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Effects of Blackboard on EFL academic writing and attitudes

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*This study aimed to recognize the pedagogical effects of Blackboard as a computer-mediated communication (**CMC**) environment for teaching academic writing and improving students' attitudes toward academic writing. Learners' interactions in the **CMC** environment of Blackboard were analyzed via a controlled descriptive design to examine how students negotiate academic literacy using two types of collaborative online strategies: synchronous chat and asynchronous discussion boards in relation to students' academic writing. This study followed a qualitative research design employing a variety of strategies, such as observations, students' online interactions, questionnaires, interviews, and written assignments to investigate the role of computer-mediated communication (**CMC**) in the development of **EFL** learners' academic writing. Quantitative data were analyzed using **SPSS**, and qualitative data were analyzed using En Vivo. The findings indicated that the students' experiences of using computers, the internet, and Blackboard varied. The longer the students' experience, the more positive their attitudes were toward the use of **CMC** to develop academic literacy. In addition, the quantitative findings showed that students who experienced Blackboard communication had a more positive attitude toward the factors of productivity, collaboration, and participation. The results also showed that **CMC**, mainly in the form of online discussion and online peer review activity, facilitated students' interactions and scaffolded learning within their online community. The paper concludes with recommendations for future research.*

Regular Paper

Introduction

This study explores the language and literacy practices of EFL students enrolled in an intermediate writing course. An examination of the current literature in academic writing provides insight into several major issues faced by researchers. The first challenge is that much of the existing research has focused on the features of professional writing (e.g., Swales, 1990), but there has been little attention to how students, especially EFL students, develop their academic writing skills and gain access to the English discourse community to which their in-class academic writing is aimed and to the general discourse community. Second, prior research has mainly focused on disciplines such as the sciences, engineering, and business (e.g., Braine, 1995; 1997; 2001; Belcher & Braine, 1995; Zhu, 2004), which are considered the fields likely to attract the largest numbers of foreign students. Third, many previous studies focus on the nature and types of writing tasks performed by both L1 and L2 students. There is an extensive body of literature that considers "academic literacy" in first and second language research (see, for example, Lea & Street, 1997; 1999; 2006; Lea, 1998; Lillis, 2003) and the ways in which students must adapt to a language and discourse that is specific to a subject or discipline (McMullen, 2009). However, few studies, especially in the EFL context, focus on how students develop their academic literacy and gain access to a particular discourse community when performing writing tasks using CMC technologies. Fourth, there is a lack of research on the role of CMC in assisting students in engaging in the process of academic writing.

Research addressing various aspects of CMC has considered multiple unrelated areas, such as affect, metacognition, and the psychological factors that relate to CMC in the classroom, including attitudinal and motivational factors (e.g., Antonietti, Colombo, & Lozotsev, 2008; Derks, Fischer, & Bos, 2008; Gao & Lehman, 2003; Gao, 2003; Mishra & Yadav, 2006), the effective presentation of academic literacy instruction in asynchronous CMC mediums (Hirvela, 2007; Goodfellow, 2005), active, collaborative participant learning (Abrams, 2001; Zeng & Takatsuka, 2009), and other diverse themes. Reflecting on the findings from this prior research, which are abundant in some areas and lacking in others, the methodological observation that emerges is that this "research is often carried out under ideal conditions which are only partially realizable within the constraints of everyday use" (Sergeant, 1999, p 240). Hence, the need arises for research that considers the status quo of computer-mediated communication in language classrooms.

These issues require attention from language education researchers. Thus, our research intends to examine the following main research question:

What are the effects of CMC teaching on the development of academic writing skills, and the attitudes of both male and female EFL learners toward writing at Saudi EFL colleges?

This question suggests the following sub-questions:

1. How do students of both genders use CMC to learn academic writing?
2. In what ways and for what purposes do students of both genders use CMC in the course of their academic writing development?
3. What is the effect of CMC on male and female students' attitudes toward learning academic writing skills and gaining knowledge?

Significance of the study

This study examines a communicative, reflective, and interactive approach toward teaching and learning writing using online interactive media. Whereas teachers previously considered how to use computers to teach language, "it is now essential also to consider how to teach language so that learners can make effective use of information technology" (Shetzer & Warschauer, 2000, p. 172). Through networked language teaching, students can acquire electronic literacy skills that may help them become better writers for academic purposes and may assist them in participating and writing in online environments with native speakers in academic and professional environments. In this way, students can become autonomous learners and can broaden their knowledge base, interpret, express, and share what they have learned, and gradually become part of a discourse community that includes native and non-native speakers of English.

Research objectives

This study sought to accomplish the following objectives:

- To identify the effects of computer-mediated communication via Blackboard® as a medium of collaborative learning designed to develop academic literacy skills and to enhance **EFL** college students' attitudes toward academic writing.
- To examine the effectiveness, in terms of achievement and writing skills development, of computer-mediated communication via Blackboard for promoting written communication in an interactive and collaborative environment.
- To investigate and evaluate the Blackboard learning management system for synchronous and asynchronous communication to promote academic literacy and improve attitudes toward writing.

Literature review

This literature review outlines the impact of **CMC** on collaborative learning in general and on **EFL** learning in particular. It considers the importance of **CMC** on learners' attitudes and their acquisition of academic literacy, specifically in relation to academic writing. The examination of the current literature in academic writing provides insights into several major issues faced by researchers.

The state of the art in pedagogical practice has brought about "a growing interest in integrating computer-mediated communication (**CMC**) tools into language learning along with the development of Internet technology" (Zeng & Takatsuka, 2009, p. 453). This practice covers both **ESL** and **EFL** domains, where **CMC** has proved to be an effective medium for facilitating the emergence of "a learner-centred discourse community" and initiating collaborative peer-to-peer dialogues as effective tools for mediating **L2** learning of integrated language skills (Darhower, 2002; Swain et al., 2002). As such, **EFL** learners can "benefit from interaction because the written nature of the discussion allows greater opportunity to attend to and reflect on the form and content of the communication" (Kern and Warschauer, 2000, p. 15).

Lea and Street (2006) have suggested an academic literacy model for the **CMC** environment that "foregrounds the variety and specificity of institutional practices, and students' struggles to make sense of these" (p. 235). This model allows instructional leaders to work

closely with participants in an open (distance) learning environment "to collaboratively investigate the range of genres, modes, shifts, transformations, representations, meaning making processes, and identities, involved in academic learning within and across academic contexts" (ibid.).

Many previous studies have focused on the nature and types of writing tasks performed by both L1 and L2 students. However, few studies, especially in the EFL context, focus on how students develop their academic literacy and gain access to a particular discourse community when performing writing tasks using CMC technologies. According to Abrams (2001, p. 490),

> Several studies in second language acquisition have already examined the ability of computer-mediated-communication (CMC) to provide learners a forum in which they can produce more language ... and more diverse discourse functions ... than during in-class discussions, and in which they can become the initiators of discourse instead of mere followers of teacher-directed interaction.

