEY TO TRAINING AND EVALUATION

Language learning is a complex and time-consuming process involving many curricular activities such as vocabulary building, writing, pronunciation and conversation and listening. It also includes wider range of issues such as those in the cultural and sociological domain. Each of these areas of language learning is a huge topic in itself and this paper addresses one of these, namely writing – in particular, English writing. Writing involves training and sharpening the writing skills of the students using the target language. Writing is closely intertwined with other areas of language learning, especially reading. Writing can be viewed as the most advanced level of language learning. The first level of language learning is mastery of simple dialogue, whilst writing requires more academic skill as the written word is prone to scrutiny. Written language should be perfect – or close to, while more severe mistakes can be permitted during informal conversations.

It is generally accepted amongst educators that the cultivation of writing skills requires practice. The most common format for writing practice is the essay. An essay is a generally a shorter piece of writing on a set topic. Essays are read, corrected and assessed by the instructor. These corrections provide feedback to the student enabling them to identify weak spots and particular problem areas on which to focus their attention.

MANUSCRIPT SUBMISSION

This section reviews methods for retrieving manuscripts, evaluating the essays and providing feedback to the students.

Paper manuscripts

Traditionally, essays have been submitted to the teacher in the form of paper manuscripts. Either as a workbook, or a

portfolio, containing a growing collection of essays, or as individual essays on sheets of paper stabled together. Essays were traditionally carefully and painstakingly handwritten in blue or black ink. Some students would even use a typewriter to beautify their essays and improve the readability. During the last two decades the emergence of cheap personal computers has allowed an increasing number of students to provide their written work on printouts of word-processed essays. The word-processor has made life much easier for the students as it enables them to edit the text and reorganize the content without having to laboriously scribble down each revision by hand. In addition, modern word processors provide several tools of language checking such as spellcheckers and grammar checkers.

Common to all paper-based methods is that the teacher reads the paper submission and adds suggestions, corrections and comments directly to the manuscript using a red, highly visible, pen. In addition the teacher must administer the results by crosschecking and updating class lists. Paper based submissions can be heterogeneous in nature unless a strict formatting regime is imposed, as students use different type of paper, organisation and formatting styles. Also the students have to physically deliver the essays in person, and the teachers have to physically collect the essays.

Email manuscripts

During the last decade, electronic mail, or email, has become the de facto way of communicating, and most students are comfortable and proficient using this technology. Some students and teachers are using email as a courier for essays. Email has the following advantages: Students can submit their essays to the teacher from nearly anywhere and at anytime before the deadline. Teachers have more flexibility when collecting the essays. Further, an email message is tagged with the originator of the message providing a reliable mechanism for authenticating the origin of the submission. Further, emails are time-stamped as they are routed through the Internet. The timestamps provide evidence of when the essay was submitted.

On the downside, not all word-processing systems are compatible, and a teacher may encounter problems reading an essay written using a different word processor from the one used by the teacher. In addition, word-processed essays impose a security risk, as some word-processing files contain viruses. Further, an email submission from a student arrives in the teacher's inbox together with all of the teacher's other email messages, and there is a chance the email may be "lost" or forgotten by the teacher. One way of overcoming this is to use an email filter where the students provide a given keyword such as "English essay" in the title of the message, and the email program is set up to pick out such messages and move them to a dedicated "essay" folder, analogous to a box of essays outside the teacher's office. In practice, students frequently do not adhere to such "advanced" submission instructions, either as they forget, make a mistake or simply do not know how. Thus, a more

direct and structured approach is called for. Common to both email and paper submission is that students frequently forget to provide vital information such as their name. Also, email submissions shift the responsibility of printing out the essays to the teachers, for those teachers who insist on marking paper manuscripts. With a large number of students this can become a noticeable expense. Obviously, printout expenses do not apply to electronic feedback.

