Effectiveness of Organised E-mail Exchanges and Online Reading/Writing on College Students' Literacy Development and their Attitudes towards English: A Study from Saudi Arabia

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Abstract
Being a quasi-experimental study, this study explored the effectiveness of organised email exchanges and online reading utilising webquests on developing reading and writing of college students. The study explored the effectiveness of organised emailing and webquesting on college students' attitudes towards learning English in a Saudi university. The underlying premise is that e-learning can assist foreign language students in their progress in reading and writing. The study employed a four-stage model integrating organised emails and webquests in an inquiry-based learning approach. Findings indicate that the model is effective in ameliorating reading and writing of college students, especially when integrated with collaborative learning, all in a problem-solving inquiry-based learning environment. Findings also indicated improved attitudes towards English upon utilising this collaborative, enquiry-based learning

model.

Introduction

Resources in online e-learning environments, from online support for traditional classes to online courses and full online degree programmes, can efficiently induce significant improvements in learning, especially the use of synchronous and asynchronous communication methods in higher education institutions (Andrews & Haythornthwaite, 2007). One such application is the electronic mail (e-mail for short) which has suffered from a paucity of research in the field of composition theory. Electronic mail is defined as "an electronic communications system that is used to send information from one person/site to another (one-to-one communication) or from one person to many people at the same time" (Cross and Raizman, 1986, p.3). In its pedagogical context, D'Souza (1992, p.22) defines email as a programme that "uses computer text–processing and communication tools to provide a high-speed information exchange service" which can have strong, effective applications in teaching reading and writing. This is because one of the most prominent features of e-mail communication lies in its ease of editing, storing, duplicating, and delivering or distributing (Huff, Sproull & Kiesler, 1986). This feature, when combined with its suppressing of social cues, lends itself to the flexibility both in the content scope in which e-mail functions and in the direction information flows. Pedagogical applications of emailing for literacy development have been theoretically contemplated (e.g. D'Souza's, 1992; Warschauer, 1995).

McComb (1994) has argued that critical learning occurs when students are engaged in critical reflection on their personal, political, and social lives. E-mail communication seems to promote a "pedagogy that encourages students to be active creators of, rather than passive to,

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society" (p. 157). Furthermore, learning activities, from this perspective, come from students' concerns and interests, and occur in reflection and interactions. It has also been confirmed in Chiu's study (2005) that email communication, when pedagogically employed, can lead to better classroom interactions and creative learning. This can also improve and build up students' confidence and facilitate their writing skills in literacy classrooms. Hiltz, et al. (2007) relevantly indicate that the field of Asynchronous Learning Networks (ALN) integrates social and technical aspects, linking together teachers and learners in e-learning circles, especially if these groups are involved in collaborative social/ pedagogical processes emerging from the communication that is supported by the technology.

Further, it is surmised that e-mail technology can positively help students bridge the gap between "skill-getting and skill-using", borrowing the expression from Rivers (1975, p. 12). Omaggio-Hadley (1993) observed that the use of computers and computer-assisted instructional programmes in teaching foreign and second language composition is one relatively recent development in writing instruction, and it is so much so that preliminary experiments affirm this apt observation. Earlier, Smith (1999) found that, upon comparing two writing instruction methods - one computer-mediated and the other traditional, "the computer users improved significantly in their ability to read and express oral and written ideas" (pp. 80-81).

Studies by Neu and Scarcella (1991) Phinney (1991), and Thaipakdee (1992) all found that students had positive attitudes towards reading and writing with computers and less apprehension about writing, and more importantly, students developed better attitudes towards reading and writing with computers; this corresponded with better writing.

By the same token, Tao (1995, p.7) reviewed the literature and investigated "the still nebulous area of e-mail implications" in literacy learning. He indicated that:

"(1) in reducing the social cues and enriching functions of easy editing, storing, and manipulating, e-mail lends itself to more user-control and user responsibility; (2) e-mail is capable of bringing traditionally peripheral persons into the instructional mainstream; (3) e-mail offers users chances to develop positive attitudes but can also touch off some undesirable behaviors; (4) due to its reduced sense of presence, e-mail communication exhibits some sense of anonymity and depersonalization; (5) e-mail is direct, straight forward and more self-centred; and (6) anecdotal reports suggest that e-mail might have effects on social behaviors such as collaboration and motivation, metacognitive aspects central to the learning process especially in writing".

In addition, Stein and Stein (1995) revealed three rationales that function as the theoretical framework of e-mail-based literacy development and instruction:

Rationale 1: The e-mail training and assignments are embedded in the context of the overall language class objectives.

Rationale 2: Throughout the e-mail training, the instructor provides the participants with scaffolds of how to compose a message, how to send a message, how to receive a message and how to save a message by downloading it or printing it.

Rationale 3: E-mail instruction works best with training with awareness. Further e-mail applications e.g. delete a message, a folder, change user password send the same message to multiple users (with cc), are then

introduced as students become expert e-mail users.