In addition, a wide range of prior research has addressed the potential of CMC to facilitate second language learning. However, little research has examined this issue with regard to EFL. In ESL research, CMC has been found to result in improved motivation, increased student involvement in the learning process, greater self-confidence and autonomy, and more active processing (Shetzer & Warschauer, 2000; Stepp-Greany, 2002). Vance, Fitzpatrick, and Sackville (1997) found that e-mail, chat, and conferencing promoted communication and collaboration among students. In addition, the inclusion of CMC-based activities induced overwhelmingly positive responses to learning because these activities facilitated students' acquisition of language competences. Affective concerns, such as students' attitudes and motivation, have been shown to improve when students engage in interactive CMC language learning settings (Beauvois, 1998; Warschauer, Turbee, & Roberts, 1996). CMC can also induce comprehensible interaction and collaborative learning in language classrooms (Kitade, 2000; Vance et al., 1997). In this vein, Kern (1995) found that students' language production increased in quantity and quality when they engaged in synchronous CMC rather than face-to-face discussions. Researchers have also reported enhanced second language writing skills in CMC-based activities (Ayres, 2002; Chavez, 1997; Sullivan & Pratt, 1996; Warschauer, 1996, 2002).

In the EFL classroom, harnessing technology has been proven to be effective and useful for language learning and teaching, especially when CMC applications of Blackboard are utilized for language teaching. The use of these applications leads to an upsurge in the adoption and acceptance of CMC learning technology (Aldosari, 2012a; 2012b; Aldosari & Mekheimer, 2013; Fageeh, 2011; Mekheimer, 2012), "but education should not be designed around the technology" only (Murray, 1995). Researchers have found mixed interpretations of the usefulness of this technology for foreign language teaching. Similarly, Hirvella (2002) concluded that "implementing computer-mediated pedagogy is so complex an undertaking that, for all its promise, is often fraught with disappointment".

Kitade (2000) explored L2 learners' interactions in CMC-based settings and found that L2 learners' strategies took advantage of the distinct linguistic and interactional features of CMC that potentially benefit language learning by facilitating comprehensible and contextualized interaction, learners' self-correction, and collaborative learning environments. In terms of literacy development, Zeng and Takatsuka (2009) studied EFL learners' dialogues in synchronous task-based CMC. They examined whether learners engage each other in

text-based dialogues related to language use in pursuit of the task goal in CMC contexts and how their mutual engagement affects their language learning. These authors' findings revealed improved language learning and mutual assistance among learners in attending to language forms through collaborative dialogue.

Bacabac (2008) investigated two online practices, the use of synchronous chat and asynchronous discussion boards, as collaborative invention forums for the composition of a research-based essay. They considered the proposition that collaborative CMC forums such as these can foster cognitive constructivism. Their findings revealed that chat and discussion board forums were effective in facilitating the "successful" transfer of ideas in terms of essay topics, purpose, and thesis statements, the "average" transfer of main ideas and supporting details, and "minimal" transfer of source ideas. Similarly, Goodfellow's (2005) study adopted an academic literacy perspective to argue for a critical approach to the writing practices of the online university classroom, concluding, "Such a resource can provide a space for students to critique the dominant literacies of the online university" (p 481). However, these academic literacy skills can pose challenges when they are introduced. In this respect, Cheng (2007) found that computer-mediated communication facilitated students' understanding of tasks, performance of writing activities, and correct application of citation conventions. The scaffolding among students enabled them to effectively learn disciplinary knowledge and to develop their academic literacy. This research produced reliable testimony of the potential of CMC to foster and facilitate the acquisition of academic literacy.

Warschauer (1997) introduced a conceptual framework for understanding the role of computer-mediated interaction based on a socio-cultural analysis of the relationships among text, talk, and learning. According to his study, students use language-related collaboration in CMC settings (a) to become competent members of a speech community or social group, (b) to gain important cultural knowledge or content matter, or (c) to develop literacy skills or critical thinking skills. Warschauer notes, "The socio-cultural perspective, deriving in part from the concepts of Vygotsky (Vygotsky, 1978), illuminates the role of social interaction in creating an environment to learn language, learn about language, and learn "through" language" (Warschauer, 1997, p 471).

Based on this perspective, interaction has been examined within a broad social and cultural context, which Warschauer terms the "text-mediational view". This view "links the concepts of expression, interaction, reflection, problem-solving, critical thinking, and literacy with the various uses of talk, text, inquiry, and collaboration in the classroom. This approach provides a useful framework for understanding collaborative learning in the language classroom as well as for evaluating the potential of online education to assist that process" (Warschauer, 1997, p 472).

With a focus on pedagogy and academic literacy as a design frame, Lea and Street (2006) further described two diverse online settings. They demonstrated that an academic literacy model can be used to structure curricular and instructional design. Such a model "foregrounds the variety and specificity of institutional practices, and students' struggles to make sense of these" (Lea and Street, 2006, p 376).

In summary, the theories of both academic literacy and social constructivism support the acquisition of academic literacy through the application of particular pedagogical knowledge by scaffolding and text mediation, respectively. In other words, learners develop their academic writing skills through the understanding and practice of socially situated academic knowledge. In this process, academic knowledge is internalized through contextual writing activities. The result is to help learners gain access to particular discourse

communities. Learners acquire this knowledge and develop mastery of the discourse community's conventions through collaboration with and support from their peers and teachers. These interactions and the social and cultural context in which they occur combine to help shape students' final written products.

Academic writing may be more challenging for EFL learners because of their insufficient language proficiency and possibly different understanding of the discourse community. These issues may hinder their progress in achieving the required academic literacy and gaining access to discourse communities. Many researchers have claimed that CMC may provide a more level field for EFL learners, where students can participate in a safer and more liberating environment and can control their learning process at their own pace. These researchers argue that CMC provides an opportunity for learners to extend their interactions with peers and teachers, expand their social repertoire, and make their voices heard.

Research in this direction, however, remains inadequate, especially in academic writing and related writing processes. EFL learners must be aware that academic writing, as a discourse community, has peculiar skills, knowledge, and socio-cultural contexts. Researchers must explore these issues to gain a better understanding of them. The purpose of this study is to provide textual and interactional data about how EFL learners in a specific context attempt to acquire academic literacy and gain competence in the process of writing and the discourse of academic writing and how they perceive the role of CMC in this collaborative learning process. In addition, the study explores EFL learners' attitudes toward the use of technology in the learning environment.

Research methodology

This study uses qualitative data collection methods, such as teachers' observations and diaries, questionnaires, online discussion entries, comments, and assignments. Attitudes and skill development measured by written assignments and writing e-tests were identified before and after the experiment to assess gains in literacy acquisition. Furthermore, afterthoughts, reflections, and observations about online written activities on Blackboard contribute to insights into the researcher and teachers' expectations of students' progress in the CMC medium.

