Learner Perceptions of a Concordancing Tool for Academic Writing

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Online templates have the potential to scaffold complex writing processes and to provide information and language prompts for writers. The purpose of this study is threefold. First, for assisting students in their scholarly writing, an online Scholarly Writing Template (SWT) was designed and developed. SWT includes two major features: (1) an information template that guides students in their development of content, and (2) a language template that provides students with language support by using a discipline-specific corpus and concordancer as a source of language examples. The second purpose of this study rests on efforts to examine the effects that the learner variables had on participants’ perception of the SWT. To this end, the author implemented the SWT into an academic-writing course and surveyed 20 participants regarding their perceptions of the SWT. Third, individual retrospective interviews were conducted to understand the learning processes, the strategies in use, and the perceptions of students in relation to the students’ different proficiency and publication experiences. The results of the study show that students held a positive attitude towards the scholarly writing template and that the template had varying effects on students’ scholarly writing processes and on students’ use of strategy. Implications and recommendations for future research and system design are addressed.

Introduction

A corpus is a large collection of texts of written or spoken languages. It has the potential to serve as a template for rhetorical moves and language usage in academic writing by guiding learners and scaffolding their learning processes, especially when the processes involve complex cognitive skills. Writing, particularly second-language
writing, is a common task that involves multifaceted planning, organizing, and—all the while—language-usage struggles, such as those concerning word choices, sentence patterns, and grammatical structures. In providing both language-template support and information-template support, it not only heightens awareness of genre-specific lexicon-structural regulations, but also shows how such awareness can help to make the highly complex task of writing scholarly papers in a foreign language more accessible to students. Thus, novice academic writers can spend more time and effort on content and idea development and enhance their scholarly writing effectiveness. The current study aims to illustrate how Internet applications such as hypertexts and concordancer could be valuable template tools that guide and support writers.

A concordancer is a computer application that enables users to search for language patterns in a corpus. It does so by displaying occurrences of keywords or key phrases in an immediate context. Typical output of a concordancer search is as follows.

1 women, is believed to be due to a reduction in loading on his . . .
2 says this was a mistake, due to a “simple confusion of procedures” . . .
3 than a quarter, 27%, said it was due to a better economic climate . . .
4 surveyed, 39%, said this was due to a boost in sales and new orders . . .
5 cheaper at 473 p. This was largely due to a fall of 19 per cent in single . . .

With advances in the Internet and with increases in computer memory, concordancer enables users to observe extensive language examples in authentic texts (Sun, 2003) and provide users with an online environment for inductive learning.

The popularity of concordancers has grown in education recently. From the early 1990s onward, the use of corpus and of concordancers in classrooms has attracted the attention of language teachers and language learners (Chambers, 2005; Dodd, 1997; St. John, 2001; Wang, 2001; Woolard, 2000). Owing to this growing popularity, researchers conducted several studies to explore the uses of corpora and concordancers in various contexts of language learning. There have been two main areas of focus in this research: (1) the extent to which learners actually benefit from corpus consultation and analysis (Bernardini, 2002; Chambers & O’Sullivan, 2004; Cheng, Warren, & Xun-feng, 2003; Cobb, 1997; Gaskell & Cobb, 2004; Johns, 1997; Sun, 2003; Yoon & Hirvela, 2004); and (2) the type of corpora to be consulted (Aston, 1997; Roe, 2000). Results of other studies indicated that, in general, users hold positive attitudes toward the incorporation of concordancers into second-language instruction (Sun, 1999; Lee & Liou, 2003). Many studies examined the effectiveness of using concordancers as a tool for developing lexical and collocation knowledge (Barlow, 1996a, 1996b; Cobb, 1999; Lin, 2003; Todd, 2001; Wang, 2001; Wichmann, 1995; Woolard, 2000). Furthermore, students’ use of concordancers, whether the concordancer is monolingual or bilingual, helps students gain insight into structures and functions of language and to adjust their misconceptions of language rules (St. John, 2001; Todd, 2001; Wang, 2001).

Regarding the cognitive benefits gained in the corpus-consultation process, concordancing features the use of authentic linguistic examples in contrast with
invented or artificial ones, and it offers contextualized language examples (Johns, 1991). Students who engage in concordancer-based exploratory learning activities thereby benefit from an authentic linguistic inquiry and authentic discovery-based learning (Biber, Conrad, & Reppen, 1996; Chambers, 2005; Sun, 2003). Moreover, as students consciously explore the target language during corpus consultation, their own profiles of meanings and uses expand (Johns, 1991). That is, students’ language awareness is enhanced in terms of vocabulary, grammar, and even genre of language. In Dodd’s (1997) words, a learner’s use of concordancers improves the learner’s formal knowledge about the language and gives the learner an insight into the work of the descriptive grammar.

