Extra-Dimensional In-Class Communications: Action Research Exploring Text Chat Support of Face-to-Face Writing

Barry Lee Reynolds [a,*], Tom A.F. Anderson [b]

[a] *Education Center for Humanities and Social Sciences, National Yang-Ming University, Taiwan*
[b] *Flinders University of South Australia's School of Computer Science, Engineering, and Mathematics, Australia*

Abstract

Two experienced English as a Foreign Language (EFL) teachers transformed a traditional pencil-and-paper writing classroom that focused on sentence writing mechanics for Taiwanese graduate students by incorporating in-class text chat to augment students' regular classroom regime. This blended-style classroom afforded the teachers enhanced monitoring and guidance of students during the writing process. Students practiced sentence writing, offered peer support during learning, and interacted in real-time practice of sentence patterns taught. The incorporation of text-chat into the traditional classroom increased the amount of interaction amongst students as well as between students and teachers. Findings revealed that students often supplemented their in-class text chat on-line writing with spoken discourse but seldom utilized other on-line technologies available. This action research investigating technological innovation in a writing course facilitated the identification of emerging issues within EFL academic writing classes mediated by in-class chat-rooms, namely: peer support, self-correction and punctuation.
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Writing is an essential component of academic English coursework, yet it is challenging for teachers to provide in-class feedback to individual students regarding their writing. Students of English as a foreign language (EFL) have numerous problems in English writing difficult to resolve, and in particular, those who are speakers of non-Western languages have distinct difficulties with English punctuation and advanced sentence patterns. A writing instructor confronted with problem writing may seek to devote a significant portion of class time to providing individualized one-to-one writing instruction (sometimes referred to as "conferencing"), but in even moderate-sized classes, this approach quickly reaches its limits. It is more common for teachers to restrict their feedback to the marking of compositions, but due to the time necessary for marking written work, teachers highlight incorrect turns of phrase, and students reviewing graded writing assignments have difficulties recalling why they made those particular errors. A compounding factor is that passive learners rarely review error corrections to an extent necessary for internalizing natural patterns of the written language.

Instruction is vital in the development of written language, yet mastery of a language or writing does not come simply through learning the techniques (Vygotsky, 1962). The construction of meaning within the context of social interaction with teachers and peers is necessary for learning the intricacies of language as a system (Pena-Shaff &

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* Corresponding author.
  E-mail address: barry@ym.edu.tw (B.L. Reynolds).

Nicholls, 2004). In the digital age, online text chat has become one of the most commonly utilized forms of social interaction (Lim & Meier, 2012). A text chat environment provides multiple computer users with a shared area in which they can communicate using text; computer users are able to see a history of previous comments and can type their own comments for others to see. In-class text chat provides a medium for the exchange of ideas and a channel for receiving the assistance of peers (Jones, Garralda, Li, & Lock, 2006; Godwin-Jones, 2005; Sauro, 2009). Accordingly, we propose a technological approach for teachers to ensure that all students, even those less capable, gain maximal benefits from in-class writing.

Teachers are eager to increase the productivity of both teachers and students, but the use of technology is often met with caution. Educators raise concerns that the introduction of technology is to the detriment of valuable student-teacher contact time. Although computer technology allows writing instruction to move from a focus on composition towards "writing, response and revision," Computer-Assisted Language Learning (CALL) approaches for writing have primarily centered on writing assignments or on computer tutorial programs (Stan & Collins, 2002). Fortunately, unlike in the past when CALL was widely viewed as something only for beginners and not something suitable for the improvement of academic writing (Levine, Ferenz, & Reves, 1999), now CALL is considered to be a possible solution to problems experienced by advanced language learners as well as teachers with time-constraints. Innovations brought about by CALL research have provided advanced learners with a means of noticing previously undetectable errors in writing such as miscollocation (Shei & Pain, 2000; Wible, 2008; Wible, Liu, & Tsao, 2011), putting them in positions to produce writing in a more native-like manner through the incorporation of longer phraseological language units (McAlpine & Myles, 2003). Jing Xu and Susan Bull (2010) showed the potential of open learner modeling for assisting advanced second language (L2) speakers to self-correct grammatical rule usage. Likewise, with the advances in CALL technology, teachers are able to monitor students during the writing process with unobtrusive computer screen recordings or the review of user logs; these advancements provide insights into L2 learning that are not possible with traditional writing research or teaching (Glendinning & Howard, 2003).

When used appropriately, technology can transform a classroom, especially when it affects the communication among the participants. Carol Chapelle (2003) suggested that computer mediated communication allows learners to benefit from planning time before production, and learners self-correct more often, which may result from signals received by interlocutors. It is our thesis that graduate-level EFL students can be well served by the use of software that forms an environment in which social interactions are well suited to the focused study of writing mechanics. In this action research, we implemented a system that could bridge the communication gap between teachers and students, with the hypothesis that by incorporating synchronous chat into a writing class, teachers could provide just-in-time feedback to students about their writing. In this one-to-one classroom, each student and teacher had their own notebook computer, allowing them to access a bespoke text chat environment that not only enabled learning of advanced sentence patterns and punctuation, but also enabled real-time correction and discussion, both oral and text-based. Additionally, the communication medium could increase the amount of interaction amongst students as well as between students and teachers.