Important as this medium is, as having become our principal, steadfast form of organized communication, it has not yet been adequately studied (Hawisher & Moran, 1993; Tao and Reinking, 1996; Schaefer & Dillman, 1998; Blase, 2000; Rodrigues, 2007).

In the field of literacy education, research is on the increase in e-learning and online education (Anderson & Lee, 1995; Bolter, 1991; Reinking, 1994; Harris, 1994; Andrews and Haythornthwaite, 2007); yet, literacy research in e-mail and its impacts on literacy acquisition seem at most scanty and hardly begun.

Given our recognition of the so-called mystique of e-mail, however, the empirical testimony for using e-mailing to enhance the processes of reading and writing online is scarce, and may perhaps be nonexistent among those learning English as a foreign language in our Arabic-speaking community. Even in non-Arab environments, only a few studies have been conducted in the United States delving into the impact of the electronic mail and the uncovered promises that it may have for writers in English (Anderson and Lee, 1995; Lee, 1994; Mabrito, 1991; McKay, 1989; Traw, 1994; Warschauer, 1995; 1996). Some of these studies explored the influence of e-mail as to cooperative learning and interaction in literacy (Allen & Thompson, 1995; Smolenskey, et al., 1990; Kern, 1995; Fey, 1994; Reiss, 1996), while other studies emphasized the effect of e-mailing on cognitive development as related to language (Kaufman, 1998). Hawisher & Selfe (2007) , therefore, call for a critical review of the 'pedagogical enthusiasm to new technological innovations' in order to shift researchers' focus from the technology itself to the ways in which such technologies shape and are shaped by students and teachers, rhetorical and pedagogical contexts, composing products

and composing processes (Snyder, 2007; Whitworth, 2007; Hawisher & Selfe, 2007).

Furthermore, as tacitly voiced in Tao (1995, p.22) and further work (e.g. Rodrigues, 2007), the e-mail impact on the cognitive aspects of literacy acquisition and instruction still remains unclear.

The purpose of the present study was to look for empirical testimony for the most important role of e-mailing in enhancing the basic reading and writing skills through using grammar checkers, spellcheckers, dictionaries, etc. available in the compose box, and developing intercultural communication in EFL learning in Saudi Arabia. As well as this, it seeks to integrate online reading using a webquests model with email exchanges in reading and writing learning to check their effectiveness on developing under-developed skills, as well as the students' attitudes towards EFL.

This study further seeks to recognize students' attitudes towards English as a foreign language. Many a researcher has claimed a strong relationship between students' attitudes towards language learning and achievement rates; they concluded that students' attitudes are an integral part of learning and that they should become an essential component of second/foreign language learning pedagogy (Weinburgh, 1998; Gardner, 1985; Gardner & Lambert, 1972). The premise that the importance of attitudes assumes in learning is that 'Cognitive theories of learning will be rejected unless a role is assigned to affectivity' (Brown, 1994: 134). However, Internet-based Instruction (IBI) for language learning was found to have varying effects on students' attitudes towards foreign/second language instruction. In Chen's study (2004), 1,026 freshmen and sophomore students in Taiwan developed positive attitudes towards educational technology use for EFL instruction. In a similar

vein, Felix (2001) reported that on the whole, students were positively inclined to working with the web and found it useful, with the majority preferring to use the web as a supplement to face-to-face teaching. Furthermore, intermediate level community college ESL students and teachers expressed very positive attitudes toward using IBI (Schnackenberg, 1997). Some of this research indicated age and gender differences that explain variation in enhanced attitudes.

Context of the Study

Based on the experience of the researcher as an instructor of English language skills courses, especially writing and reading, and on the low scores achieved on these two skills by the population of the study, the problem of underachievement in reading and writing skills appears prominently worthy of treatment. Students regard their reading and/or writing classes, in their traditional delivery methods, as courses in which they are offered reading passages in class or as homework, or they are assigned titles for essays and short paragraphs to write about comfortably at home, submitting samples of their writing to the instructor who, in his/her turn would instruct them in some of the skills of the academic year in a uni-directional fashion; i.e., with students; in this approach writing and/or reading is a product. The problem of the study is therefore summarised in the following research questions:

What is the effectiveness of an instructional programme grounded in email exchanges and reading online on developing reading and writing skills among students of English? How does using e-learning in this programme affect the students' attitudes towards English?

Importance of the Study

This study is based on the premise that e-learning can assist foreign language students in their progress in reading and writing skills. Empirical testimony to support this observation is needed as voiced in some studies (Tao, 1995; Tao & Reinking, 1996; Anderson, 2002; Baron, 1998; Smith, 1999).