To date, much of the research on concordancers has focused on grammar and collocation learning; few studies address issues concerning the enhancement of students’ writing skills. Even fewer studies, if any, address the use of the concordancer for scholarly writing purposes. Besides, very few studies, if any, examine whether or not learners with different publication experiences and different proficiencies in writing differ in their writing processes and their perceptions of the language support of corpus consultation.

**Background of the Study**

English has become the dominant language for scholarly communication in almost every academic discipline (e.g. Crystal, 1997; Graddol, 1997). Therefore, writing scholarly papers in English is a trend and has become indispensable for many multilingual scholars or scholars-to-be. Allison, Cooley, Lewkowicz, & Nunan (1998) surveyed both graduate students and their advisors, analyzed students’ writing, and identified four main areas of writing problems for non-native writers: (1) failure to organize and structure the thesis, (2) failure to substantiate arguments with evidences from literature, (3) failure to organize paragraphs to show relationships, and (4) failure to attend to language problems, such as grammar and word choice. Of these four problematic areas, three concern both information organization and information development; the remaining area concerns language problems. It is in this context that the present study aims to bridge the gap between learners’ current writing ability and expected ability. To this end, I use emerging Internet technology to provide students with information (structures and moves) and language templates to make scaffolding easily available to students in their writing processes.

**Purpose of the Study**

In this study, I present an example of integrating template prompts into skill-development education. Although there has been an explosion in the number of students writing for scholarly purposes, relatively little research, if any, explores how technology can support academic writing (Wood, Willoughby, Specht, & Porter, 2002). And few studies examine whether writing templates can benefit learners who
have different proficiency levels and different publication experiences. The purpose of this study is threefold: (1) to develop and implement a web-based scholarly writing template (SWT) that addresses the two most prevalent problems (lack of information support and lack of language support) encountered by non-native writers of English; (2) to examine students’ perception of and attitude toward the effectiveness of the SWT and to examine whether students with different backgrounds, in areas such as publication experience and writing proficiency, differ in their perception of the SWT and of the two template modes; and (3) to conduct retrospective interviews with the participating students to examine qualitatively whether students with different writing proficiency and different scholarly publication experience integrate the SWT into their writing differently and whether they have different perceptions of the effectiveness of the information template and the language template.

Overview of the Web-based Scholarly Writing Template

I developed a web-based SWT to scaffold student writing in relation to writing-for-publication processes. The SWT includes both a student module and a teacher module. Two major functions of the SWT student module are information template (moves guidance) and a language template. The website design aims to create a scholarly writing forum that can function either in an academic-writing course or as a stand-alone writing tool to facilitate the scholarly writing process in the planning, drafting, and revising phases. In the following sections, I highlight some unique functions of the SWT.

Design of the Information Template

The information template provides a rhetoric reference for scholarly writers. The template has two modes: a default mode and a writer-modified mode for individual needs. The default mode provides the user with a suggested sections-and-stages outline that hints at commonly used moves in research papers and, more precisely, in abstracts, introductions, methods sections, results sections, and conclusions.

Each section has specific stages. There are, for example, five stages in the introduction section: (1) provide a general setting in which the author can report the problem, (2) provide a relevant literature review, (3) indicate the need for more research, (4) identify the study purpose and the study objectives, and (5) justify the study (Weissberg & Buker, 1990). The information template provides users with a useful rhetoric structure. The modified mode enables students to modify the default template so that it fits the specific requirements of a particular paper. To select the modified mode, the user clicks the arrow button for sequence rearrangement and clicks the Add/Delete button for modification of sections and stages. Figure 1 illustrates the default moves development in the information template. The information template fits the paper outline in the paper-writing zone to aid students’ writing, in the prewriting stage, as well as in the writing stage.
Compilation of Discipline-specific Corpus