1. Literature review

The use of computers and technology in the field of language learning has been prominent since the early days of computing in the 1960s. Computer technology has numerous well-established positive effects on the learning of writing. Likewise, blended learning has enormous potential to improve EFL writing classes. For example, a comprehensive 46-study meta-analysis of any form of online learning indicates that blended learning, which uses both an in-class and an online component, is superior to either an online-only or offline-only mode of instruction (Means, Toyama, Murphy, Bakia, & Jones, 2009). The transformative influence of blended learning is related to how it can promote connections between "people resources" and "information resources" (Cummins, 2000). Blended learning can amplify the potentials of the classroom by providing immediate access to assistance from teachers and peers. In view of such a context, we present the following review of related literature. In Section 1.1 background literature on corrective feedback of grammatical errors is reviewed, followed by Section 1.2 where the need of providing L2 writers with corrective just-in-time feedback on not only grammatical errors but also punctuation errors is discussed. Next, in Section 1.3, the benefits of incorporating computer-mediated discussion tools into traditional classrooms are considered. Finally, in Section 1.4, the reasons for selecting text chat as the

means of providing L2 writers with the opportunity to participate in computer-mediated peer communication are given.

1.1. Corrective feedback

EFL writing instructors are bound to provide some types of written feedback on L2 learners' written work. Feedback on student writing has been researched with the explicitness of corrections in mind (i.e. whether corrections should be coded or uncoded) and whether all or only some of the errors should be marked for correction (i.e. whether corrections should be focused or unfocused) (see Sampson, 2012; Bitchener, Young, & Cameron, 2005; Bitchener, 2012 for discussion). However, there is a serious mismatch between research findings and classroom applications in the area of error correction (Lee, 2013). The growing debate between the effectiveness of corrective feedback on L2 writing (Truscott, 1996, 1999, 2010; Ferris, 1999, 2004, 2010) largely ignores what actually occurs in the writing classroom. For example, most of the feedback studies use a "one shot" approach to grammar correction, in which L2 writers are only provided around five minutes to review teacher corrections before being expected to have internalized the feedback enough to produce error free writing. Chian-Wen Kao (2013) also pointed out that the majority of studies claiming investigation of a possible difference in the effects of focused and unfocused feedback only did so for the English article system. Making claims about focused and unfocused feedback for the English article system and making claims about focused and unfocused feedback of grammar errors are two very different issues. In other words, it has yet to be determined whether what is true about focused feedback on English article usage can be generalized to other grammatical errors. Kao (2013) also noted that previous research claiming investigation of the effects of grammar feedback on subsequent writing sometimes included orthographic correction, which may have compromised results. Until this research issue is resolved, we feel a technology enhanced writing class is more equipped to provide L2 writers with the just-in-time support necessary to make input salient.

1.2. Punctuation

Just-in-time support can help reinforce correct language usage that may be more difficult for L2 writers to independently perceive through the examination of their writing that has received teacher feedback. During writing classes English teachers often stress to L2 learners the notion that non-conventional usages of English are at times okay for native speakers of English but not for EFL learners. During such discussions punctuation errors may take a backseat to grammatical errors; nevertheless, the writing produced by non-natives will still be judged by punctuation errors. In fact, Kristen A. Gansle et al. (2004) called attention to the promising subfield of punctuation in writing research, stating that since punctuation is an easily measurable element of language, it is worthwhile to explore whether there is a correlation between writing ability and punctuation usage. For students learning how to write in their native language, evidence for a possible correlation was found between quality of writing and mastery of the English punctuation system; this area of writing seems especially beneficial to teachers who wish to help advanced students who lack this ability in writing. Their research stressed the small amount of time necessary for reviewing of students' writing to grade punctuation errors. However, English L2 learners seem to have a hard time grasping the importance of improving their usage of the English punctuation system, especially when writing more complex sentence types. There is always a potential for scrutiny of their writing once it leaves their hands. L2 writers may need their attention drawn to correct punctuation usage because they lack an environment that reinforces knowledge on how to correctly use the English punctuation system, a niche that synchronous computer-mediated communication could fill.

One reason for the difficulties that native speakers of Chinese face in usage of the English punctuation system could be in their assumption that sentence punctuation is a universal language phenomenon. Although the Chinese and English punctuation systems share several similarities including the comma, exclamation mark, question mark, semicolon, colon, parentheses and brackets, the punctuation marks for these two languages vary in their form. For example, the period or "full stop" *jùhào* (。) in Chinese is a small circle that is placed in one of two positions depending on which direction the Chinese characters in the sentence have been written. The Chinese "full stop" *jùhào* (。) and the English period share a similar meaning, yet the placement differs (Ministry of Education, 2008). In addition, the Chinese punctuation system contains several punctuation marks that are alien to the English system (see Table 1).

There are several other differences between the English and Chinese punctuation systems that may cause native speakers of Chinese to produce errors in their English writing. The comma used in Chinese has a similar usage to

Table 1
Comparison of English and Chinese Punctuation Systems.