Sampling

The research population included all EFL students of both genders studying Writing IV, an upper-intermediate academic writing class. The sample also included all teachers involved in the teaching of Writing IV. The student participants (N = 46) were randomly selected and were comparable in terms of demographic and cultural backgrounds, experiences and attitudes toward academic writing, and technology competence as well as academic achievement in previously completed writing courses.

Instruments

Data for the main study were collected from the students and teachers using instruments such as the researchers' class observations and reflective journals, questionnaires, attitudes and perceptions scales, an analysis of online discussion entries, students' written assignments, students' comments on discussion boards, and interviews. The researchers

continuously compared newly emerging data and discourse functions against previously categorized similar idea units or discourse functions to identify discrepancies in categorization and to determine whether our rationales for the categorization of a particular idea unit or discourse function were uniform. Similarly, after transcribing the audio tapes of the interviews, researchers carefully read the transcriptions and the forum entries several times.

Findings

Qualitative data analysis methods were employed to consider the research sub-questions examining how participants of both genders use CMC to learn academic writing.

This study explored two aspects of online literacy communication: the specific language functions utilized by students in their writing e-classes and their focus of attention. These aspects are discussed below in more detail and are followed by a summary of the composite findings.

CMC and the negotiation of academic literacy

The primary discourse functions used by the participants were observed, and the data on discourse functions were analyzed both quantitatively and qualitatively. The number of online communication activities and students' extent of participation varied in each online forum.

A total of 51 contributions were made by five participants over a period of 14 weeks of term work. Thus, on average, each participant entered 10 times in 14 weeks, which is less than one entry per week in three forums.

Thus, it can be inferred that the students did not use the facility as much as expected. That is, the students did not actively participate in the online forums. A total of 812 idea units resulted from the segmentation of the participants' online communication in the three forums. Each idea unit was examined in terms of its discourse functions.

Table 1 presents the types and frequencies of the occurrence of discourse functions in the online entries produced by the participants of all forums.

Table 1: Type and frequency of discourse functions in online entries

Type of discourse function	Frequency of occurrence	Percentage
Reacting	363	44.75%
Supporting and confirming	123	15.19%
Disagreeing	45	5.5%
Questioning	68	8.39%
Advising	60	7.32%
Explaining	107	13.2%
Eliciting	19	2.28%
Critiquing	27	3.37%
Total	812	100%

As Table 2 shows, the most frequent type of discourse function used in online communication by EFL students in this program was *reacting* (44.75%). The students made use of this function to react to topics raised on discussion boards or required by the instructors,

whether they were performing the role of a reader or a writer (reviewing or being reviewed). In other words, whether participants were posting their writings or reading other participants' postings, they responded as readers to comments and remarks or provided feedback. Thus, reacting was the function that was used most often. This finding may be attributed to the fact that the nature of the tasks – discussing, commenting, and providing information – was such that the participants had to use this function most often, and the frequency of this discourse function may differ significantly for different types of tasks. Furthermore, students often understood discussion boards as requiring them to react to the teachers' thoughts or other thoughts posted on Blackboard. This finding is substantiated by a participant's comments in an interview:

> *When we work on the discussion forum, it is cooperation and responsive feedback, as described by the teacher. I read to get information, so I get ideas for my own writing. When I write, I want to give all information that I know and that is correct. This is my idea: that when I tell others my ideas, they will tell me their own idea, and I can learn from their idea and they can learn from my idea… I mean share ideas… sharing ideas is good. So, I must write fully and give more information for sharing my idea.*

Other participants shared similar views that suggest similar reasons. *Supporting and confirming* was found to be the second most frequently used discourse function (15.19%). The following example from the students' online synchronous chat illustrates how this function was used.

> *Example 1: Supporting and confirming*
>
> **Student C:** I think the essay that is best for its good organization is Student D's. Every paragraph has clear main idea and nice details […] Dec 11, 2012 9:33:64 **AM**
>
> **Student B**: I am thinking same. 3rd para about the activties of village life is best and has lot of information for supporting detail.[…] I lived in villege before I came to middle school in City 5 and I remember same life. Dec 11, 2012 9:35:05 **AM**
>
> **Student A**: Thank u. I was tryin to follow what was discussed in the forum. Student B my grandfather lives in a village and we go for visit him in holidays. so I was able to write like that […] Oct 11, 2012 9:37:43 **AM**

As is evident in the above example, both Students B & C supported and confirmed, respectively, what Student A had presented for discussion – in this case, an essay comparing city life with village life.

Based on the analysis of many of the transcripts, such as the one above, it becomes clear that the learners provided mostly positive comments when they discussed other students' writing. When their own writing was under discussion, they responded to others' comments with gratitude and explained how they wrote. When a participant was asked in an interview how he felt about the peer feedback about his writing, he responded,

> *I felt good when anyone said I write nicely. So, I think I also praise others' essays when I see some good points and ideas, and I am not very harsh if I don't like anything. You know we are*

all friends, so I should encourage my friends. However, if I see something not good, I also tell that, but in a different way.... You know ... so he doesn't feel bad but understands what I mean.

The third most frequently used discourse function was *explaining* (13.2%). The remaining discourse functions, such as advising, questioning, disagreeing, critiquing, and eliciting were all below 10%.

Qualitative analysis demonstrated that the functions of *advising* and *critiquing* foregrounded the users' experience in academic writing. In other words, it is generally assumed that only an expert can effectively provide advice or critique. However, the analysis of the interview transcripts and online interactions indicated that the participants were hesitant to assume the role of an expert and to advise and critique, especially at the beginning stage. Most of the participants stated in the interviews that they would easily accept or consider the application of these functions to their own writing without feeling offended. However, they did not think that they were in a position to provide constructive feedback or to critique others, as one of them adeptly commented:

I see most students give good comments, and I like it, but I also want to improve my essay. If someone can give me good advice, I would like more. I will not be angry even if someone gives me negative comments because I know it is good for me to learn my faults or weaknesses. Also, if someone disagrees with me, I don't mind because it is not personal; it is to show their own ideas, which can be different from my idea. [...] No, I could not easily criticize other essays, and I can't tell them I disagree with them because I feel someone may become my enemy, and also I am not very confident about my own English.

An important feature was the changes in the range of discourse functions as the participants used them in online discussion activities. Participants of both genders used all of the language functions, but the two most frequently used functions were *explaining* and *supporting and confirming,* which were employed almost uniformly across all discussion board postings. However, the analysis showed that they used almost all of the other functions in the forum only to discuss the mechanics and the process of writing due to varied degrees of English proficiency, knowledge, and expertise in the mechanics of writing in English. Below is an example of the variety of functions that one student used during one activity on the forum.