The advantage of using corpora in language learning and language teaching is that this use provides the user with a body of evidence regarding the function and the usage of words and expressions (Kita & Ogata, 1997). In order to provide writers with a corpus and a model language in their own field of study, the first step is to build a corpus of various fields of study. The compilation of a discipline-dependent corpus follows three main steps. (1) Information-convention instruction is delivered to the class so that students understand the information convention commonly practiced in scholarly writing. (2) Students are required to find a couple of journal papers in their field of study and search for expressions in each section and stage. (3) Students type or copy and paste those expressions onto the language template and identify at least one keyword from each input expression for model-sentence future searches. Figure 2 illustrates a platform where students can record useful expressions and keywords in the SWT and store them according to the different sections and stages in an information template. Categorizing disciplinary areas, sections, stages, and keywords makes it easy to develop a field-dependent concordancer and language template for future searches.
All sentence corpora contributed by the students are saved in the corpus-screening database for the instructor to check if the sentences are categorized in appropriate sections and stages. The teacher would delete those sentences that were mistakenly categorized in relation to a particular move (sections or stages). Also, the teacher would modify the keyword entries submitted by the students with either too general a scope (e.g. use of “Figure” or “study” as the keyword) or too specific a scope (e.g. use of “modulation” or “streaming” as the keyword). However, owing to the authentic (un-edited) nature of the corpus, it is still possible that the corpus will have errors. The database is shared among users so that sample-recorded sentences, based on different sections of research writing, can increase as the number of SWT users increase.

Concordancer Searches for a Language Template

There are two search methods for the language template. According to the first approach, users locate appropriate language examples by clicking on a disciplinary area, a section, and stage fields. Users can easily retrieve several useful keywords and model sentences for writing reference. Figure 3 illustrates the academic concordancer screenshot. These language examples help students identify both structural characteristics of certain types of scholarly writing and structural characteristics of scholarly word usage. According to the second approach, users search for the concordancer by typing in English or Chinese keywords to search for model sentences. This bilingual keyword search tool is especially beneficial for students with lower English proficiency.

Scholarly Writing Zone

The SWT scholarly writing zone provides a forum integrating various writing tools that aid the publication-writing process. Figure 4 shows the screenshot of an
academic writing zone. The left buttons are the sections-and-stages outline. By clicking on one section or stage, the right column will show its corresponding content. The top buttons include the concordancer toolbar. When the user keys in the search keyword, the concordancer will generate all sentences containing that keyword for students’ reference.

In order to assist graduate students working in a wide range of disciplines, the concordancer is uniquely content specific, that is, the system’s research corpus is classified according to different academic writing sections and stages. When students are writing a research paper’s method section, the concordancer will only search for the corpus of the method section. This feature helps increase the applicability of generating concordancer samples. The corpus in the concordancer is also classified according to different disciplinary areas, such as electronic engineering, material science, computer science, and civil engineering. This classification helps learners locate sample sentences that best fit the learners’ need or reference.

To provide a user-friendly interface, the system enables the user to click on the concordance that the user would like to reference. The system will then automatically copy the sentence and paste it onto the paper in progress and will automatically use quotation marks, which remind the user that he or she should further paraphrase the
sentence to avoid committing plagiarism. To help avoid plagiarism, illegitimate paraphrasing, or overuse of quotations, both class lectures and homework assignments have extensively addressed issues regarding the definition of plagiarism, the definition and the practice of legitimate paraphrasing, and reasons for using quotations in place of paraphrased material. The teacher constantly reminded students that they needed to paraphrase—either immediately or later—any word placed in quotation marks unless the word was meant to function as a quotation.

The system records the number of clicks on each concordance and displays examples according to degree of usefulness (number of clicks). This function enables the user to find useful sample sentences more efficiently.

All the above-mentioned major functions in the SWT aim to provide academic writers with useful writing templates. The following sections report on SWT system evaluation, effectiveness, and students’ attitude toward the writing tool.

**Method**

**Participants**

Survey respondents consisted of 20 graduate students (18 males/2 females) enrolled in an academic writing course at a research-oriented university in Taiwan. The academic writing course was a two-credit elective course geared mainly toward doctoral students. Most participants were in a doctoral program (95%) with 5% in a master’s program. Participants’ program levels ranged from second-year master’s program ($N=1$), to first-year ($N=3$), second-year ($N=9$), and third-year ($N=7$) doctoral programs. All participants were majoring in technical fields, including three in communication engineering, six in electronics engineering, four in photonics, three in electrical and control engineering, and four in computer science. In regard to
previous publication experiences, 75% of subjects were writing or had written either papers for journal publication or dissertations at the time of survey and 50% had publication experiences in international journals.