Punctuation Marking	English	Chinese
the period	.	。
the comma	,	，**
the exclamation mark	!	！
the question mark	?	？
the semicolon	;	；
the colon	:	：
parentheses	()	（ ）
square brackets	[]	【 】
enumeration comma	*	、
middle dot	*	·
quotation marks	" ' ' "	「『 』」
ellipsis	…	……
wavy dash	∼	∼
en dash	–	–
em dash	—	– –

Note. In addition to a difference in form, the usage and placement of punctuation differs between the two languages.
* The English punctuation system does not have an equivalent marking.
** The Chinese punctuation system cannot be used for series.

the English comma but with a single exception: It cannot be used when writing a series (e.g., I like to eat bananas, oranges, and peaches.). In Chinese, a different comma, the "enumeration comma" *dùnhào* (、) or pause mark is utilized. Another distinguishing feature of the Chinese punctuation system from the English punctuation system is the "middle dot" *wèngéhào* (·) which is used to signal the separation of a translated foreign first and family name. In Chinese it is customary to write a person's family name before his or her first name, but many foreign names are written in the exact opposite. The "middle dot" *wèngéhào* (·) signals readers of Chinese that they are reading a foreign translated name, thus, the first and last names should be reversed. When referring to books, Chinese utilizes special book title marks; the single marks are only used if they occur within the double marks. While serving the same function as in English, the ellipses in Chinese is composed of six dots, unlike three in English and takes up two full spaces. The wavy dash and the en dash serve similar functions in both languages, signaling a range; however, for Chinese, the wavy dash is used more often in giving a range of numbers (e.g., "10∼20" means "10 to 20"), or in exaggeration of vowel sounds or the pronunciation of a word (e.g., "Wa∼∼∼" means "woooooooooow"). The em dash serves the same purpose as in English and takes up two complete spaces (Ministry of Education, 2008).

1.3. Computer-mediated discussion

In a classroom, we might reasonably assume that computer-mediated communication could augment the written and spoken communications between teachers and students, especially for a writing class. This added level of communication may transform the classroom from one in which the instructor's only role is information provider to one in which the instructor is participating in students' writing processes. Sara Cushing Weigle and Gayle L. Nelson's (2004) results showed that when using email to supplement face-to-face tutoring, Internet-based tutoring could be much more helpful to L2 learners than traditional face-to-face tutoring. Likewise, the results of Reima S. Al-Jarf (2004) indicated that students with supplemental online writing instruction fared better against those students who received only the traditional lecture and textbook approach to teaching writing. These studies indicate that traditional methods of teaching can be enhanced through the web, especially when learners are allowed to communicate with teacher and peers. Therefore, our hypothesis is that a lecture-based class would be improved by allowing teachers and students in a language arts classroom to communicate via text chat in real-time.

The Daedalus Integrated Writing Environment (DIWE) has long provided a computer-based system for teachers (Chávez, 1997). It features a discussion forum as well as writing prompts and a word processor. A writing environment like DIWE has the advantage of scale as it provides a number of different ways that a writing class may be supported.

On the other hand, modern social technologies such as chat and email provide affordances for EFL writing: Students enjoy using them for assignments and are encouraged to use them to practice beyond their assigned use. Bette Brickman (2003) found that students favored the individualized attention and social aspects of online courses. Students utilized English writing for communicating with classmates not only during formal assignments, but also when writing e-cards, emails, and bulletin board postings. Just by providing students an outlet to use English, students used English more often than in her "offline" classrooms.

1.4. Text chat

Text chat has often been used to provide educational opportunities when face-to-face interaction is impossible or limited (Hastie, Chen, & Kuo, 2007; Chen & Wang, 2008). Major points can be summarized in text chat; furthermore, teachers can maximize individualized learning. In distance language learning, it has been found that text chat caters to different learning styles and language proficiencies (Chen & Wang, 2008). In particular, shy students who are given access to text chat participate more. In contrast with these studies, our current work involves text chat within a classroom. We aim to demonstrate that these key advantages seen in distance learning can also be harnessed within a blended classroom.

Although there is a lack in research where teachers utilize text chat in face-to-face classes, especially when the teacher's computer screen is projected for the entire class to view, there still have been a number of studies showing the impressive role that text chat plays in encouraging peer interaction while engaged in online learning. Nik Aloesnita Nik Mohd Alwi, Rebecca Adams, and Jonathan Newton (2012) suggested that the use of text chat in classes be structured within tasks to aid learners to make the most of collaborative writing contexts. They found tasks that focused on specific L2 forms to be influential in encouraging learners to refine their knowledge of said forms. Shannon Sauro (2009) investigated the relative effectiveness of two types of corrective feedback delivered through text chat. Although no significant difference was shown between the two methods of feedback, the learners involved in the study increased their knowledge of the target L2 form regardless of the method of feedback. In addition, significant gains in grammar knowledge were shown on the immediate posttest compared to the control condition, indicating that just-in-time support provided through text chat may increase the speed at which learners are able to refine their knowledge of grammatical structures. However, some difficulties may still arise with the use of text chat in a writing class. Li Jin and Wei Zhu (2010) found learners' previous experiences with text chat to be influential in how learners were able to take advantage of text chat to aid their academic writing. They found no difference in language fluency but instead found a difference in technology fluency to be the reason for breakdowns in communication via online chat. Therefore, it is necessary for teachers to ensure learners are equally matched in their experience and familiarity with any technology that is integrated into a regular classroom regime.