This study, therefore, describes the impact of e-mailing on how well participants will acquire basic reading and writing skills and subskills, predetermined as lacking in those students, and how this delivery medium would affect the students' attitudes towards learning English. Furthermore, this study is based on prior rationale research, which supports the use of Internet-based instruction (IBI). Evidence from prior research suggests that this environment supports active, collaborative learning and the construction of knowledge (Killins, 2002). The study is important to the field of English language teaching for the following reasons:

1. This study is conducted in line with the international trend of computerized education followed in advanced countries in all stages of education; trends include computer-based learning and internet-based learning and instruction;

2. There is a paucity in research studies in Arabic literature, especially in Saudi Arabia, which tackle Internet-based instruction (IBI); research is very meager or non-existent here in Saudi Arabia.

3. The findings of the study may contribute to enhancing and developing new courseware that can be effective for teaching and learning reading and writing skills, given that the College of Languages and Translation will soon shift to an e-learning paradigm in the next few years.

4. The findings of the study may contribute to constructing new

learning models and instructional designs appropriate for EFL skill instruction which could be new assets to the theory and practice of e-learning in English language Teaching (ELT).

Research Methodology

A. Subjects and Sampling:

A typical university classroom of IV-level students enrolled in the English department constitutes a representative population. Sampling was purposeful: thirty male students were selected on the basis of their basic computer skills (as measured by a computer skills questionnaire[1]) to participate in the experimental group. Other participants of the same level were randomly assigned to the control group.

B. Experimental Design:

This is a qualitative/quantitative study of the effectiveness of Internet-based learning and instruction. The study utilizes a model grounded in the WebQuest theory and involves online reading and e-mailing for developing reading and writing skills in EFL students. The experimental design used in this study is of the type: Pretest-Posttest Control Group Design (Gay, 1996).

  This design involved one treatment group; the experimental group which received instruction into reading and writing skills for the academic year 2007-2008. An instructional design underlying the teaching method was devised based on the WebQuest model by Bernie

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[1] This is a questionnaire aiming to sort students who are regular attendants of English majors at Level IV. The questionnaire is set in three sections; it starts with gathering demographics of the students, then, in section one, it seeks student information as to whether students have computers at home or not and what type they are, whether they are connected to the Internet or not, and their experience and attitudes towards computers. Section two of the questionnaire gleans information about students' computer skills, i.e. keyboarding skills, file management, word processing and operation systems. Section three seeks information as to skills of using the Internet and e-mail, i.e. basic knowledge of the Internet and frequency of using e-mailing for correspondence.

Dodge and developed by the researcher and the incorporation of email as a useful technique for developing reading and writing skills (Dodge, 1997; 1998).

Data were analyzed using t-tests, mean scores, One-way Analysis of Co-variance (ANCOVA); other statistical methods used included averages, weighted percentages, Chi^2 and qualitative data analyses. Qualitative analyses were done using students' e-logs and the instructor's diary. E-logs are peer-review assessment sheets with items scaled from awesome to aweless on a five-point Lickert Scale to peer-evaluate learners' performance during the session and after. The teacher's diary is essentially a diary where one would record one's classes, the activities and language being taught, the problems experienced and so on so that over time one can build up a reference book of problems and their solutions, useful activities and such like. After each session, the researcher jotted down whatever happened during the e-session in his diary to make amendments and modifications in the e-workbook which contains the session plans for e-learning.

Limitations of the study

The present study is constrained by the following delimitations:

1) The sample of the study, which consisted of male students only due to the nature of the segregated educational system in the country, included the IV Level Writing majors for the academic year 2007/2008;

2) The instruments of the study;

3) The statistical measures and instructional methods used in the study.

C. Procedures of the Study:

With students having attained Level IV, still some of the reading and writing skills are either missing or weakly developed. The researcher conducted a Reading/Writing Questionnaire to recognize the reading and writing skills direly needed by the students of the English department. This study sought to check the effectiveness of varied instructional delivery medium on learning outcomes and the students' attitudes towards learning English in this context. Therefore, an e-course utilizing webquests, an inquiry-oriented activity in which most or all of the information used by learners is drawn from the Web, and e-mail were developed based on the core skill areas and the sequence of the traditional course for developing basic reading and writing skills.

The Instructional Model

There have been so many models of incorporating e-learning in the EFL curriculum; in the field of ELT, many attempts have been exerted to transform the traditional classroom into computer-based, computer-mediated, and Internet-based media of instruction. Further, ELT methodologists in collaboration with technologists looked for the advantages of the World Wide Web not only as a medium of instruction, but also as a source of courseware and content for ELT, either in native speaker communities or in contexts where ELT is delivered as ESL or EFL (e.g. Dodge, 2003a; 2003b; Bartoshesky & Kortecamp, 2003; March, 2004; Menchaca & McVicker, 2003).

This is a procedural model that integrates the benefits of e-mailing and webquests for enhancing writing skills with online reading as an inquiry-based learning approach. The model is grounded in the webquest theory, and was developed in this study in order to develop reading and writing. A 'WebQuest' is a constructivist approach to learning, and is

operationally described as follows:

> 'Students not only collate and organize information they've found on the web, they orient their activities towards a specific goal they've been given, often associated with one or more roles modeled on adult professions. Since students have to participate in the elaboration of their learning strategies, the level of autonomy and creative production they attain is increased. With the proper guidance and "scaffolding" students can accomplish far more actual learning than in traditional transmission-of-knowledge situations that so often leave them wishing they were anywhere but in the classroom (Benz, 2001, p.12).'