Three participants (1 male, named as participant H, and 2 females, named as participants S and W) were drawn from the graduate program for immediate retrospective interviews. All three participants were writing their dissertation or thesis at the time of the study. Participant H was a third-year computer science doctoral student. Participants W and S were majoring in Teaching English to Speakers of other Languages (TESOL) and were in their first year and third year, respectively. Of the three participants, participant H possessed poor writing skills, whereas both participants W and S had scored above 600 on the TOEFL, or English proficiency test, and had demonstrated good writing skills.

Procedure

As the researcher of the study, I first introduced the Scholarly Writing Template to participants enrolled in the academic-writing course by demonstrating the SWT functions. Then, I gave participants opportunities first to acquire hands-on tool-use experience and second to write three parts of a research paper: an introduction, a literature review, and a method section. After this exercise, I asked the participants to identify structural characteristics of research papers in their field of study and then to develop an information-outline template for that particular type of paper (by modifying or rearranging the template). Following an instructor lecture on the language-and-information conventions of research-paper moves, participants uploaded an individualized sample-sentence corpus into various SWT moves. Participants referred to the outline template and to language examples that they had prepared, and searched for academic concordancer examples regarding lexical choice, grammatical structure, or model sentences. These searches were to yield information that would help the participants compose an introduction, a literature review, and a method section.

The data collection for this study rests on a twofold methodological approach: (1) a survey of participants’ attitudes toward the writing tool, and (2) retrospective interviews.

Instruments

A 17-item, 5-point Likert-scale evaluation questionnaire was administered at the end of the semester to all participants. The first part of the questionnaire contained nine SWT evaluation questions covering perceived degree of general-system helpfulness, user friendliness, possibility for future usage, concordance-example displays, and concordance-example search methods. The second part of the questionnaire contained eight questions that focused on perceived scholarly writing helpfulness and that covered writing improvement in grammar, organization, vocabulary, lexical choice, punctuation, idea development, and paraphrasing. I collected demographic
information regarding participants’ year in school, major, scholarly publication experiences, and current status in dissertation or journal writing. To collect data on scholarly publication experience, participants responded to a yes/no survey question, “Have you ever published in any English-language academic journal?” The responses shed considerable light on the participants’ scholarly publication experience. Furthermore, a question concerning participants’ current writing status asked them whether or not, at the time of the survey, they were engaging in the writing of a journal manuscript or a dissertation manuscript. If their response was “No,” they should be either still taking courses or preparing for a comprehensive exam. The aim of the latter question was to identify whether or not the Scholarly Writing Template works better for users who are currently engaged in scholarly writing publication than for users who are using the template only for classroom-assignment purposes.

Retrospective Interview

I conducted retrospective interviews individually to encourage participants, as learners, to comment on (1) the processes that participants applied to their writing, (2) the experiences that participants had of their writing, and (3) the evaluations that participants assigned to the learning tool. Each interview lasted approximately one hour.

Results

Results of Survey

The descriptive analysis of the SWT system evaluation is reported in Table 1. The mean score for all items in this part is 3.93 on a five-point Likert scale, and the

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The SWT is beneficial for my scholarly writing</td>
<td>4.39</td>
<td>0.59</td>
</tr>
<tr>
<td>2.</td>
<td>I will use the SWT as my future scholarly writing supporting tool</td>
<td>4.08</td>
<td>0.88</td>
</tr>
<tr>
<td>3.</td>
<td>Sorting language examples by field of discipline is helpful for me</td>
<td>4.05</td>
<td>0.90</td>
</tr>
<tr>
<td>4.</td>
<td>The interface design of SWT is user-friendly</td>
<td>3.95</td>
<td>0.87</td>
</tr>
<tr>
<td>5.</td>
<td>The concordancer tool in the SWT can help me find language examples</td>
<td>3.92</td>
<td>0.94</td>
</tr>
<tr>
<td>6.</td>
<td>The language examples I kept on the SWT are helpful</td>
<td>3.76</td>
<td>0.91</td>
</tr>
<tr>
<td>7.</td>
<td>The display of language examples is appropriate</td>
<td>3.76</td>
<td>0.75</td>
</tr>
<tr>
<td>8.</td>
<td>It is difficult for me to choose an appropriate keyword to search language examples</td>
<td>3.74</td>
<td>1.03</td>
</tr>
<tr>
<td>9.</td>
<td>The searching method of language examples is appropriate</td>
<td>3.74</td>
<td>0.83</td>
</tr>
</tbody>
</table>
standard deviation is 0.63. In general, participants stated that the SWT was beneficial to their scholarly writing and that they would continue using this system in the future. Among all the various SWT features, the classifying corpus and the discipline-based model language ranked high in the survey. In addition, a variety of concordancer-related functions such as keyword searching, personalized-language model collection, and concordance display all reached above 3.70 in the mean scores.