Web form submissions

The objective of this work is to overcome some of the difficulties mentioned in the previous sections, by employing a web based form for the submission of essays. During the second half of the last decade, the Internet, web, web browsers and web technology have become commonplace and most students have access to a computer and the Internet. The requirements for the web based submission system include the following:

- Acquire a consistent and homogeneously formatted set of essays. This will speed up the evaluation and marking, as teachers can build up a marking routine and avoid unnecessarily searching for information such as names and email addresses.
- Facilitate the provision of a complete and faultless set of essay data. The purpose is to prevent students from forgetting to provide certain information by supplying a structured form with clearly labelled data entry fields and clear instructions, and mechanisms for providing students with immediate feedback if fields are incorrectly filled in or not filled in at all.
- Provide a reliable way of time-stamping the submissions. This is to avoid "bargaining" with students regarding penalty reductions of marks due to late submissions. A fair penalty policy can be imposed. It is also possible to automatically close the submission form at a set time, say, two days after the deadline.
- Avoid incompatibility problems usually associated with different word processors using different proprietary and incompatible document formats. The form should store the essay as unformatted standard ASCII text.
- Avoid the spread of computer viruses. Since only textual information is exchanged, the spread of viruses are greatly reduced.
- Provide geographic freedom. Students can submit their essays from anywhere, and the teacher can retrieve the essays from anywhere.
- Constrain the length of essays. Some students write essays that are too short. However, of concern to the teachers are those students that write unnecessarily long essays, essays that take a long period to read. The web form should automatically notify the student that an essay submission is too long and thus is not registered. It must be reduced by certain amount of words in order to be accepted.

- Simplify workload balancing. Sometimes it is not convenient for one instructor to assess all the work of a class given certain time constraints. In these situations the assessment can be distributed between different teachers. The web-based approach simplifies this distribution job.
- Enable consultancy. Occasionally, an instructor comes across unusual passages of writing in which the instructor may be uncertain. The instructor can then email the query to a teaching colleague – a colleague that perhaps is located in a different teaching institution or even in a different country (native language experts).

Essay management

A web form can also assist the management of essays and student information. Firstly, the coherent and consistent collection of essays simplifies queries such as: Who submitted? Who did not submit? Who submitted after the deadline? Such queries are rather time-consuming and cumbersome to answer based on paper or email submissions. Secondly, it is desirable that the system supports integrated setting, computation and management of grades and pass-lists.

METHOD

The study was carried out with a writing class in Cheng Kung University in Tainan, Taiwan. The class comprised 18 students that were split into 6 groups of 3 students each. The groups were selected based on previous coursework so that the groups would have a heterogeneous composition with students of various skill, sex and background. The groups were given 10 days to complete the essay.

The web space consisted of a server-side web-application written in Java based on JSP (Java Server Pages [3]). Each student were given a unique username and password and had to log into the system in order to work on the essays. Once in the system the students are immediately presented with the most recent essay. This essay can be altered and resubmitted. It is always the most recent submission that is presented to the user. The web-space also presents a hyperlinked revision history of the essays where the students can go back and track the development and perhaps base modifications on a previous version. The revision history is organised on the identity of author enabling the student to know who did what. Each essay shown also lists the author and the date of submission.

The web space also has a teacher portal where the teacher can monitor the student activities. The teacher has access to all the groups and all the revisions of each group.

Both quantitative and qualitative data were collected during the experiment. The web space keeps a copy of all the essays that is used for qualitative evaluation and the web-server assimilates quantitative access statistics that reveals the work patterns of the students, i.e. which students did what and when. After the essay was due the students

also had to fill in a questionnaire. The objectives of this study was to shed some light on the following:

- If students are given geographical and timely freedom to work what would their natural work patterns be? Can this knowledge be used to improve the learning environment for students?
- Can collaborative web-spaces be used to assist students in developing their writing skills? Can students learn from the other group members? To what extent should the teacher intervene? Should the role of teacher change?
- How can the access statistics be used to evaluate the students? Are there certain dominant patterns of behaviour emerging that can be used as indicators? Can we formulate a quantitative numeric model for evaluation?
- How should such writing activities be orchestrated and choreographed to best stimulate the learning process?
- What requirements should be imposed on such educational software? What is missing, what is superfluous and what is working?
- Is socio-cultural learning present in this distance based collaboration activity?