E-mailing, however, is operationally defined as the first stage of the webquesting model when students sign in to their accounts or their team accounts to get introduced to the topics of the webquests used in the literacy development classroom, or to get instructions as to their e-sessions. It is also the last stage of the model when students submit copies and/or samples of their work to other teams or to colleagues or to the instructor.

To summarise, this is a circular model for teaching online reading/writing in collaborative teams based on the notions of constructivism and inquiry-based learning. The design moves around six stages diagrammatically depicted in *Figure 1* below.

Many studies agree that e-mail communication seems to lend itself well to collaborations of various kinds (Fey, 1994; Mabrito, 1991; Schwartz, 1990, Selfe, 1990; Spitzer, 1989; Traw, 1994). Collaborations of any kind involve interactions with other people within society. Since social interactions are believed to affect literacy acquisition (Vygotsky, 1978),

the possibility of collaboration offered by e-mail communication provides a viable means for understanding e-mail's potential in promoting literacy acquisition. This type of collaboration among students in sharing their perceptions and enhancing understanding of others provides the true context for meaningful writing.
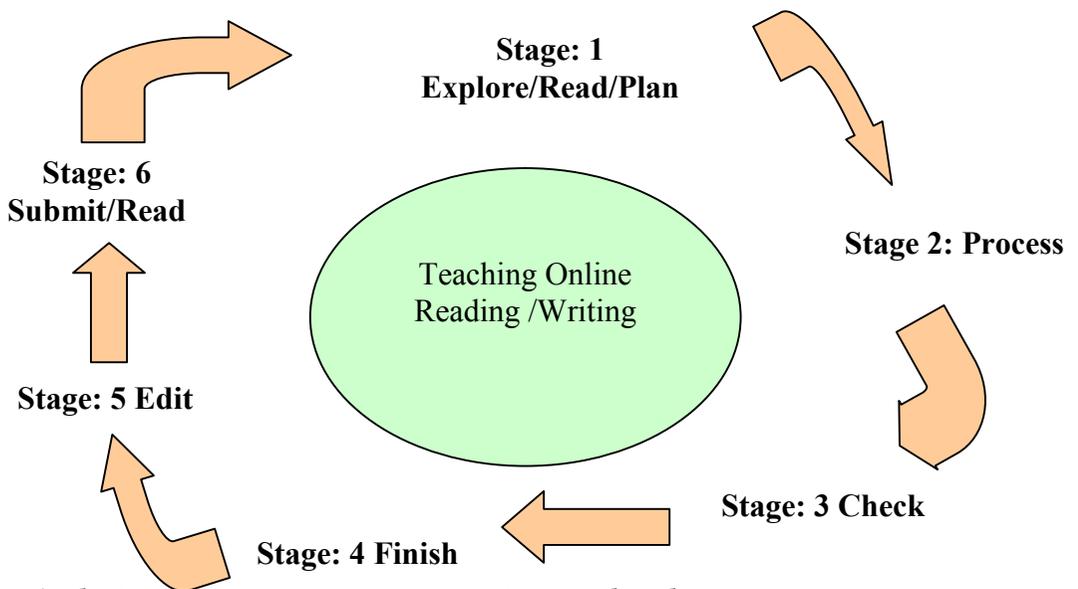
Stage: 1
Explore/Read/Plan

Stage 2: Process

Stage: 6
Submit/Read

Teaching Online
Reading /Writing

Stage: 3 Check

Stage: 5 Edit

Stage: 4 Finish

Figure 1: *the instructional moael grounaea in e-mail exchanges*

Stage 1: Explore/Read/ Plan

At this stage, students explore the Internet and read online using webquests to explore the topic of the writing. To plan their outline for their writing, they will explore the online materials they have collected, and in their respective teams, they brainstorm ideas for the paragraphs / essays as to what to cover, how to cover it, and how to devise an outline for the writing project. Students at this stage should filter the bulk of ideas they obtain and choose amongst them, e-mailing to one another what each of them has decided. Here at this stage, the instructor initiates the webquesting process, which should proceed as follows:

Introduction:

The introduction section provides background information and motivational scenarios such as giving students roles to play, e.g. "You are an underwater research scientist" or "You are an astronaut planning a trip to the moon." It also provides an overview of the learning goals for students. The goal of the introduction is to make the activity desirable and fun for students. When projects are related to students' interests, ideas, past experiences, or future goals, they are inherently more interesting. The goal of the motivational component is to engage and excite students at the beginning of each WebQuest.

Task:

The task is a formal description of what students will have accomplished at each stage of the webquests; e.g. Log online to www.google.com. Search for the entry 'astronauts' or 'voyage to the moon'.