Synchronous interactions among teachers and students via text with a dedicated chat server have been shown to differ from the traditional classroom. In an online setting, text chat provides a very strong medium of communication. Rodney H. Jones, Angel Garralda, David C. S. Li, and Graham Jones Lock (2006) compared participants in online and face-to-face tutoring sessions using Halliday's functional-semantic analysis. The results indicated that there was a significant difference between the modes of the tutoring sessions. For example, tutors often took more control during face-to-face interactions, whereas online encounters provided more opportunities for learners to take control of the discourse and tutored content. Similarly, Susana M. Sotillo (2006) found participants used text chat more than video chat to provide corrective feedback to L2 learners. Yuping Wang and Nian-Shing Chen (2012) found that participants rated text chat as second among five features in an online synchronous cyber face-to-face environment. Although their study granted learners access to a combination of oral/aural, visual, and text-based interaction mechanisms, the participants felt text chat was the most satisfying of the five. It should be noted that in their study, text chat was not used in isolation: Instead, "listening, seeing, and text chatting occurred simultaneously," indicating that text chat can also increase other modes of communication in a classroom (Wang & Chen, 2012, p. 320). This action research also aimed to demonstrate that online learning allows students to redirect focus on more global elements of writing rather than the grammar and vocabulary seen in the more traditional modes of teaching; the underlying assumption is that this increase in student-directed learning is a result of being online, not owing to the technology being used. On the basis of the literature reviewed above, it is our belief that a text chat component can significantly improve a writing class. Previous research clearly shows that web media has yielded significant benefits to the ecology of writing courses, fostering more student-centered learning and enabling a greater amount of practice both in and outside the class. However,

the web-based component in each of the writing research studies outlined above was made possible through recent advances in distance learning. How those benefits gained could be transferred to an in-class setting is less clear. As computer technology becomes ubiquitous, we find it likely that in the near future, classrooms of students will have access to portable wirelessly-connected computing devices, one for each student. Furthermore, we hypothesize that the inclusion of text chat in the classroom could allow learners a better chance to practice their writing, providing a synergistic relationship between writing and speaking in the target language.

2. Methods and materials

The main goal of a writing class is for a teacher to guide students towards improving their writing. Specifically, the focus of this class was to aid students with a high level of competence in their academic field who were not intrinsically motivated to improve their English writing. Taking into consideration the needs of all students, we determined that the learning of sentence mechanics would be beneficial to all. We sought to address the specific concerns of raising students' punctuation skills and increasing their knowledge of more advanced sentence structures, a necessary skill to begin sharing research in academic publications. This was partially due to the observation of student performance during the previous semester in which traditional punctuation error correction did not yield noticeable improvement in students' subsequent writings. Because traditional methods of marking such errors and asking for student revisions did not seem to raise students' awareness of the importance of punctuation as seen through continuation of similar errors on subsequent student writings, we felt immediate feedback of errors, including punctuation errors, should be provided via in-class text chat. Thus, we also chose a textbook that emphasized a variety of sentence patterns, requiring a good control of the English punctuation system (Longknife & Sullivan, 2002).

2.1. In-Class text chat environment

The action research required an environment in which text chat could supplement the writing class. Therefore, either the technology needed to be easy to use so that it would take little time to learn to use it, or the time that needed to be invested in learning how to use the system needed to have a dramatically positive effect. Determining which approach should be used required knowledge about the classroom ecology.

The main distinction between our in-class chat system and previous work with online environments for writing classes is that we focused on in-class chat, with the Internet as supplemental material. We aimed to make use of the system intuitive. If chat was used, a large number of students could collaborate with each other and the instructor in real time. This provided an immediate scaffolding effect; the experienced teacher could guide the students towards forming a community of support that developed a deeper understanding of the lesson.

In the class, all the students were experienced computer users with their own notebook computers. As a result, students could type fairly quickly, use an Internet browser, use chat rooms, and use basic Internet protocols. Accordingly, we designed the system primarily for ease of use by this group of students, such that a given student or group of students could be asked to make a written response that could garner teacher feedback. The majority of research into computer-based writing instruction in the classroom generally removes the teacher from the main teaching duties, transforming the role into one that of a facilitator who aids the students in using computers. In contrast, it was our intention to leave the instructor as the head of the class. In addition, because teachers or students might like to make a revision or correction of their own work or the work of others, another design concern was to allow more than one person to type at any given time, to allow copying and pasting of answers, and to distinguish the comments.

We developed a homepage describing class goals and sample sentences and incorporated MediaWiki extension Lace, a push chat client, to which we made special modifications. Provisions for part-of-speech tagging were provided via buttons for tagging parts of sentences (e.g. verb/noun). Part-of-Speech (POS) tagging refers to the process of labeling words in a text as corresponding to a particular part of speech, such as verb, noun, or adjective. In contrast to automatic POS tagging, the tagging tools incorporated into the wiki required users to manually indicate the parts of speech of words in the sentences they wrote. The interface was hosted through an intranet on an Ubuntu Hardy LAMP server. In addition to the interactive shared workspace, students also had access to a discussion board and could retrieve the history of previous chat sessions through the homepage. The basic interface can be seen in Fig. 1.