I agree with you when you say, "The family traditions differentiate a family, making each and every family unique and special." However, this idea is not well substantiated. You could have added some more information to make it clearer. I mean, how can you say that a family is unique and special? I like the way you presented and discussed the traditions of your family and how they have been very important to you to illustrate your point that traditions are important in family life. You would do well to include some more information taken from the interviews we were advised by the teacher to conduct to complete this writing assignment. Your paragraph structure is clear, and I like your conclusion part the most. You have summarized all the ideas in the essay and drawn the right conclusion. Please don't mind if I say that your sentence structure is weak, especially the subject-verb agreement and logical connectors. I think any good grammar book can help you in that.

This excerpt shows that the participant used most of the categories of the discourse functions. During the interview, another participant admitted that because she felt confident

about her English language proficiency, she participated in the forum with more interest and vigor.

> *I liked this forum because I could help my class fellows more by giving them suggestions for improvement by critically reviewing their essays. I don't like to offend others, but still I want them to improve. I also like such comments that are useful for me to improve myself, though most of the time, the students are praising each other. Some students gave me good advice that helped me to make my essays better, but most of the time the comments were just showing what they liked and what they did not like; they did not tell me how I can improve….*

This example above illustrates that to achieve the purpose of developing academic literacy through computer-mediated communication, technology tools must be easily accessible and available to **EFL** students. In addition, during the interviews, all of the participants concurred that **CMC** is only useful if students have basic proficiency in computing and internet skills and if these facilities are easily accessible in their colleges and their homes. Thus, easy access to technology and computing proficiency are vital in determining the influence of **CMC** on the acquisition of academic literacy.

The development of academic literacy occurred during the process of these discussions and negotiations, or *reactions*. The use of other discourse functions progressed over time, and the students began to use a variety of discourse functions by the end of the semester. The use of a variety of discourse functions in online communication was also a sign of the development of scaffolded learning among peers to develop their knowledge and skills in academic writing. This development was later observed in a forum that was intended for students to generate ideas to develop an essay. The interactions revealed that most students assisted each other in generating and developing ideas for their essays.

Similarly, when the students contributed to the forum discussing the mechanics and process of writing, they were required to collect and share information with other students on issues related to the steps involved in the process of writing. The students were also required to identify the technical features of an academic essay, such as the structure of paragraphs, the parts of an essay, punctuation and grammar rules, different types of essays, explaining the process, comparing and contrasting, analyzing, persuading, and researching to prove information. Through these online activities, the students were exposed to ways of communication in the discourse community of academic writing. The analysis of the participants' interactions implies that they acquired some proficiency in academic essay writing through the use of **CMC**.

Focus of attention

To explore the areas of focus in the **EFL** students' academic writing class during their engagement in collaborative online activities through Blackboard's discussion board facility, 812 discourse functions were analyzed to identify the focus of attention. Table 2 presents the types and frequencies of the occurrence of various focuses in the **CMC** activities conducted by the **EFL** students in different forums.

Table 2: Type and frequency of focus of attention in online discussions

Focus of attention category	Frequency of occurrence	Percentage
Reacting to specific people or groups of people or to particular documents	214	26.35%
Comment or evaluation on a statement, test, or otherwise invoked voice	221	27.21%
Mentioning a person, document, or statements	126	15.51%
Stating personal experience	119	14.61%
Indirect quotation	98	12.06%
Direct quotation	34	4.18%
Total	812	100%

As shown in the table above, the students focused on multiple areas with different frequencies. The percentages of *reacting using recognizable phrasing, terminology associated with specific people or particular documents* (26.35%), and *comment or evaluation on a statement, test, or otherwise invoked voice* (27,21%) were very similar. Three subsequent focuses, *mentioning a person, document, or statements* (15.51%), *stating personal experience* (14.61%), and *indirect quotation* (12.06%) were also similar in their frequency of occurrence, but the *use of direct quotation* was minimal (4.18%). A clarification is in order about the *use of direct quotation* and *mentioning a person*. The former is associated with the writing convention that in direct quotations, people tend to mention the name of the person and to quote their statements in inverted commas. In this case, what is being reported is significant as well as who said it. Mentioning a person refers to either talking about a person or mentioning them in relation to some idea or incident. The mention is significant in itself for contextual reasons.

To explore students' focus of attention, EFL learners in this study were observed both in online and face-to-face classrooms. Students' online activities were recorded and studied carefully to pinpoint their focus during their online interactions. The results were compared with the notes on the classroom observations, which were made in an attempt to identify the topics or ideas on which they focused. Although the online interactions of all participants were recorded and studied for the data analysis, the classroom interactions of all participants could not be analyzed because as observers, we were able to focus specifically on only one or two groups at a time; it was not possible to observe and record the occurrences in all five groups that were simultaneously engaged in discussions.

Extensive class notes on the number and content of class discussions indicated that some participants included their personal experiences in almost all face-to-face discussions. Therefore, the focus of attention during classroom discussions was primarily personal experiences. On two occasions when the discussion could not be concluded in the face-to-face class, it was carried over to the discussion board via Blackboard. During the online discussions, one participant displayed multiple uses of idea units in addition to providing personal experiences in the online discussions, as illustrated below:

I feel your point is a good addition to our discussion. In a persuasive essay the writer should appeal to human values. I think the human values that a writer can address in a persuasive essay are sense of justice, fairness, and attitudes towards the community or world. I had to

persuade my father to buy me a new pair of shoes. I told him if my older brother can have one for the Eid, I should also get one. It worked. I have also read somewhere that facts alone may not catch your reader's attention. For example if you want to write a persuasive article for a charity organization to help raise funds, facts only cannot tell or show the reader the benefits of supporting that organization. A better option would be start your writing by telling a touching story of a homeless family. This little drama can effectively show the problem and the reader can be persuaded. So a little dramatization can be very effective to clear you point.

An analysis of the above excerpt in terms of idea unit categories for the focus of attention is presented below in Table 3.

Table 3: Idea unit categories in an online contribution

Idea unit category	**Sentences**
Explaining using recognizable phrasing, terminology associated with specific people or groups of people or particular documents	*In a persuasive essay the writer should appeal to human values. I think the human values that a writer can address in a persuasive essay are sense of justice, fairness, and attitudes towards the community or world.* *For example if you want to write a persuasive article for a charity organization to help raise funds, facts only cannot tell or show the reader the benefits of supporting that organization*
Comment or evaluation on a statement, test, or otherwise invoked voice	*I feel your point is a good addition to our discussion.* *A better option would be start your writing by telling a touching story of a homeless family. This little drama can effectively show the problem and the reader can be persuaded. So a little dramatization can be very effective to clear you point.*
Stating personal experience	*I told him if my older brother can have one for the feast, I should also get one*
Mention of a person, document, or statements	*I had to persuade my father to buy me a new pair of shoes.*
Indirect quotation	*I have also read somewhere that facts alone may not catch your reader's attention.*

The table above shows that this participant used multiple idea units during this online discussion entry. In addition, he used terminology that displayed his disciplinary knowledge rather than merely stating his personal experience. For example, terms such as *persuasive essay, appeal to human values, sense of justice,* and *write a persuasive article for a charity organization to help raise funds* reflect his engagement with the reading material related to the disciplinary knowledge of academic composition. The disciplinary knowledge he used to compose this posting may strengthen his understanding of how to write effectively and persuasively.