   Having been guided to the essay topic, the teams find resources for that particular topic on the Web. Then, the instructor devises an activity for the students that incorporates the information from the various sites. This

task should be doable and interesting.

Stage 2: Process

This is the 'explain/expand/support' phase. Students in their respective teams seek to synthesise, expand, and provide justifications and in stage 4 edit their final product.

At the step of explanation, students analyse (a step back to stage 1 and forward to stage five) and synthesise their preliminary notions. Then in the step of expansion, they apply their agreed upon ideas and extend them. In the support step, they give reasons as to what they select and provide justifications for or against such ideas in team discussions.

The instructor provides ideas, feedback and support when necessary. This is a description of the steps learners should go through in accomplishing the task, with links embedded in each step. Step three of the webquesting model by Dodge (1997), known as Resources, is fitting here; this section of the WebQuest consists of a list of the resources (bookmarked Web sites, print resources, etc.) that the students will need to complete the task.

Stage 3: Check

This is the 'test/assess/evaluate' stage; in this stage, students apply the evaluation criteria for their finalised writing products. Evaluation criteria cover language, style of writing, critical thinking/critical reading, resource management, and content (quality/quantity). Students will peer-review their writings in teams according to a set of standards and indicators. There is also ongoing evaluation where teams exchange their writings with one another within their respective teams through email, and to other teams and the instructor via the secretary of the team, using

their CHECK tools.

The instructor at this stage evaluates the students using a follow-up/ reporting form: here, the plan is that the instructor looks for how the students:

- Depict (decide, choose);

- Collect (download, classify, save;

- Analyse (Explain, give reasons, support);

- Synthesise (read extensively, read critically, author);

- Evaluate (self-review, peer-review, instructor-review);

- Finalise (edit, check for style, double-check for language and mechanics, conclude)[2].

Stage 4: Finish

This is the 'Conclude/Suggest/Recommend' stage. Students, having finished their writing products, then write the last draft, and teams suggest to one another points where change is most likely to be advantageous (intra-team finishing and inter-team finishing); they would also recommend new ideas or language corrections where necessary.

The instructor at this stage moves about and suggests necessary changes; additionally, this can also be done via email with feedback sent to the students.

Stage 5: Style

This is the 'edit/change' stage, featuring new suggestions and recommendations from teams (intra/inter-team recommendations) and from the instructor sent over email. This phase of the model is associated with the conclusion step in Dodge's webquesting model, allowing for

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[2] These ideas are the researcher's, further developing the WebQuest paradigm.

reflection by the students and summation by the teacher. Setting aside time for discussion of possible extensions and applications of the essay honours the constructivist principle: "We learn by doing -- but we learn even better by talking about what we did." During the concluding section of Webquests, the instructor can encourage the students to suggest ways of doing things differently to improve the essay.

Stage 6: Submit

Having edited the final version against the newly received feedback, students submit it to the instructor/peer for review. This is the stage now termed present/feedback stage. The cycle could be reinitiated cyclically with new ideas generated for new reading/writing topics or more extended development of the same essay, or an argument based on the older one.

Findings

Hypothesis one states that "There are no statistically significant differences between the mean scores of the experimental group subjects and those of the control group on pretesting as measured by a Reading/Writing skills test (1, 2, 3, 4, 5, and the total score)." A t-test for two independent samples was utilized.

Table 1. t-test results for independent samples (experimental and control) on pretesting of reading skills (1,2,3,4,5, and the total score)

Skills		Subjects	Mean Score	Standard deviation	no	t-value
Skill 1	Previewing	*Experimental Group*	13.23	1.695	30	0.015

Skills	Subjects	Mean Score	Standard deviation	no	t-value
	Control Group	13.24	1.615	25	
Skill 2 Skimming	Experimental Group	12.70	1.745	30	0.039
	Control Group	12.68	2.056	25	
Skill 3 Scanning	Experimental Group	13.77	2.431	30	0.834
	Control Group	13.16	2.968	25	
Skill 4 Questionning & Reviewing	Experimental Group	12.27	2.377	30	0.400
	Control Group	12.52	2.293	25	
Skill 5 Note-taking	Experimental Group	13.23	2.112	30	1.764
	Control Group	12.36	1.411	25	
Total score on all skills	Experimental Group	65.20	5.623	30	0.845
	Control Group	63.96	5.168	25	

Table 2. t-test results for independent samples (experimental and control)on pretesting of writing skills (1,2,3,4,5, and the total score)

Skills	Subjects	Mean Score	Standard deviation	no	t-value
Skill 1 Making a time	Experimental Group	13.57	3.350	30	0.111

			Mean	SD	N	
		Control Group	13.68	4.200	25	
Skill 2	Outlining & organization	Experimental Group	13.50	2.980	30	0.529
		Control Group	14.08	5.049	25	
Skill 3	Coherence & Cohesion	Experimental Group	12.17	2.984	30	1.393
		Control Group	13.52	4.204	25	
Skill 4	Style	Experimental Group	14.37	5.156	30	0.505
		Control Group	13.72	4.148	25	
Skill 5	Presentation	Experimental Group	13.4667	3.28773	30	0.133
		Control Group	13.6000	4.15331	25	
Total score on all skills		Experimental Group	67.07	9.063	30	0.585
		Control Group	68.60	10.380	25	

Results from the above tables indicate that the hypothesis is verified, as there were no differences between experimental subjects and control subjects that were of statistical significance.