Regarding SWT usefulness in writing skill development, Table 2 illustrates the mean scores and the standard deviations of participants’ perceptions. The average mean score for the eight items was 4.03, and the average standard deviation was 0.49. Results show that, overall, participants in the study held very positive attitudes toward the SWT in relation to writing-skill development. Among various writing skills, sentence structure, idea development, organization, and prompts for sections and stages all reached above 4.0 in mean scores. These four writing skills correspond to academic writing’s information conventions. The other four writing skills had a slightly lower mean score and all correspond to academic writing’s language conventions: namely, word choice, paraphrasing, grammar, and punctuation. Results show that the SWT was most helpful with rhetorical-organization writing.

Table 3 shows the mean scores and the standard deviations of SWT evaluation from the following four categories of participants, (1) participants who were currently writing journal articles, (2) participants who were not currently writing journal articles, (3) participants who had publication experience, and (4) participants who did not have publication experience. The mean score for participants who were currently writing journal papers was 4.16, and the mean score for participants who were not currently writing journal papers was 3.62. An independent-samples $t$ test indicated that the participants who differed among one another in terms of writing status differed significantly among one another in terms of their evaluation of the SWT, $t(13) = 3.22$, $p = 0.006$, whereas a $t$-test failed to show any difference between the participants who had international-journal publication experience (Mean = 4.13) and the participants who did not have international-journal publication experience (Mean = 3.92), $t(18) = .96$, $p = 0.21$.

<table>
<thead>
<tr>
<th>No.</th>
<th>Degree of helpfulness in the following areas</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sentence structure</td>
<td>4.40</td>
<td>0.68</td>
</tr>
<tr>
<td>2.</td>
<td>Idea development</td>
<td>4.21</td>
<td>0.78</td>
</tr>
<tr>
<td>3.</td>
<td>Organization</td>
<td>4.11</td>
<td>0.95</td>
</tr>
<tr>
<td>4.</td>
<td>Information prompts of section/stage</td>
<td>4.05</td>
<td>1.00</td>
</tr>
<tr>
<td>5.</td>
<td>Word choice</td>
<td>3.95</td>
<td>0.70</td>
</tr>
<tr>
<td>6.</td>
<td>Paraphrasing</td>
<td>3.79</td>
<td>0.74</td>
</tr>
<tr>
<td>7.</td>
<td>Grammatical rules</td>
<td>3.76</td>
<td>0.71</td>
</tr>
<tr>
<td>8.</td>
<td>Punctuations</td>
<td>3.50</td>
<td>0.69</td>
</tr>
</tbody>
</table>
Immediate Retrospective Interviews

According to the retrospective-interview results, participants whose language proficiency differed from other participants’ language proficiency were participants whose integration of SWT into their writing differed from the other participants’ integration of SWT into their writing. Likewise, participants whose levels of scholarly publication experience differed from other participants’ levels of scholarly publication experience were participants whose integration of SWT into their writing differed from the other participants’ integration of SWT into their writing. Table 4 summarizes the differences. The following sections discuss participants’ processes in terms of information use and the language template.

Different Approaches to the Integration of SWT into Scholarly Writing

Participants with different research backgrounds, different experiences, and different writing proficiencies clearly approach the information template in different ways. Participant H was a third-year doctoral student and had several years of work experience in the semi-conductor industry. He was quite familiar with research-paper moves and was the only participant who modified specific information template moves for the particular requirements of his paper. He stated, “I had taken two academic-writing courses before I started writing my journal paper. So, I think I am pretty familiar with the moves of research papers. Indeed, I only glance at the information template as a warm up and will modify the moves to fit my own purposes.” The other two participants had less scholarly publication experience and tended to accept what was presented in the information template.

Participants’ scholarly publication experience also influenced the frequency with which they referred to the information template. Participant H referred to the information template only once at the early stage of his writing, whereas participants W and S repeatedly referred to the information template. Participant S stated, “I am not quite sure about how to present a case in the introduction, so I find it helpful to constantly refer back to the information template.” Furthermore, the information template served participant W as a post hoc reminder of missing moves in her writing.