The students were asked to complete a questionnaire in-class after the close of the deadline. The questionnaire addressed the students' experiences and opinions regarding the writing activity.

TABLE 1:
COLLABORATIVE STATISTICS

| Group | 1 | 2 | 3 | 4 | 5 | 6 |
|-------------|----|----|----|----|----|----|
| Student 1 | 5 | 27 | 12 | 19 | 22 | 43 |
| Student 2 | 5 | 8 | 12 | 20 | 8 | 13 |
| Student 3 | 3 | 6 | 4 | 9 | 5 | 18 |
| Total | 13 | 41 | 28 | 48 | 35 | 74 |
| Transitions | 8 | 11 | 14 | 17 | 11 | 16 |

EXPERIENCES USING THE WEB-SPACE FOR ENGLISH WRITING ASSIGNMENT

This section addresses the issues that emerged during the course of evaluation. Table 1 shows the statistics that emerged during the 10-day experiment. Rows 2, 3 and 4 list the number of submissions made by the individual students and row 5 lists the total number of submissions for each group. The groups collectively submitted between 13 and 74 revisions of their essay. The smallest number of contributions was 3 and the largest number of contributions was 43. There is a difference in activity level within each group, but the less active members of the active groups were more active than the less active members of the less active groups. It is possible that the activity level of active student members influences the less active group members in a positive manner.

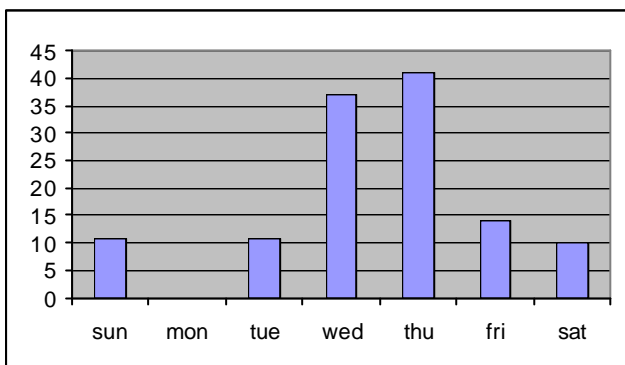


FIGURE 1:
WEEKLY STUDENT ACTIVITY PATTERN

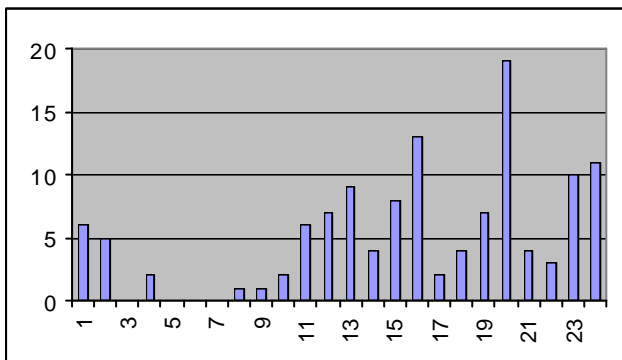


FIGURE 2:
HOURLY STUDENT ACTIVITY PATTERN.

The sixth row lists the number of author transitions in each group. An author transition occurs when an essay is handed from one author to another. A high author transition indicates active collaboration within the group. This number is a more realistic measure than the number of revisions since some students modify the essay several times consecutively without the interaction of the other group members. As can be seen from the table, the number of transitions is more even across the groups, ranging from 8 to 16.

Figures 1 and 2 illustrate the weekly and hourly activity levels of the students. Students work more intensively around and before the deadline (Friday), and there is little activity at the weekend and at the beginning of the week. The hourly work patterns indicate that the students do coursework in the afternoon and evening, especially before dinner at 5pm and after dinner at around 8pm and then again at 10 to 12 pm.