To verify hypothesis two which states: "There are no statistically

significant differences between the mean scores of the experimental group subjects and those of the control group on posttesting as measured by the reading/ writing skills test (1, 2, 3, 4, 5, and the total score)." A t-test for two independent samples was utilized. Tables 3 and 4 show the results of the t-test:

Table 3. t-test results for experimental and control subjects on posttesting reading skills

Skills		Subjects	Mean Score	Standard deviation	no	t-value
Skill 1	Previewing	Experimental Group	18.12	1.737	30	7.417**
		Control Group	14.50	1.878	25	
Skill 2	Skimming	Experimental Group	18.84	1.709	30	**12.857
		Control Group	13.10	1.573	25	
Skill 3	Scanning	Experimental Group	18.92	1.882	30	**12.617
		Control Group	12.90	1.605	25	
Skill 4	Questionning & Reviewing	Experimental Group	18.68	1.971	30	9.985**
		Control Group	12.66	2.495	25	
Skill 5	Note-taking	Experimental Group	19.24	1.788	30	9.211**
		Control Group	13.33	2.919	25	
Total score		Experimental Group	93.40	4.455	30	**21.143

	Control Group	67.13	4.743	25	

**significant at 0.01

Table 4. t-test results for experimental and control subjects on posttesting writing skills

Skills		Subjects	Mean Score	Standard deviation	no	t-value
Skill 1	Making a time plan	*Experimental Group*	18.2400	1.52414	30	**17.852
		Control Group	14.7667	1.83212	25	
Skill 2	Outlining & organization	*Experimental Group*	19.1200	1.61210	30	**9.159
		Control Group	13.2333	1.71561	25	
Skill 3	Coherence & Cohesion	*Experimental Group*	19.1200	2.06782	30	**14.750
		Control Group	13.0000	1.66633	25	
Skill 4	Style	*Experimental Group*	19.0000	1.87420	30	**14.815
		Control Group	12.7333	2.51661	25	
Skill 5	Presentation	*Experimental Group*	19.6000	1.88917	30	16.813**
		Control Group	13.5000	2.19848	25	
Total score on all skills		*Experimental Group*	94.0800	4.28858	30	**20.822
		Control Group	66.2333	4.69858	25	

**significant at 0.05

The above tables demonstrates that there are statistically significant differences between the mean scores of the experimental and control groups on reading and writing skills (1,2,3,4,5, and the total score) on posttesting to the advantage of the experimental group, thus the hypothesis is rejected as invalid.

A follow-up statistical test for post-comparisons was conducted for the writing test. The following table sums up the results:

Table 5. t-test results for a follow-up post comparisons for experimental subjects on re-administration 1 month later

Skills	Mean differences	SD for differences	Standard error for differences	t-value
Skill 1	.10000	.48066	.08776	1.140
Skill 2	.03333	.55605	.10152	.328
Skill 3	.03333	.49013	.08949	.372
Skill 4	.03333	.66868	.12208	.273
Skill 5	.20000	.61026	.11142	1.795
Total score	.33333	1.29544	.23651	1.409

The above table demonstrates that there are no statistically significant differences between post comparisons of the experimental subjects' mean score differences on the post-comparison follow-up t-test for the writing

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skills (1, 2, 3, 4, 5, and the total score) as upon re-administration of the same test one month later; this indicates reliability of the findings.

A follow-up statistical test for post-comparisons was conducted for the reading test. The following table sums up the results:

Table 6. t-test results for a follow-up post comparisons for experimental subjects on re-administration 1 month later

Skills	Mean differences	SD for differences	Standard error for differences	t-value
Skill 1	.16667	.64772	.11826	1.409
Skill 2	.26667	1.01483	.18528	1.439
Skill 3	.20000	.55086	.10057	1.989
Skill 4	.10000	.54772	.10000	1.000
Skill 5	.23333	.81720	.14920	1.564
Total score	.20000	.66436	.12130	1.649

The above table demonstrates that there are no statistically significant differences between post comparisons of the experimental subjects' mean score differences on the post-comparison follow-up t-test for the **reading** skills (1, 2, 3 , 4, 5, and the total score) as upon re-administration of the same test one month later; this indicates reliability of the findings.