Table 3. Descriptive statistics of students’ writing status and publication experience on SWT evaluation.

<table>
<thead>
<tr>
<th>Writing stages</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Currently writing journal paper</td>
<td>15</td>
<td>4.16</td>
<td>0.48</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>3.62</td>
<td>0.26</td>
</tr>
<tr>
<td>Previous publication experiences</td>
<td>10</td>
<td>4.13</td>
<td>0.54</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>3.92</td>
<td>0.43</td>
</tr>
</tbody>
</table>
She wrote her first draft without referring to the information template. Then, she consulted the information template to check whether there was any missing part in her move development. In contrast, participant S used the information template as guidance for her writing from an early stage in her writing. To write her passages, she followed the information template’s suggested moves, and checked back several times whenever she started a new move. The information template also helped her with idea

<table>
<thead>
<tr>
<th>Information template</th>
<th>More research-related experience</th>
<th>Less research-related experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Take more information template control by modifying template moves to fit specific paper needs.</td>
<td>1. Be more information-template dependent and consider template a rule of thumb. Does not modify moves.</td>
</tr>
<tr>
<td></td>
<td>2. Refer to the template only at the beginning of the process.</td>
<td>2. Be more recursive in referencing back to the information template.</td>
</tr>
<tr>
<td></td>
<td>3. Use information template only as an initial prompt of main moves in the research paper.</td>
<td>3. Use information template as a prompt for idea development.</td>
</tr>
<tr>
<td>Better writing proficiency</td>
<td></td>
<td>Poorer writing proficiency</td>
</tr>
<tr>
<td>Language template</td>
<td>1. Write down the first draft before consulting language template.</td>
<td>1. Consult language template for model sentences before writing one’s own.</td>
</tr>
<tr>
<td></td>
<td>2. Search noun collocation or checks tense.</td>
<td>2. Search keywords such as terminology, verb, or noun to find useful sentence patterns.</td>
</tr>
<tr>
<td></td>
<td>3. Look for specific language problems to enhance writing style or word choice.</td>
<td>3. Look for general sentence structure modeling.</td>
</tr>
<tr>
<td></td>
<td>4. Analyze language examples by comparing and making inferences to find answer.</td>
<td>4. Copy and paste sentences and replaces nouns or verbs.</td>
</tr>
<tr>
<td></td>
<td>5. Revise writing by questioning the appropriateness of style, tense use, or word choice.</td>
<td>5. Do not question or revise style.</td>
</tr>
<tr>
<td></td>
<td>7. Be concerned with particular language usage frequency.</td>
<td>7. Be not concerned with language usage computational meaning.</td>
</tr>
</tbody>
</table>
development. Participant S stated, “Whenever I experience writer’s block, I always resort to the information template for an inspirational idea and can always get some ideas out of the template.” These accounts of the participants’ template use suggest that participants who differed from one another in terms of background were able—through their template use—to develop different strategies that addressed the participants’ own needs and difficulties.

**Different Approaches to the Integration of Writing Template into Scholarly Writing**

Participants varied in their language-template use owing to their different levels of English proficiency. Participant H, the computer science doctoral student, did not have a good command of English, especially in speaking and writing. Rather than write on his own, he directly consulted the language template for possible modeling sentences that would strengthen his writing’s organization and content. After finding useful sentences, he directly copied and pasted those sentences and replaced the subjects or verbs to fit his writing purposes or to avoid plagiarism. He stated, “It is too difficult for me to come up with completely new sentences in English even though I know exactly what I want to write.” Because he found it difficult to translate an idea into an English sentence, he found it more efficient to search for language-template sentences that fit the meanings he wanted to express.

In contrast, participants W and S, both of whom had better writing skills than participant H, did not depend as much on the language template as participant H did. Participant W did not consult the template when she wrote down the idea that she wanted to express. Then, on each move, she checked the language template for a useful addition to her writing. She also used the language template as a tool for checking her language use, such as tense usage and noun collocation. For example, she stated, “I am not sure if I should use past tense or present tense in the method section. So then, I will check the tense usage from sample sentences in the method section.” Participant S used the language template and the concordancer as language consultation tools. For example, when she was not sure about the appropriate verb to collocate with the term “Likert scale” and “t-test,” she searched the concordancer and the language template for word-choice options. Participant S made sophisticated distinctions between good choices and better choices, rather than use whatever examples were at hand. She not only found language examples that would support or disprove a language-problem hypothesis, but also conducted occurrence comparisons that would help her make the best word choice. The following sentence was problematic for her:

“...a t-test was _____ in order to determine if the participants have particular preferences or different perceptions about...”