An analysis of the completed questionnaires revealed that no students directly disliked the collaborative writing activity, 52.9 % of the students said the activity was ok and the 47.1 % thought it was either a bit interesting (17.6 %) or interesting (29.4 %). Further, a massive 47.1 % of the students agreed that writing activities help to improve one's language skills, and 52.9 % of the students claimed to always look at the teacher's comments when they receive marked essays with comments back from the teacher. This

confirms the students' strong desire and need for feedback on their work. Surprisingly, 52.9 % of the students thought that the grade is not important. This further indicates that a system that gives students immediate feedback on the work is better than the classic graded coursework where the feedback is returned to the student after long periods of time.

It is quite interesting to observe that 2 students (11.2 %) thought that the input from peer students during the collaboration did not help them, while 47.1 % thought the peer students' comments make no difference, and the remaining students thought peers' comments helped them improve their language. This could be due to the way the groups were composed, as some students were more linguistically mature than others, and these students might find the process frustrating and restricting at times. For students at the lower end of the scale the benefits are obvious. As for the students in the middle with approximately the same language level, they do learn a lot from the collaboration process as they all know different things and have strengths covering different domains. As one example, vocabulary is very much a result of prior individual experiences and the collaboration helps students exchange this knowledge.

Finally, 88.2 % of the students indicated that they had no particular preference towards submitting their essays online, while 41.1 % of the students enjoyed reading peer students' work online.

Qualitative Findings

The facility for restricting the word length appeared to be very useful from the teacher's point of view, as no long essays were encountered during evaluation. However, it is not evident how this appeared to the students as no feedback was received. One can easily imagine the frustration of a student, ignoring or missing the length restriction and working away on a long essay, only later to discover that the essay is too long and then have to rewrite to make it shorter. However, it is the responsibility of the student to identify all the requirements of the assignments. Further, the ability to write with length constraints is a skill to be acquired.

The geographic freedom provided by the system was a great asset to both the teacher and students. The teacher was not bound by a specific location when retrieving the essays. This was particularly useful as the teacher was in a situation requiring mobility, teaching at different sites. The questionnaires elicited from the students revealed that students welcome such novel writing experience, even though at times system access was slow due to overloaded university internet connections. Almost all students would rather choose to work collaboratively than to work alone. The most challenging issue during the writing activity, as agreed by some students, was to decide upon a final manuscript. This is understandable, but such a challenge can become a prerequisite for further and better collaboration, hence forcing students to work even more wholeheartedly.

Several of the students commented that it was hard to come to a common consensus on the final manuscript and they would like to have stronger support for some kind of information exchange beyond the essay itself – for example, comments fields where students can comment essay or built in discussion groups or online chat. It was also pointed out it was hard to find a common time slot for carrying out the activity that would suit all the group members.

Further, most students commented that they learned from reading the other essays and got good ideas. However, a couple of students complained that not all the students were interested in collaborating and that they ignored other groups members completely.

The experiment also revealed some surprising results. A couple of students entered their essays into the form using double line spacing. This occurred in the class of mature students that the teacher had taught in the preceding term using paper-based essay submissions. During the preceding term the teacher had requested the students to format their essays with double line-spacing providing space for comments. Thus, students may have assumed that this applies to the web-based form as well. The remaining students had probably either forgotten about the double line spacing requirement or realized intuitively that this requirement did not apply to the electronic version of their essays.

Finally, one student pointed out that 2 weeks would be more suitable to carry out the activity than the 10 days given.

CONCLUSIONS

This paper describes experiences using a collaborative web-space for implementing English writing student activities. The writing tool allows the students to collaborate irrespective of geographical location and with few constraints on time. The collaborative writing process stimulates socio-cultural learning, and the students have to exercise self-criticism and peer assessment, placing less strain on the teacher.