In the previous semester, students had studied writing in a more traditional classroom where they received written corrective feedback on grammar exercises and typed compositions. This time, all brought their own notebook computers
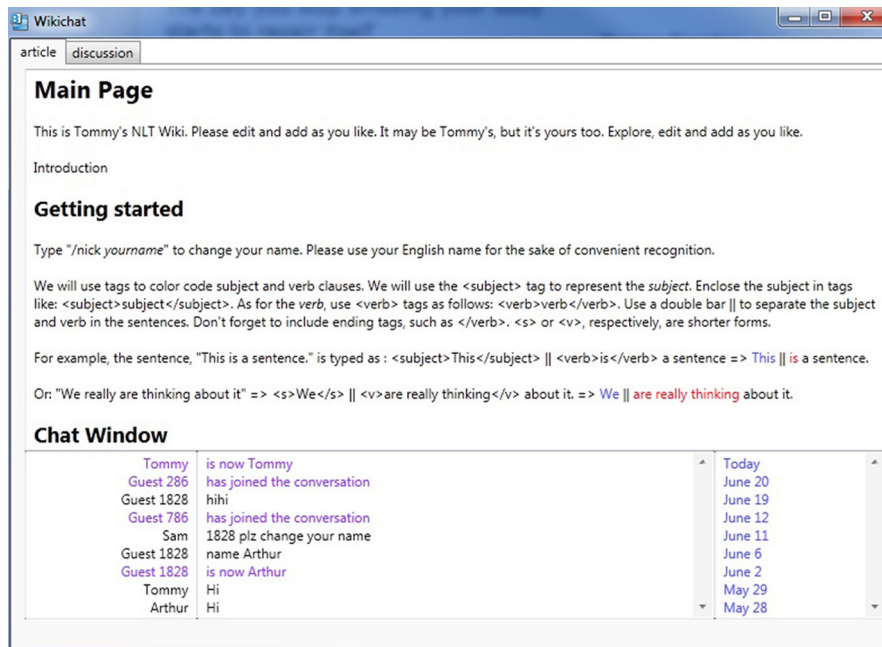
Fig. 1. Wikichat homepage.

connected to campus WiFi. As in the earlier semester, the lecturer's screen was projected for viewing, and students and teachers met in the same room. New to the class were the text chat and the textbook used (Longknife & Sullivan, 2002), a textbook of sentence mechanics and writing.

Ten two-hour English writing lessons were taught to a class of 29 graduate students studying in the field of network learning technology. This class was comprised of both MA and PhD students with the PhD students generally having a better grasp of English writing than the MA students. All students would have passed a TOEFL iBT 71 or other equivalent English proficiency test before being admitted to their current program of study, with the PhD students needing to pass a higher proficiency test before graduation. Attending the writing course was mandatory, but only a grade of pass/fail was given at the end of the term. Attendance records and students' class performance was submitted to their academic adviser for review at the end of the term. Students' notebook computers were used to review homework, answer questions, and offer peer review. Each class was co-taught by two experienced EFL teachers who alternated roles of "lecturer." The lecturer's role was essentially to teach the book's content while ensuring students stayed on task. The second teacher primarily observed while taking anecdotal notes, but at times assigned tasks to individuals, dyads, and groups, or assisted the lecturer via the chat by posting example sentences or guiding students. Prior to each class, sentences and phrases were prepared to be cut and pasted into the text chat room as needed. A typical class covered 2-3 sentence patterns. The class included: checking homework/review (15 min.), introducing new content (15 min.), practicing new content (1 hr.), reviewing (15 min.), and assigning homework (15 min.). After ensuring each student was connected to the chat environment, the lecturer guided the class through a review of the homework assigned the previous week. Homework questions were assigned from the textbook. Each student posted his/her answer to at least one homework question in the chat room. Corrections and advice were drawn from classmates orally and via chat. The EFL teacher who took on the role of "lecturer" could also type comments into the chat window to provide example sentences or feedback.

The introduction of new content consisted of introducing new sentence patterns, explaining textbook content, and asking questions to ensure understanding. During practice time, the main activity was for students to write and post sentences in the text chat for scrutiny and comparison. Sentences followed new sentence patterns, as well as structures taught in past lessons. Tasks included: identification of sentence structure patterns, sentence correction, part-of-speech tagging, and sentence sampling. We used the term *sentence sampling* to describe searching for real-world examples of the target sentence patterns on the Internet or in text documents.

During review, class opened up for discussion and questions; subsequently, students were given more complex tasks to complete in dyads or small groups. Once class work was checked and revised, the following week's homework was explained thoroughly to ensure it could be completed before class was dismissed. The two teachers immediately reviewed that particular in-class text chat log while discussing difficulties or interesting phenomenon that occurred, prepared the next class content, and then separately wrote up their reflections.

3. Results

The main focus of this paper was on the text chat environment that was used within a live class; the primary use of the text chat system was for presentation of sentence patterns written by the students, not for a purely social chat environment. The text chat system allowed the class to have a shared workspace where focal points of interest could be presented and then discussed in the class. Basically, the text chat formed a shared artifact, providing a way for students to see what others were writing and allowed the teachers to direct attention towards those aspects of writing that were important and relevant.