Another participant made a very good point about the role of traditions in family life by stating his personal experience for the benefit of his fellow students. In the interview, when he was asked if he perceived any improvement during the semester, he replied,

I thought in the beginning that these Blackboard forums were just for making students spend more time on the computer at home. However, when I heard my class fellows talking about different activities they did, it aroused my interest. I started to read their postings and sometimes to give my personal view. Some of my group students were very seriously working, and their postings helped me write my own assignments. So, I thought I would do the same and give something good to them also.

It was implied that some participants learned from online communication either by carefully preparing their own postings or by reading their peers' entries that were of better quality than their own. Thus, the students shared and gained disciplinary knowledge specific to academic writing during their participation in the discussion forums provided in the CMC environment. Academic literacy developed consciously or subconsciously in the process, with the result that some participants could communicate, to varying degrees, in the ways used by experts in the discourse community of academic writing. To conclude, we can infer that online communication in this context appeared to encourage students to engage in a wider variety of communicative functions that may be relevant to developing their own academic writing and that of their peers.

The findings also show that CMC played an important role in facilitating students' understanding of their writing tasks. As such, CMC provided extended opportunities for collaboration among students and instructors. For instance, the participants provided mostly positive comments and encouraging remarks when discussing other students' writing during the peer review tasks. This finding suggests that CMC assisted in the development of positive rapport and mutual confidence among students engaged in collaborative writing assignments. In addition, academic literacy continued to develop during asynchronous discussions on Blackboard's forums about negotiations of meaning in the CMC technological medium. The use of CMC provided the students with more than adequate practice and opportunities to gain competence in this medium. This process augmented their technical literacy, which is an essential element of academic literacy, as suggested by several researchers.

Regarding the differences in the use of discourse functions in synchronous and asynchronous modes, the findings showed that these differences exist with regard to different types of discourse functions that are present in both the asynchronous and synchronous data. Nevertheless, the most outstanding aspect of these interactions, whether synchronous or asynchronous, was that they were predominantly student-centered, and the role of the teacher was minimal. This finding seems to confirm the idea that compared with face-to-face classroom interactions, CMC may pave the way toward a more student-centered environment if instructors and course designers keep this aim in mind.

In addition, textual analysis of the participants' writing assignments was employed. This analysis demonstrated a relationship between the written assignments and the feedback activities. CMC-based feedback suggested peer revisions in the structure and organization of the paragraphs to achieve clarity and to support and/or disagree with an idea as well as suggestions to change or revise the ideas. The feedback provided by peers in the forum activity can be divided into three types. The most common type can be described as approving and encouraging what the writer stated in the essays. This type of feedback may occasionally help peers develop their confidence, but it does not help them practically in any significant way. Another type of feedback that occurred rarely involved multiple pieces of constructive advice. In summary, some students provided feedback that substantially helped other

students revise their drafts effectively. This feedback was mostly encouraging and supportive of the students' peers, but it did not contain much practical or critical advice for the improvement of drafts. In addition, the frequency of providing feedback was quite low.

To respond to the research question on the effects of CMC on participants' attitudes toward academic literacy development in the Blackboard environment, both quantitative and qualitative data were collected and analyzed.

For the first section of the survey, the data indicate significant facts about personal information: although 74% of the participants own computers, only 42% could access them at home. All of the participants had more than three years of computer experience, and all had more than six months of Blackboard experience. Regarding their experience of English, 88% began studying English in grade 6, and 18% had studied English since first grade. Regarding internet use, 75% of the participants used the internet at home or at university facilities.

The second part of the questionnaire was designed to include two sections: perceptions of the **advantages** and **disadvantages** of academic writing experience through the use of the Blackboard learning management system (LMS). The data were analyzed for reliability by calculating the Cronbach's alpha for all parts separately to confirm their reliability. The statistical analysis presented in Table 4.1 shows that the reliability of the 12 items of the scale was .899. This is a high reliability coefficient. To analyze the differences between the participants' perceptions of the advantages of CMC in their academic writing, a discussion of the significant variations is presented below.

Table 4: Participants' perceptions of CMC in terms of its convenience (advantages)

	Means	SD	%
CMC is more convenient to me than face-to-face learning.	2.89	1.185	58%
CMC improves communication between students and students and between students and teachers.	3.57	1.021	71%
CMC through BB makes teaching and learning more effective.	3.41	.996	68%
I find BB interesting and useful.	3.43	1.043	69%
I like BB because I can work according to my own pace.	3.66	.987	73%
The BB forum helps me to develop proficiency in English writing techniques and mechanics.	3.50	1.110	70%
The BB forum helps me to share my work with my classmates and to obtain their feedback.	3.73	.899	75%
I benefit from the feedback given by my teacher and my classmates through BB.	3.77	.912	75%
BB assignments help me to develop computer and internet skills.	3.98	1.110	80%
BB assignments help me to develop knowledge of the writing process.	3.77	.961	75%
My teachers and peers' messages and postings presented clear and concise arguments for academic writing tasks.	3.61	.722	72%
My teachers and peers' feedback was important for increasing collaboration.	3.84	.861	77%

As shown in Table 4 above, it appears that the most frequently perceived advantage was that BB assignments helped students to develop computer and internet skills, with a mean score of 3.98 and a standard deviation of 1.11. Moreover, teachers and peers' feedback was important for increasing collaboration, with a mean score of 3.84 and a standard deviation of 0.861. However, the lower agreement indicates that CMC is more convenient for students than face-to-face learning, with a mean score of 2.89 and a standard deviation of 1.185.

Table 5: Participants' perceptions of CMC in terms of its inconvenience (Disadvantages)

	Means	SD	%
I feel isolated when I use BB.	2.82	1.187	56%
BB is difficult to handle and therefore is frustrating to use.	2.36	1.123	47%
Slow internet connectivity is a major problem in using BB.	3.57	1.228	71%
I face technical problems when I use BB, such as difficulty in connecting to the BB system, accessing peers' work, etc.	3.39	1.351	68%
I prefer to learn from the book than from the website.	3.41	1.207	68%
BB encourages students to be dishonest (cheat).	3.02	1.229	60%
I feel I will become anti-social if I have to concentrate only on relearning.	2.89	1.017	58%
Both synchronous and asynchronous interaction through BB is less effective than face-to-face interaction in the classroom.	2.61	.868	52%
I do not have internet at home, so I have problems using BB outside of college.	2.75	1.416	55%
I don't feel that BB helps to increase collaboration among students.	2.68	1.095	54%
My teachers and peers' messages and postings were not useful for or relevant to academic writing tasks.	2.61	1.243	52%
I was not satisfied with the online peer communication.	2.57	1.149	51%

As presented in Table 5, the most frequently perceived disadvantage relates to the problem of slow internet connectivity in using BB, with a mean agreement of 3.57 and an SD of 1.228. Moreover, learning from books rather than from websites received average agreement with a mean of 3.41 and an SD of 1.207. The lowest perceived disadvantage was that BB is difficult to manage and therefore is frustrating to use, with a mean score of 2.36 and a standard deviation of 1.123.