REFERENCES

- [1] Agrew, P. W., "Multimedia in the Classroom", *Allyn and Bacon*, 1996.
- [2] Brooks, D. W., "Web-teaching: A guide to Designing Interactive Teaching for the world wide web (Innovations in Science Education and Technology)", Plenum Publishing Corporation, 1997.
- [3] Callaway, D. R., "Inside Servlets 2nd edition – Server Side Programming for the Java Platform", Addison Wesley, 2001.
- [4] Goshka, K., M., Riedling, E., Radinger, W., Falb, J., "Using Database Backed Web Applications for the Implementation of Interactive Tutorials on WWW", Proceeding of the International Conference on Engineering Education ICEE98, August, 1998..
- [5] Jian, F. H-L., Teaching Taiwanese tones in a multimedia framework, Proceedings of the 3rd International Conference of ROCMELIA'99, pages 153-157, Kaohsiung, Taiwan, December, 1999.
- [6] Lo, D., Liao, W-T., Chen, M-S., "An Interactive Language Learning System in the Web", Proceeding of the International Conference on Engineering Education ICEE 2000, Taipei, Taiwan, August, 2000.
- [7] Midkiff, S., F., DaSilva L. A., "Leveraging the Web for Synchronous Versus Asynchronous Distance Learning", Proceeding of the International Conference on Engineering Education ICEE 2000, Taipei, Taiwan, August, 2000.
- [8] Dieberger et al. (2000), Social Navigation: Techniques for Building More Usable Systems, *Interactions*:7(6), Dec., pp. 36–45.
- [9] Dieberger, A. and Bolter, J. (1995) On the Design of Hyper "Spaces". *Communications of the ACM* 38(8): 98.
- [10] Dourish, P. (1999), Where the footprints lead: tracking down other roles for social navigation, in Alan J. Munro, Kristina Hook, & David Benyon (eds.) *Social Navigation of Information Space*. Springer-Verlag London Limited, London, pp15-34.
- [11] Eklund, J., Eklund, P. (1997), Collaboration and Networked Technology: A Case Study in Teaching Educational Computing. *Journal of Computing in Teacher Education* :13(3) p14-19 Apr.
- [12] Gitsaki, C., Taylor, R. P. (2000), *Internet English. www-based communication activities*, Oxford. Oxford University Press.
- [13] Hill, Stead, Rosenstein & Furnas (1995), Recommending and Evaluating Choices in a Virtual Community of Use, Proceedings of CHI'95 Conference on Human Factors in Computing Systems, ACM Press.
- [14] Keating, A. B, Hargitai, J. (1999), *The wired professor. a guide to incorporating the World Wide Web in college instruction*, New York University Press.
- [15] Ko, S. S., Rossen, S. (2001), *Teaching online. a practical guide*, Boston, Mass. Houghton Mifflin.
- [16] Lederer, N. (2000), New Form(at): Using the Web To Teach Research and Critical Thinking Skills. *RSR: Reference Services Review*:28(2) p130-53.
- [17] Lueg, C. (2000), Supporting social navigation in usenet newsgroups. In *Social Navigation: a design approach? Workshop at the ACM SIGCHI Conference on Human Factors in Computing Systems (CHI 2000)*.
- [18] Pieters, J. and de Bruijn, H. (1992). Learning Environments for Cognitive Apprenticeship: From experience to Expertise. In P. Kommers, D. Jonassen & J. Mayes (Eds.), *Cognitive Tools for Learning*. Berlin: Springer-Verlag.
- [19] Rosellini, J. J. (1997), Untimely Observations on Using the World Wide Web in Teaching German Composition and Conversation. *Unterrichtspraxis/Teaching German*:30(2) p200-205.
- [20] Schacter, J., Fagnano, C. (1999), Does Computer Technology Improve Student Learning and Achievement? How, When, and under What Conditions? , *Journal of Educational Computing Research*:20(4) p329-43.
- [21] Starr, Ackerman & Pazzani (1996), Do-I-Care: A Collaborative Web Agent, Proceedings of CHI'96 Conference on Human Factors in Computing Systems, ACM Press.
- [22] Wallace, B. A. (1997), An Understanding of the Role of Socio-Cultural Learning: Using the Past To Maximize Potential for Future Academic Success, Proceedings of the Annual Meeting of the Mid-South Educational Research Association, Memphis, TN, November 13.
- [23] Wexelblat, A. (1998), Communities through Time: Using History for Social Navigation, in *Community Computing: Collaboration over Global Information Networks*, Toru Ishida (ed.), John Wiley & Sons.