As with Al-Jarf's (2004) blended learning study, students were positive about the lessons. The most obvious indicator of how students felt about the course was the attendance records for the course. Unlike the previous semester of traditional writing instruction, each student had either perfect or near perfect attendance for the technology enhanced class. In addition, unlike the previous semester where students were usually stationary and silent, in the technology-enhanced class, students were very emotive and actively communicated with peers. Yet, we experienced several difficulties upon introduction of text chat to the writing classroom. On isolated instances, computers crashed, forcing two students to share computers. This changed classroom dynamics, especially in self-paced and "speed racing" type activities. Part-of-speech tagging, stressed in the beginning of the course, was resisted—a more user friendly and quick tagging system may have yielded better results. Reflections on a third problem, inappropriate comments, are considered in the discussion section.

A discussion board, a basic tool of many online courses, was also incorporated into our system. Even though teachers encouraged students to access the discussion board outside of class time, no students utilized this tool. This could be attributed to no assignments requiring the use of the discussion board. On the other hand, when students were asked why they did not post questions or comments to the discussion board, the most common reason given was that they would be meeting the teachers face-to-face each week and could ask questions during class time. Even though this course was required, it was a non-credit course with no other penalty for performing poorly other than being considered an "uninterested" student. Maybe under different circumstances students would have been more active in activities not specifically required of them by the teachers. In addition, students may have felt that the in-class text chat also gave them a space to voice questions and opinions, deeming the discussion board unnecessary.

One of the main successes of the course could be because we considered ourselves advanced computer users. A teacher without an adequate computer background for support may not have as much success as those that have experience using computers for learning or teaching. For example, Brickman (2003) experienced several difficulties in her first attempt at teaching an online course and benefited very little from the training courses provided by her college. Instead, she pursued one-on-one tutoring that allowed ample opportunities to practice what was being taught. Also, Brickman stressed that even though several online platforms were available for teachers who wish to teach online courses, a basic understanding of HTML coding is necessary to customize educational materials planned for online use. In our action research, without having a knowledgeable background in Operating Systems, Web Server software, and programming, we would have been forced to utilize an online platform. In order to not overwhelm students, we intentionally gave students access only to online resources needed for our course. Still, for less-seasoned computer users, a "pre-packaged" platform may be a better choice for a first attempt at teaching an online or blended course.

Students made repeated attempts at revising their sentences to approach a native level. As seen in Fig. 2, in which students created their own sentences following the pattern of an internal series of appositives enclosed by a pair of dashes, the student indicated as "A" initially made an error in pluralization. After oral discussion with her classmates, she was able to locate her error, but unfortunately there was another error introduced in the process. Her attempts at improving her English were spurred forward by further oral discussion, but at the same time, other students were able to participate in creation of their own sentences. In addition to the focus on the use of the punctuation and sentence mechanics, students also used creativity in their sentences. In such situations an alert EFL teacher was needed to observe the oral interaction that complemented the text chat. In this instance, because student peers had indicated that

Chat Window

Alice	Some activities--reading children's book, watching cartoon, fooling around--are my favorite to play with my nephew.
Bob	My favorite drinks --cola, root beer, and juice--are all bought in 7-11.
Alice	Some activities together--reading children's books, watching cartoon, fooling around--are my favorite to play with my nephew.
Charles	Some movies -- House of Wax, Saw, Final destination 3 -- often make me feel grody.
David	My pets--cat, bird, dog are--all my best friends.
Alice	Some activities--reading children's books, watching cartoon, fooling around--are my favorite to play with my nephew.
Ellen	The weathers-- sunny, rainny, cloudy--are my favorite.
Alice	Some activities together--reading children's books, watching cartoon, fooling around--are my favorite to play with my nephews.

Fig. 2. An example of iterative attempts at improving discourse quality.

"Alice" had made a mistake, there was no need for the EFL teacher to intervene. Verbal or textual communication between the EFL teacher and student would only result for instances in which an error appeared in the chat without notice from peers. Because each lesson focused on a new sentence pattern by incorporating new knowledge into what students had already mastered, the EFL teacher had to ensure that corrective feedback was given for errors involving previously-taught sentence patterns and punctuation that peer interaction or attempts at self-correction did not resolve.

As the class progressed, by working closely with students and their sentences, several areas of interest became apparent. Through interacting with the students, we became aware that one specific problem area of even advanced graduate students' writing was English punctuation. This triggered the instructors to pay closer attention to punctuation errors and request students to retype and self-correct errors posted to the text chat. Taiwanese graduate students are expected to write at a level which will guarantee their research writings acceptance in academic journals. Simple but noticeable errors such as punctuation usage and English writing mechanics are often blamed for keeping their publications from being accepted.

It was apparent in our action research that errors in punctuation were not quick to change, but correct punctuation usage gradually improved and was sustained over the long-term, due to frequent and repeated insistence on English punctuation patterns. One specific problem that our students experienced was period usage. The common accepted usage of a period in the English punctuation system is to indicate a full stop or the end of a complete thought. Likewise, in Chinese the "full stop" *jùhào* (。) is used for the same purpose. Unlike in English, usage of the Chinese counterpart "full stop" *jùhào* (。) takes up a full space. The punctuation marks used in most European languages take up half a width of a space, whereas written Chinese allows punctuation to take up a full width of a space. Because of this acceptable usage in their first language, the students in our action research often placed a full space both before and after a period. Similar usages also manifested with other punctuation marks.