Table 6: Comparison of writing experiences in traditional versus CMC settings

	Means	SD	%
I can express my ideas clearly in writing (in English).	3.75	.991	75%
I dislike writing in English.	2.27	.949	45%
I am happy with my use of vocabulary in written English.	3.66	1.098	73%
I have no problem with grammar in written English.	3.25	1.164	65%
I have no problem with organization in written English.	3.25	1.014	65%
I am good at writing (in English).	3.23	.961	65%
It is difficult to write in English.	2.61	1.083	52%
I enjoy writing (in English).	3.50	.902	70%

Table 6 above shows the students' experience of using English in both the traditional way and through the use of technology. Most informants concurred that **CMC** effectively mediated learners' ideas clearly in writing (M = 3.75, **SD** = 0.991). The second-ranked response was that most participants were happy with their use of vocabulary in written English (M = 3.66; **SD** = 1.098). The statement that received the least agreement was that students disliked writing in English (M = 2.27; **SD** = 0.949).

Table 7: Perceptions of writing experience in CMC settings

Statements	Mean	SD	%
I can write better essays when I do them on the computer.	3.07	1.043	61%
Learning English reading and writing through a computer is fun.	3.27	.973	65%
Learning English reading and writing through a computer makes me less anxious.	3.43	.846	69%
Computer-mediated language learning can promote my English literacy abilities.	3.34	.914	67%
Revising my written work is easier when I write it on computer.	3.59	.844	72%
I am willing to use an online discussion board if I have a question or comment.	3.61	.895	72%
Commenting and responding to others through an online discussion board helps me develop my thoughts and ideas.	3.68	.909	74%
I feel that communicating through an online discussion board is a good way to improve my English.	3.61	1.061	72%
I feel that writing by computer makes me more creative.	3.70	.904	74%
I feel that using a computer gives me more chances to practice English than a pen/paper mode of writing.	3.61	1.083	72%

As presented in Table 7 above, the students' experiences of using English through technology indicate that the respondents feel that writing using computers makes them more creative, the statement that received the greatest consensus (M = 3.7, **SD** = 0.904). Moreover, the informants concurred that commenting and responding to others over an online discussion board helped them develop their thoughts and ideas (M = 3.68; **SD** = 0.909). However, the

respondents were least likely to agree that they could write better essays on the computer (M = 3.07; **SD** = 1.043).

Qualitative data analysis of interviews

The interpretive data analysis that follows comes from the ten participants of the case study. It was not practically possible to analyze and interpret all of the qualitative data generated by the 46 participants of the study. Therefore, a case study approach was adopted to focus only on ten participants representing various levels of competence in English and technology use. The ten participants were selected on the basis of their responses to the first part of the questionnaire discussed above. All ten participants had similar demographic and cultural backgrounds, but varied experiences and attitudes towards academic writing, yet they all possess almost the same technology competence. All of the participants had some experience using the computer and Blackboard; they had used this learning management system for more than a year during their time at the college while taking various blended courses. The participants were beginners in the field of academic writing and demonstrated limited understanding and experience with the writing requirements and conventions of this field. However, they seemed to be aware of the importance of reading literature and practicing different types of academic writing to gain access to the discipline.

The analysis of the interview data aims to discuss the learners' perceptions of **EFL** writing and their implementation of the Blackboard learning management system, which consisted of the following factors as coding categories: 1) learners' general attitude toward **EFL** writing; 2) learners' preference for **EFL** writing; 3) learners' enjoyment of Blackboard tasks and more traditional tasks; 4) learners' self-estimation of their writing performance; 5) learners' perspective on computer-mediated communication and academic literacy; 6) learners' collaborative learning; 7) learners' participation in computer-mediated communication; 8) formal or informal use of language; and 9) other. Each of these factors is accompanied by excerpts from the interviews.

During conversations with the interviewees, the researchers found that opinions about **EFL** writing varied from *dislike* to a *very positive* attitude. Although one interviewee reported that he disliked writing in English, there was no further evidence indicating that other interviewees had negative attitudes toward **EFL** writing. The interviewee who disliked **EFL** writing seemed to lack self-confidence and to under-estimate himself, as seen in the excerpt below. He could not continue his interview in English and used Arabic most of the time.

Excerpt 1 (dislike)

Interviewee: Umm, it's hard and grammar is too much difficult. (*Translated from Arabic)* "Oh, I get so confused trying to remember the grammar rules, that my ideas get lost before I can put them into writing. Typing them into computers is even harder, so …."

Excerpt 2 (neutral attitude)

Interviewer: What do you feel about writing in English?

Interviewee: So… I mean I am not very sure…. sometime I feel it is easy and sometime I feel it is difficult… maybe the topic is difficult or easy, you know

These responses can be compared with the participants' responses to the third part of the scale, item 29, for which a high percentage of participants agreed that they have problems with organization in written English.

While highlighting the issue of students' self-efficacy, the opinions from three of the ten interviewees indicated that having their writing proofread or peer reviewed and receiving suggestions from others or simply reading others' writing would encourage them to learn and would help them in developing their writing.

However, two interviewees stated that having their writing exchanged or reviewed by others would have no effect on the development of their writing. Learners who were biased against the practice of peer reviewing had doubts about their own ability to evaluate the quality of their colleagues' work. Hence, they preferred not to have their writing exchanged or reviewed by their colleagues.

It is clear that a few interviewees suspected that due to their poor English proficiency, they would be unable to help others. The following excerpt is taken from one interviewee who was not in favor of peer reviewing.

Excerpt 3 (negative attitude toward peer review and collaboration)

Interviewee: The problem is that our English is not equal to our teacher, and what we know about the English language is less than you know (teacher)....umm .... I believe that most of us are at the same level of English knowledge. Therefore, I don't think it's possible to correct the mistakes in our colleagues' writing after reading it.

Similar views were shared by three of the ten participants. However, five participants who supported the idea of peer reviewing believed that the practice of peer review through Blackboard forums would promote their English learning. The following example is taken from one learner who stated that he learned how to edit his writing and how to organize paragraphs from peer reviews on Blackboard.

Excerpt 4 (positive attitude toward peer review and collaboration)

Interviewee: Thanks be to God… I feel I can... I found that the way I developed my essay paragraphs using many clauses to present an idea is less skillful than that of my colleagues. I found others helped me to say more effectively in few sentences with less clauses.

Interviewer: So you learned from these collaborations and you helped your class fellows?