To verify hypothesis three which states that "There are statistically significant differences between the attitudes of the experimental subjects on pretesting and posttesting", the following table summarises the

attitudes of the students towards learning English in an online environment:

Table 7. Students' Attitudes towards Learning English via Internet-based Instruction (IBI)

Attitudes towards Learning English via IBI	No (%)	Sometimes (%)	Yes (&)	Mean Score (SD)
Positive Attitudes	11.5	47.5	41	2.3 (0.7)
Willing to Learn English online even if not required				
Increasingly absorbed in learning English online	9	54	37	2.27 (0.6)
Negative Attitudes				2.18 (0.7)
Study as required due to limited time	18	47	35	
Feel that extra work is limited in this environment	47	37	16	1.79 (0.7)

As is shown in the above table, there are four items and for each one, experimental subjects were requested to choose one out of the following 3 options: No, Sometimes, and Yes. Option 1 was scored as 1, representing total disagreement and option 3 was scored as 3, representing total agreement. Responses to the first two items in the Attitudes Questionnaire show that the majority (88.5%) like to spend time improving their English even if they are not required to do so, and 91% become increasingly absorbed in learning English as they do it online (mean score = 2.30, 2.27, respectively). This suggests that students have positive attitudes towards learning English.

Nevertheless, these students also have negative attitudes towards learning English as responses to the other two items show that 82% only study what is specifically required due to limited time, and 63% feel that

doing extra work in English is not necessary (mean score = 2.18, 1.79, respectively). These findings seem to suggest that most subjects have ambivalent attitudes towards learning English in this environment. On the one hand, they like to improve their English, and become increasingly absorbed as they learn English; however, they are not willing to commit themselves when they are asked to spend extra time on English (Table 8). This finding was also confirmed by their low desire to use IBI to improve their English. All in all, the hypothesis is yet confirmed; students' attitudes towards learning English in an IBI environment has induced bettered attitudes towards learning the language.

Table 8. Spearman Correlation Coefficients for the Desire to Learn in an IBI Environment and their Attitudes towards English

Attitudes towards Learning English via IBI	No (%)	Sometimes (%)	Yes (&)	Mean Score (SD)
Positive Attitudes	11.5	47.5	41	2.3 (0.7)
Willing to Learn English online even if not required				
Increasingly absorbed in learning English online	9	54	37	2.27 (0.6)
Negative Attitudes				2.18 (0.7)
Study as required due to limited time	18	47	35	
Feel that extra work is limited in this environment	47	37	16	1.79 (0.7)

As depicted in Table 8, there is a strong correlation between the desire to use IBI as in this study's programme and their attitudes towards learning English.

Results from qualitative data gleaning techniques

Since the qualitative results of the implementation of this study relied on different techniques for gleaning subjective data, only marginal observations would be highlighted here.

E-logs

The following aspects of IBI-based process writing design had been checked over and over again in each session. Generally, the following webquest process aspects were observed to have been adequately attended to:

- Roles were well defined. It was clear who did what and when.
- Roles were integral to getting the job done, not just tacked on.
- Logistics were clear (e.g. it was clear how groups got formed)
- Enough resources were identified (Web or other) to convince one that the learners would have enough information to go on.
- Enough guidance was provided for activities in which learners interacted with each other (e.g. brainstorming) or with data (e.g. analyzing a photograph, interviewing an expert).
- There was enough specific guidance on how to produce/perform the task (e.g. suggested outlines, examples, formats).
- The Process matched the Task description.
- Consistent voice was used (addresses students as "you", not "the students".)
- Vocabulary was matched to the reading level of the audience.
- Bulleted and numbered lists were used to break up long paragraphs.
- Links were placed so as not to distract readers and cause them to click off to other sites prematurely.
- Long role-specific information was put onto separate pages.

Instructor's diary

This is the most lengthy and detailed section of qualitative data gathered during the implementation of the IBI instructional design. The diaries written were beyond the scope of reporting here; however, it would be helpful to note that the diaries were kept to tackle the daily circular evaluation of what happened in the IBI lab. Therefore, the researcher put into mind that diaries should report on several aspects, mainly:

Initiation of the session:

Mostly, there had always been a problem initiating the session related to starting time due to few students' fairly late arrival. That was a minor problem because a lot of work involving the model had to be done online at the participants' convenience, even at home. The computer lab capacity differed from one session to another. This was a frequent problem.

Organization of the class:

Collaborative working was executed by the instructor so that all group members would work together towards the instructional objectives of each session which were accessible to them in their group e-mails. Different inter-group roles such as group secretary, group leader, and group reporter were changed each session, which was a little bit time-consuming.

Discipline and Logistics:

Moving about in the lab was mostly difficult due to unavailability of enough chairs for all members in the groups. Also, some computers always needed to be checked before getting to class each session. The subjects of the study were adults; therefore, it was pretty hard to interfere with their disciplinary conduct. That was left to them each time, trying

not to impose certain disciplinary behaviours upon them unless it had to do with sabotage or uncleanliness in the computer lab.

Feedback:

As a way of getting started, observations from previous sessions were publicly noted, with group and individual feedback provided by the instructor in each session. Usually, students got on the right track easily after the first introductory sessions. Sometimes, private feedback was reported to students via their private emails or to groups via the group emails. Most students reported in their e-logs and in feedback emails to the instructor that they enjoyed learning in the lab. Several students noted that learning to read and write in an online environment was joyous and entertaining, with the least constraints of anxiety and time usually encountered in traditional learning environments.