Chinese and English punctuation systems serve their own unique purposes, but the difference may not be clear to EFL learners. During the previous semester in the traditional writing classroom, repeated attempts at correction of students' punctuation errors yielded minor improvements; however, when students were asked to self-correct in real time, these errors recurred less frequently. The improvement in punctuation usage can be held accountable for the real time practice that text chat provided our students. When punctuation is corrected with a red pen on paper and returned to students—though this situation is better than not receiving any feedback at all—they have little need to practice or improve since everything has been marked for them. Also, it may be difficult reading a correction of a punctuation mark on paper unless the teacher rewrites the sentence for the student. We found that text chat, on the other hand, offers a unique opportunity for teachers to point out students' errors and have them attempt to self-correct in real time, making the learning effect more meaningful and lasting.

In this action research, technology afforded participation in a hands-on interactive writing class. Compared with traditional Taiwanese writing courses, students in this action research provided more guidance and support to one another. This result supported previous research by Mark Mabrito (1991) in that the students in our class who utilized electronic communication contributed more and offered more feedback to their peers than the students from the previous semester that did not utilize in-class synchronous chat. Mabrito's subjects utilized email, an asynchronous

method of communication, whereas ours utilized synchronous online face-to-face text chat. It seems that the electronic environment allows for or increases students' willingness to participate and provide feedback to one another than a more traditional writing environment.

The in-class text chat may have been specifically influential in the increased participation of students in our action research. While reviewing the in-class text chat log data, the researchers discovered that many interactions of the more introverted students were triggered by a comment made by the teacher taking on the non-lecturer role. For example, if while practicing a sentence pattern, a student made error(s) in use of the pattern, the teacher would be able to use text chat to ask a question about the sentence just written by the student. In the traditional writing class, even if students were given time to practice, the teacher would most likely be unaware that the students were producing errors. The text chat environment allowed both teachers to see the sentences written by students and then to provide either verbal or written (i.e. typed) feedback on the errors. Such just-in-time support encouraged students to practice their writing more than in the previous traditional writing class. Sometimes not only would the student that the question was directed at attempt to revise the sentence, but also classmates would attempt revisions as well, often substituting their own information in place of that of their classmate's. Although the teacher usually used the chat interface to provide feedback, the students, on the other hand, usually asked their questions through verbal communication with their classmates and the teacher. There was an increase in verbal communication between students and between students and teachers compared to previous semester's traditional writing class. Whereas in the traditional class, writing was viewed as a solitary activity where little verbal communication took place between students, the technology enhanced class-fostered interaction. Students were often seen pointing to each other's notebook screens or the teacher's projected screen while asking questions, making comments, reading comments, and genuinely enjoying themselves.

Using students' names as nicknames in the text chat also offered teachers the opportunity to quickly skim the chat log to determine which students had participated recently in chat and those who had not. In a classroom with a size similar to or lower than the one in this action research, it would be quite easy for the teacher to quickly know which students were not participating and thus prompt the less interactive students to participate more. If the teacher realized certain students were not participating as much as others, a query would be made asking if those particular students could attempt to practice a sentence pattern. Brickman (2003) also experienced a similar occurrence during her class. Utilizing WebCT, she was able to determine the length of time that had lapsed since any particular student had last logged on. She made it a point to contact any student that had not logged in for several days in order to encourage the student to continue studying. She often found students considering dropping the course because of personal reasons, but in the end decided to follow through and finish the course because of the individualized attention received from the teacher. Brickman's class had a nearly perfect retention rate for her online course. Furthermore, she received favorable feedback from students regarding the online course, more than traditional face-to-face writing classes. Likewise, our system created an environment for more individualized attention by allowing multiple students to answer the same or similar questions; at times, students completed more than was assigned. With obvious enthusiasm, sentences were constructed following taught structures. Often, students smiled when writing and reading sentences—especially as noun subjects named classmates, teachers, even famous Taiwanese. Furthermore, upon the urging of teachers, sentence sampling—the harvesting of sentences from papers, their own and from courses—became a lively text chat activity.

4. Discussion and conclusion

Our in-class chat system had several advantages over related approaches. Compared to an environment like DIWE, our text chat offered a major advantage because it could be accessed through a web browser without requiring installation. This significantly reduced the difficulties of managing the software, and given the speed and convenience, the Internet browser would be sufficient for practically every educational delivery method in the near future. Twenty-nine students were able to connect with their own notebook computers to participate in interactive writing sessions. As the chat updated automatically, there was no need to reload, and the writing could be submitted much more like a face-to-face conversation than a forum exchange. The instructor took the role of a writing companion, guiding students through exercises. One disadvantage of our in-class chat system was that the instructor needed to lead the class actively, which did not allow a lot of time for visits with individual students, a reported advantage of DIWE (Chávez, 1997). We overcame this disadvantage by having two experienced EFL teachers teach the course, allowing one teacher to lead the class while the other took care of other responsibilities.

Language learners have significant hurdles to overcome. Most significantly, for learners to produce their own academic discourse requires a high level of understanding of the ways that the new language holds meaning. In our class, there were many example sentences. Although many of these sentences were readily understandable by students, there were many others that were found to be more difficult to understand for reason of vocabulary or grammar. In such cases, we encouraged students to consult with their peers to establish meaning. Additionally, the class was kept together, meaning that in general, the entire class was focused on a small group of sentences. Only when one group of sentences was completed did the class move on to another group of sentences. As a result, it was much easier to ascertain when students did not have complete comprehension, and therefore, the class as a whole could benefit from the meaning-focused inquiry.