Interviewee: This is what I can learn from this practice. I would like to think about the way I develop my sentences and compare my writing with others. So I can learn from others. As for helping others' writing, if it is not too difficult, I might be able to help. I tried to help them when I could.

An interesting fact drawn from the interview data is that in the quantitative measure discussed earlier, the majority of the participants were either not sure or had negative attitudes toward collaboration on Blackboard. This difference may be attributed to the fact that the participants felt more free while responding to the questionnaire, whereas in the presence of the interviewer, they wanted to be diplomatic and were more eager to demonstrate their positive attitude toward collaboration.

With respect to the learners' self-estimation of their writing performance, six out of ten interviewees felt that revision on computers was easier compared with pen and paper and that editing on computers was more convenient than editing with pen and paper. In addition, they felt that writing on computers helped them to correct their spelling and increased their confidence and creativity.

Learners' perspectives on CMC were mixed during the interviews, in conformity with their responses to the questionnaire. Four out of ten interviewees stated that Blackboard made them feel isolated. They felt that it was better to communicate face to face then through CMC to eliminate confusion between the interlocutors.

The majority of the interviewees felt that they were able to improve their writing skills in terms of increased vocabulary knowledge, better sentence and essay structure, and increased knowledge of formal writing conventions, indicating that CMC positively affected their academic literacy.

With regard to academic literacy, most interviewees had to be told what the phrase meant. Upon learning what academic literacy meant, seven out of ten of the participants responded positively, indicating that they felt they had improved in this area during their interactions on Blackboard and through the reading materials and sample essays provided to them in the forums.

Summary of findings

Overall, the participants' attitudes toward CMC in terms of convenience, inconvenience, comparisons of CMC settings versus traditional settings, and the benefits of CMC for writing development indicate a mostly positive stance toward CMC. However, learners' experiences of using computers, the internet, and Blackboard varied. Students with longer experiences of CMC showed more positive attitudes toward it than those with relatively shorter exposure to CMC. Technical problems related to internet connectivity/availability and the Blackboard Learning Management System (LMS) emerged as important factors that influenced learners' attitudes toward its use. In addition, students who experienced communication through Blackboard had a more positive attitude toward the factors of productivity, collaboration, and participation. Although the majority of learners preferred to learn using Blackboard, a large minority found face-to-face communication more convenient than CMC.

A considerable percentage of the interviewees who had positive attitudes towards BB (more than 70%) saw it as a source for improving computer literacy and appreciated its convenience in terms of the work pace, development of language proficiency, sharing work with peers, and collaboration.

In terms of the learners' self-efficacy, a solid majority of the participants enjoyed writing in English and considered the possibility of using English to express their thoughts and ideas through Blackboard. However, the learners considered the use of a PC for revising to be much more convenient and felt that Blackboard helped them to increase their writing practice, online participation, and group discussions.

The findings imply that most learners are comfortable using Blackboard and feel that additional experience with it would improve their technical literacy as well as their collaboration with their peers. Furthermore, the participants' positive perceptions of their English language efficacy suggest that most learners have clear ideas of their strengths and weaknesses. This finding also indicates that most learners are motivated to expand their English-language repertoire using the CMC.

Discussion

The use of CMC via the medium of Blackboard for academic writing development incorporates both individualized learning processes and social interaction learning tasks specifically designed to develop and improve EFL academic writing processes and writing outcomes.

The findings from the study showed that building an online discourse community plays a major part in the development of academic literacy and attitudes toward academic writing. This finding is congruent with prior research showing that online communities within CMC settings play a vital role in students' acquisition of academic literacy (e.g., Berkenkotter, Huckin, & Ackerman, 1991; Faigley, 1985; Herrington & Gadman, 1991; Walvoord & McCarthy, 1990). This line of research is concerned with how novice writers are included in online discourse communities in an academic writing course. The present study emphasized a similar concern. Thus, this study is commensurate with prior research in that it consolidated and built upon the findings of these studies to enrich the literature in several ways.

First, prior research has mainly focused on the final products to examine whether students have acquired the required writing skills and knowledge. In the present study, students' process of producing their final texts under the influence of CMC was explored. This exploration provided insight into how learning academic literacy skills and processes is facilitated by the scaffolding between peers, as demonstrated in computer-mediated communication in the form of online synchronous and asynchronous discussions. Second, the present research adds to the literature by emphasizing the importance of the intertextuality provided by CMC in helping students complete their academic papers. The investigation of intertextuality indicated the paths that students took to proceed from online communication to their personalized writing products. CMC provides forum theme threads that enable intertextuality between students' own texts and the texts of their peers, thereby facilitating the students' writing process.

The present study also supported the existing literature on the role of CMC in academic literacy development in other ways. Much prior research has emphasized the types and nature of the tasks students are expected to perform in academic literacy development as well as in other disciplines in which the effects of CMC have been explored (e.g., Braine, 1994, 1995; Bridgeman & Carlson, 1984; Carson, 2001; Casanave & Hubbard, 1992; Zhu, 2001; 2004).

However, the present study expanded the identification of the types of tasks students are required to perform by focusing on the role of computer-mediated communication in students' development and their acquisition of disciplinary knowledge and academic literacy through their performance on academic assignments. This shift in focus from what to do to how to do it reflects the socio-linguistic aspects of academic literacy development. This socio-affective aspect of the development of academic literacy in an online community is emphasized in situations in which scaffolding and mediation play important parts.

However, with the increased use of CMC to assist students in acquiring academic literacy, the context of student learning becomes more sophisticated. Students must communicate with their peers and instructors through both face-to-face and online communication. The results of the analysis indicate that the increasingly complex learning context did not complicate students' learning but rather helped to facilitate students' development of academic literacy in many ways.

These findings are commensurate with similar conclusions in prior research (e.g., Belcher, 1994; Casanave, 1994; 2003; Connor & Kramer, 1995; Schneider & Fujishima, 1995; Shaw & Weir, 2007) indicating that the integration of computer-mediated communication in the

process of academic literacy development can provide students with ample opportunities for interaction and scaffolding in an online local community.