Finalization of the session:

Students were told what to do in the final five minutes in each session. The instructor emailed the next timetable for the next session to groups. Assessments using the student assessment criteria developed first by the researcher and later by the students in their respective groups were used as group evaluation methods. Furthermore, e-portfolios were kept by individuals in their groups and as groups to be sent as cc to the instructor's email. Daily checks of these e-portfolios were done, mostly to check students' understanding of the tasks and their performances. Overall, the e-portfolios provided a vivid landscape of what was going on, indicating ongoing progress and development in the students' skills of process writing.

Discussion of Findings

Hypothesising that there are statistically significant differences between

the mean scores of the experimental group subjects and those of the control group on pretesting as measured by Reading/ Writing Skills Test (1, 2, 3, 4, 5, and the total score), results showed that the hypothesis was confirmed, attesting to the evidence that all subjects in the control sample and the experimental sample, at the time the experiment was initiated, were all equal with regard to their competences in writing as investigated by the reading online/ writing test.

These results support the idea that the results of pretesting equating all subjects, control and experimental, may be buttressed by one's 'off-the-record' evaluation of the students, as possessing similar levels of reading / writing competency.

As for the hypothesis which reads: "There are no statistically significant differences between the mean scores of the experimental group subjects and those of the control group on posttesting as measured by online reading/writing skills test (1, 2, 3, 4, 5, and the total score)", as seen, the hypothesis was rejected as invalid now that there were statistically significant differences between the mean scores of the experimental and control groups on both reading and writing block skills (1, 2,3,4,5, and the total score) on posttesting to the advantage of the experimental group. This confirms our primary assumption that the instructional design merging online reading via webquests and email exchanges in instructional model described earlier in this paper is effective in developing the major skill areas of reading and writing competency. This finding meshes with previously established findings as regards the effectiveness of Internet-based Instruction (See the reviews by Cradle, 2003; (Andreas & Haythornthwaite, 2007). Findings from this study confirm previous research indicating the effectiveness of different e-learning models; such IBI models of learning and instruction described

the potential of email and webquests in online reading and writing to extend content knowledge and promote higher level thinking (e.g., March, 2000; Dodge, 2003a; Kortecamp & Bartoshesky, 2003; Menchaca & McVicker, 2003; Molebash & Dodge, 2003; Monroe & Orme, 2003; Draper, Smith & Sabey, 2004). Findings are also commensurate with the findings from Frazee (2004) who reported enhanced learning and time management in his study, given that the experimental students in this study did well on all aspects of writing skill areas, including time management.

Incorporating the use of e-mail with reported research findings on its efficacy as a medium for developing literacy has been an effective part of the instructional design tested in this study (Schwartz, 1990; Fey, 1994; Mabrito, 1991; Selfe ,1990). The findings are compatible with the established findings favouring the use of email as a medium and technique for developing writing skills (e.g. D'Souza, 1992, Anderson & Lee, 1995; Romiszowski & de Haas, 1989). Also, the collaborative groupings and teaming up of learners in the computer lab may have helped towards the success of the model.

Considering the last hypothesis which assumes a strong relationship between learning in an IBI environment and bettered attitudes towards English, the findings are commensurate with previous research which drew emphasis to the importance of attitudes in foreign language learning (Brown, 1994; Gardner, 1985), and the significance of IBI environments in improving attitudes towards language learning (Chen, 2004; Felix, 2001; Schnackenberg, 1997; Neu and Scarcella, 1991; Phinney, 1991; Thaipakdee, 1992).

Concluding Remarks

In conclusion, the research literature on emailing in writing and webquests in reading online is sparse and it is this researcher's opinion that more empirical studies examining the model are warranted. Hence, additional research is needed to examine the variations related to these important factors such as learning gains, more elaborate and controlled investigations into the effects of IBI on learning preferences changes.

For instance, one area for future research would include taking a more in-depth examination of the group process including individual factors that may affect collaborative work such as age, major, and preferences and expectations about teaching and learning methods (e.g. student reactions to the uncertainty that comes with ill-structured authentic, complex tasks).

In future studies, researchers who choose to use this same model could examine differences in engagement, including satisfaction and time spent on task, based on the area of focus for these specific online learning model tasks.

Further research using controlled studies on integrating webquests and e-mail correspondences need to further be conducted to check IBI effects on literacy development with various age groups and grades, on attitudes towards English and on the relationship between IBI and learning styles.

Conclusions extracted from this study confirm previously established research findings. Given the authentic classroom setting in which this study took place, the results are promising for educators interested in effective IBI design strategies and models as the one in this study which merges webquests and emailing, especially when integrated with e-mailing and collaborative learning, all in a problem-solving inquiry-based learning environment. Attitudes towards learning English can be

enhanced in IBI environments, especially when integrated with collaborative and enquiry-based learning.

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