The nature of the textbook used in the class focused on sentence styles, ones that were a little more difficult and involve more complicated punctuation. Through focusing on the language at a sentence level, students became aware of how the different parts of the sentences worked together. Problems in spelling, punctuation, grammar, and style were used as learning examples, with a goal of creating a learning community that could become aware of mutual difficulties encountered in writing. In addition to working to fix errors made by the students, the teachers also made errors to bring into closer focus the workings of the English language. With the wide scope of content available on the Internet, students were empowered with exploring.

Another important aspect of learning a language, and particularly improving writing, is using the language. By asking students to type sentences that they found or created into the chat, this allowed them to put into practice the language that they were learning. Including a new environment can alter communications in a classroom. Adina Levine, Orna Ferenz, and Thea Reves (1999) noted that writing in a computer-based classroom has a benefit of allowing private interaction to take place. In our in-class chat system, the public nature of the chat system had a dramatically different effect. As the student participation was simply another mode of public communication within the classroom, some negative effects were found. As an example from our class, one student wrote an offensive sentence incorporating another's name. The offended student experienced embarrassment—even expressed disapproval. We predict that classes must develop literacy in this type of digital medium, requiring a relearning of some social norms.

Critics of our class could observe that students were taught at a sentence level, with a focus on mechanics rather than writing. They might wonder at claims of the transformative effect of chat, not realizing that the additional stream of text communication is ideally suited to the situation in the writing classroom, providing a real synergetic relationship with the teacher-led class. Students in Taiwan often express a desire for improving their sentence structure, and the differences between their native Chinese and the English academic language they are required to master for publication. Furthermore, through taking this course, our students reported that they often thought about the sentence style when they were writing their academic journal articles. Though they can definitely improve in other areas of writing, the feedback we received for this semester-long program was definitely positive. The students, having read many published academic works, were already very familiar with the structure of extended discourse; however, they still were encountering many sentence-level problems. Through our class, they gained more confidence and skill in their own writing and further investigated how to use chat outside the class with their peers, teachers, and proofreaders for their own writing. A challenge for future work will be to extend the unit of analysis from a sentence level to a larger scope so that learners can improve their abilities beyond sentence mechanics and ideas at a sentence level to encompass paragraphs and entire works.

A myriad of future research directions for writing classrooms exists given access to sufficient computers. Our action research urges future teacher-researchers to look at technology from different perspectives. Online synchronous text chat was invented for the purpose of communicating with those that are physically separated from us; instead, we utilized this technology for a purpose unintended, but yielded positive impressive results. We urge future teachers and researchers to explore the use of technology not only in ways in which it was intended, but also in ways that could benefit students. Students in this action research were immensely more active in the blended classroom than they had been in face-to-face classrooms in previous semesters. A further and deeper look at the consequences of in-class text chat teacher comments is needed to determine whether this increased student interaction can be attributed to the online environment or merely from the teacher's prompts.

Even with the added interest in participation, most students still seemed uninterested in part-of-speech tagging of sentences, with very few students utilizing this feature in the beginning of the course and with little to no use at the end. Likewise, even though the discussion board was a feature that students were familiar with from other online websites and even courses, no student attempted to utilize this feature during the entirety of the course. Future studies should

investigate changes to the interface or curriculum that could better encourage use of part-of-speech tagging feature as well as incentives for students that utilize and post to discussion boards.

This action research was an investigation of a technological innovation in an EFL writing course. We identified some main emerging issues within an academic writing class mediated by an in-class chat room—peer support, self-correction and punctuation. Future research should take a closer look into students' thoughts and feelings regarding the differences between strictly online, strictly traditional textbook and lecture, and blended writing courses. Furthermore, Chinese, a language that can use the input of phonetics for typing, may yield much different reactions from students learning Chinese as a Second Language (CSL). Not only would this allow for an investigation of whether in-class text chat could positively affect the acquisition and writing of non-alphabetic languages, but also in the case of Chinese, whether using certain input systems (i.e., phonetic-based, shape-based, hybrid) can differentially affect L2 writing. Since different methods have unique strengths and weaknesses (e.g., steeper learning curve, limited input rate), they may have a positive or negative affect on CSL writing produced in computer word processing programs. Future research should build upon our work by looking not only into the differences between face-to-face and online interactions but also at how the use of online interactions during face-to-face encounters can affect other learning outcomes.

Barry Lee Reynolds, Ph.D, is an assistant professor in the Education Center for Humanities and Social Sciences at National Yang-Ming University, Taiwan. He obtained his Ph.D. in Learning and Instruction from National Central University, Taiwan and MA in Teaching English to Speakers of Other Languages (TESOL) from Murray State University, USA. His research interests include Incidental Vocabulary Acquisition, Computer Assisted Language Learning and Second Language Writing Instruction.

Tom A. F. Anderson, M.Sc., is a Ph.D Candidate at Flinders University of South Australia's School of Computer Science, Engineering, and Mathematics, Australia. His research interests include mulsemedia, sensor networks, smart environments, student modeling, machine learning and language learning.

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