With the consistent use of **CMC** technology to foster learners' writing needs, the sociocultural aspects of writing difficulties are reduced the most, the cognitive/linguistic aspects of writing difficulties are reduced to the second-highest degree, and the psychological/emotional aspects of writing are reduced the least based on the interpretations of the findings. In terms of students' writing performance, there was a trend toward an improved level of performance due to the use of **CMC**. However, during the writing process, there were advantages and disadvantages in the use of **CMC** technology for **EFL** writing instruction. A majority of students had a high level of positive perceptions of **CMC** technology and participation. Despite a relatively lower level of discussion, the students reduced their writing anxiety, became more confident, and felt that they made progress in terms of multiple perspectives, critical thinking, identifying writing errors, implementing writing processes, and adapting to academic writing conventions due to an encouraging milieu that prevailed among students as peers and students and their teachers in the **CMC** environment. These findings are compatible with prior research findings (e.g., Goodfellow, 2005). Thus, fostering critical reflection in students helps to enhance their process of learning to write, especially in collaborative online settings. **CMC** milieus can provide repositories that learners can utilize to scaffold their academic writing needs (Strauss et al., 2009)

Furthermore, and most importantly, the findings with regard to the use of various discourse functions in the asynchronous **CMC** indicated that the interactions were mainly task oriented when students were obliged to use "explaining" as the most frequent language function. The reason for this was the nature of the online tasks, which constrained the use of other discourse functions to only a few. This issue is reflected in the relevant literature; for instance, Boud (2001) acknowledges that students learn a great deal by explaining their ideas to others and by participating in activities in which they can learn from their peers. Similarly, Webb (1989; 1992) described various studies that showed that giving and receiving explanations is beneficial for learners' achievement during peer interactions and learning in small groups. We note the extensive use of the discourse function "explaining" in the present context, so we may infer that the findings of this study support earlier findings. This finding also suggests that **CMC** in **EFL** classrooms helped students to work collaboratively on their assignments and to assist each other in their learning tasks. Furthermore, such tasks encouraged critical thinking, in which students had to reflect on and critique various issues of academic writing in addition to providing critical feedback to their peers on their essay drafts. Consequently, the interaction was extensive and detailed.

The **CMC** environment of Blackboard provided an online learning community in which participants could collaborate and help each other edit, revise, and improve their English writing. This finding is congruent with prior research suggesting that **CMC** environments can be conducive to collaborative group interaction and sharing (Bruffee, 1984; 1987; 1995; Wang & Burton, 2010). In the present study, **CMC** provided a viable environment for collaboration in which **EFL** learners could increase the sharing of insights and viewpoints via synchronous and asynchronous tools of interaction with peers and teachers. This has also been evidenced in prior research (Bowering, Leggett, Harvey, & Hui, 2007; Chaffee, 1992).

In addition, these findings support the theory of the Zone of Proximal Development (Vygotsky, 1986a), in which Vygotsky posits that students can learn better with the assistance of more capable peers (students), adults (teachers and experts), and artifacts (**CMC** technology) (Dixon-Krauss, 1996; Vygotsky, 1986b). The findings suggest that **CMC**

technology appears to be more effective in assisting less competent students. This category of EFL learners can obtain more learning opportunities from more capable peers, teachers, and computer tools or the CMC medium of Blackboard through scaffolding and modeling in this CMC medium.

These findings largely support the socio-cultural theory, Zone of Proximal Development (ZPD), and research on the benefits of CMC technology. CMC technology provides ample opportunities to foster a socio-linguistically interactive and psychologically/emotionally amiable learning environment that can contribute to improving EFL learners' academic writing skills. Thus, CMC technology has proven most effective in supporting sociocultural and linguistic interactions among an online community consisting of peers, teachers, and the CMC tools of Blackboard.

It can be concluded that learning and academic literacy development occur through ongoing participation in the online communication and performance of writing tasks, both synchronously and asynchronously. CMC, mainly in the form of online discussion and online peer review activity occurring synchronously and asynchronously with peers and teachers, facilitates the interaction and scaffolding of students within CMC-based learning settings. Thus, CMC serves as a mediator in students' development of academic literacy. However, it should be noted that CMC does not replace face-to-face communications among students and teachers in higher education learning communities. The conclusion that is most apparent from the findings is that the best practice is a combination of face-to-face and computer-mediated communication.

Research implications for pedagogy

The findings of this study demonstrate that CMC technology can be effective in improving EFL students' academic literacy skills. Thus, CMC technology may be more influential in providing EFL students with socio-linguistic interaction and psychological/emotional support to enhance students' cognitive/linguistic writing abilities. Writing instructors should be aware of both the advantages and disadvantages of the use of CMC technology as a pedagogical tool for academic writing development. The present study showed that the use of CMC technology in academic writing development has advantages that can be summarized as follows:

- Positive interaction and increased participation were noted during interactions in both synchronous and asynchronous media to varying degrees;
- As noted in the qualitative data, attitudes toward academic writing tended to improve positively, writing anxiety was reduced, and self-confidence increased due to the presence of an amicable environment among peers in the CMC online community;
- CMC tools facilitated the induction and/or development of critical thinking skills;
- The online community that developed in the CMC environment created by Blackboard assisted students in identifying writing errors but did not seek to impose corrections of any sort except by advising and explaining;
- The lack of the facilities and options from MS Word in the Blackboard tools led to increasing spelling errors and some simple grammatical errors;
- The positive feedback was conducive to reinforcing and consolidating academic literacy development, including academic writing processes;

- The online environment with its assistive CMC tools helped to improve writing performance and attitudes toward academic writing;
- The assistive technology tools of Blackboard, including synchronous and asynchronous interactions, helped to establish the basics of academic writing conventions;
- The growth of an online community that used CMC tools, despite its small size, led to a state of audience awareness among peers;
- The existence of an online community helped to provide an authentic audience among students to read for one another critically and supportively;
- Throughout its duration, this online community had an authentic purpose of academic writing, which helped students to develop better than in a traditional classroom.

Instructors should consider using online peer review activities in their language skills classes. Online peer review activities are effective for academic literacy development because, at minimum, they allow students time to identify what the writer wants to convey and to provide meaningful and constructive feedback. However, peer reviewing academic writing may not be an easy task for students, especially EFL students. It would be better to provide training on how to conduct effective peer review for academic literacy.

Recommendations

Future research could investigate the role of other types of CMC tools in students' acquisition of academic literacy in synchronous and asynchronous settings. This study primarily investigated asynchronous online discussion tools. In future research, synchronous tools, such as virtual classrooms and online chat, or asynchronous tools, such as email communications, could be explored.

The role of computer-mediated communication in peer review requires further exploration. Based on the results of the study, computer-mediated peer responses should be used in other classes, such as reading, listening, and speaking, as well as in content area classes (e.g., second language acquisition, applied linguistics, history of English) to facilitate the process of students' acquisition of academic literacy. The benefits of this inclusion are obvious, especially for EFL students.

Furthermore, and almost importantly, future research that is expected to emerge from the present study should examine the role of other types of CMC tools in students' achievement of academic literacy using samples of students with low, intermediate, and advanced levels of proficiency and across different class grades. In future research, synchronous tools in Blackboard, such as Elluminate Live online chat, or asynchronous tools, such as course email communications, should be explored in longitudinal studies. The role of computer-mediated communication on peer reviews of written assignments should also be examined further.

Using the LMS of Blackboard provided opportunities for EFL students to participate in discussion forums. Issues of limited oral proficiency and cultural issues that prevented students from engaging in face-to-face communication in the classroom were not a major issue.

However, conducting engaging and effective online discussions and other types of computer-mediated communication was not easy. Several issues must be considered by instructors who consider incorporating computer-mediated communication in the form of online

discussions or online peer review to enhance their teaching, such as the use of interesting topics related to the topics of the syllabus.

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