She was not sure about the verb collocation for t-test, so she searched the concordancer and found the following examples for “use a t-test”:

...
We use t-test and Z-test to check for significant differences in means and medians. Table 1 presents sample sizes, means, and standard deviations for the two groups, along with t-test results for measures taken at the end of Year 1 and middle of Year 3.

She checked again with Google Scholar (http://scholar.google.com) and found about 914 examples for “perform a t-test” whereas there were more than 11,600 examples for “use a t-test.” She then decided to go with the more popular collocation “use a t-test.”

This page will perform a t-test for the significance of the difference between the observed mean of a sample and a hypothetical mean of the population from which the sample is randomly drawn.

The default action is to perform a t-test, or resampling, according to the -r option.

To perform a t-test, go to the “Tools” menu.

Steps to perform a t-test. State the statistical hypotheses.

When you perform a t-test, you get a p-value that tells you how likely it is that you would get a difference as large as you observed in your study.

Use a t test to compare a continuous variable (e.g. blood pressure, weight or enzyme activity).

We would use a t-test if we wished to compare the reading achievement of boys and girls.

If you are comparing pre- and posttest scores for a single group, use a t-test for dependent means (also called a paired samples t-test, . . .

If the variances are equal then use a t test. (d) If skewness is in the same direction and the variances are unequal, then if the sample sizes are equal use Welch’s t test.

We cannot use a t-test for data consisting of colors, number of offspring, or categories, because they are . . .

It is interesting to note that in addition to consulting the SWT language template for language information, both participants H and S stated that they would search Google, especially Google Scholar, for language information. In this regard, participant H stated, “I can easily find more language examples from Google Scholar than in the concordancer because Google Scholar includes more articles in my specific research field.” Also in this regard, participant S stated, “Even though the
A concordancer provides more sorted language examples, sometimes I can’t find enough language occurrences that make me feel comfortable in my word-choice decisions. However, I can always find many Google search results.” Perhaps this difference explains why these two participants also resorted to the Google search engine to supplement the SWT language template.

Comparison of Information Template and Language Template

All interview participants believed that the information template was more useful than the language template. This interview result is consistent with the survey results. Two possible scenarios explain this preference. One is that a research paper’s structure is more “discipline-free” than language usage or expressions; therefore, general guidelines in the information template are more readily applicable to most fields of study. Second, the information template serves as a useful prompt of moves in scholarly writing. The information template can also provide users with inspirational ideas during writer’s block. Therefore, participants held a very positive attitude toward the information template.

As for the language template, the participants compared the SWT corpus with the Google search engine. They expected to find many specific language examples from the concordancer but found only a few from the SWT. For example, participant H mentioned, “I usually resort to Google for technical sentence patterns because I can always retrieve lots of data there.” Participant S made the same observation. She was frustrated with her inability to retrieve lots of language output from the “Likert scale” and “t-test” searches, and resorted to Google Scholar for help. Reading and analyzing language examples on the language template was also frustrating and time-consuming. For example, participant W stated that it was easy to “get lost” in the SWT’s many language examples. She usually had to read many sentences before she could draw any conclusion for her language hypothesis. The reading load was, at times, overwhelming.

It is clear from the above analysis that participants considered both the information template and the language template to be helpful. However, participants considered the information template to be more beneficial than the language template because the former made efficient and straightforward move-development references. The language template was helpful but time-consuming and sometimes frustrating. Participants expected a one-shot solution, as in the information template, but this hoped-for outcome was not usually the case with language consultation on the concordancer.

SWT System Evaluation

Regarding the SWT website design, participant H expressed discomfort with his efforts to post his working paper on the SWT. He stated, “I am concerned about the confidentiality of my in-progress paper. I don’t feel comfortable releasing the research content, or even the title, on the Internet.” As mentioned in the overview, doctoral
students in most science-related disciplines in Taiwan need to publish in several international journals before graduation; this policy requires that participants emphasize innovations in their research. The scarcity of innovation explains why some participants were uncomfortable with sharing their writing on a learning website.

The SWT helped participants improve their writing strategies by enabling the participants to focus more on the writing process than on the final product. For instance, participant W indicated that the SWT not only provided users with a useful resource for scholarly writing, but also helped them develop good writing habits. The SWT information template and the SWT language template serve as valuable sources for reflection and revision by enabling users to “check and modify language use and idea development,” as participant W pointed out.

Conclusions

The current study sketches a framework for a scholarly writing template. The participants’ reaction to the SWT appears to be generally favorable. In providing both language-template support and information-template support, the SWT not only heightens awareness of genre-specific lexicon-structural regulations, but also shows how such awareness can help to make the highly complex task of writing scholarly papers in a foreign language more accessible to students. Thus, novice academic writers can spend more time and effort on content and idea development and enhance their scholarly writing effectiveness. As regards the effectiveness of the concordancer-based language template, the current study lends support to the work by researchers who claim that concordancing tools serve as a useful language template that enables users to search for particular word occurrences in a given context, to compare the users’ own textual productions with concordance model concordance sentences, to identify areas of user deficiency, and to bolster user autonomy (Chambers & O’Sullivan, 2004; Cheng et al., 2003; Cobb, 1997; Johns, 1997; Sun & Wang, 2003; Yoon & Hirvela, 2004). In my study here, participants’ writing processes became more recursive and more reflective, whereas the participants’ writing strategies became more complex, more inductive, and more resourceful.

The findings of this research have important implications for the e-learning design of writing courses, as well as for research into the benefits of e-learning. First, students with lower language proficiency tend to rely more heavily on the language template. When integrating the SWT into an academic writing course, the instructor should address issues of plagiarism to make sure that students can identify inappropriate use of concordance-language models.

Second, as suggested in the interview results, students who differ from one another in terms of their writing proficiency and their research background are likely to differ from one another in terms of their strategic uses of the SWT. The results reveal two striking trends: students whose research backgrounds are weaker than other students’ research backgrounds use the information template in ways that are less strategic than the ways in which the other students use the information template; and students
whose language proficiency is weaker than other students’ language proficiency use the language template in ways that are less strategic than the ways in which the other students use the language template. Therefore, it is important for teachers to integrate into their course design various activities that foster students’ use of scholarly writing templates.

Third, the results of the retrospective interviews suggest that, in general, students believe the number of language-use occurrences on concordancers and Google to be an important indicator of the “popularity” of language usage, a belief that significantly affects students’ choice of words. In this regard, further research could focus on learners’ language identities and learners’ perception and adoption of either concordancer language models or Google language models. Moreover, future research could try to determine whether it is only through “number of occurrences” that concordancers and Google facilitate users’ language-use choices or whether concordancers and Google provide users with other criteria for language-use choices.

Fourth, the results of the study show that users are more likely to favor online templates whose rules are explicit than to favor online templates whose rules are implicit. According to these same results, users—especially those whose language proficiency is low—are more likely to avoid templates that require users to practice inductive cognitive analysis than to avoid templates that do not require users to practice inductive cognitive analysis. These findings suggest that induction-promoting templates would benefit from more scaffolding.

Fifth, because the current study has used an un-edited corpus as a source for corpus consultation, it is quite reasonable to expect that some errors may emerge in the search outcome. The emergence of errors could limit the credibility of this approach if learners received inadequate training regarding analytical strategies necessary to a corpus search. As indicated in the results of the retrospective interview, some participants made their decision about language use by comparing the number of occurrences of different language uses in their analysis of corpus output. This strategy seems to be beneficial because the occurrence of the correct patterns usually tends to outperform the occurrence of erroneous patterns in a credible corpus. Further research regarding the importance of corpus-consultation strategies in academic corpus integration could illuminate the teaching of this approach in the classroom.

For pedagogical application, teachers could introduce students to corpus consultation first by showing the students the nature of an un-edited corpus, which could differ from a corpus edited or prepared by a teacher or by a textbook writer. To bring this difference to light, teachers could explore, for example, some errors found in the Google Scholar corpus. Then, teachers could guide students in their development of investigation strategies by forming hypotheses about language usage, by analyzing language usage in terms of frequency of occurrence, and by verifying the hypotheses.

Sixth, future research could examine the degree to which the writing tool effectively contributes to accuracy, complexity, and organization of scholarly writing. Moreover, a qualitative analysis such as a case study that applies a think-aloud protocol could
examine not only writing processes and writing strategies but also their relation to writing tools.

Seventh, each area of English for Specific Purposes (ESP) has its own genre-specific lexical expressions, grammatical constructions, and structural features that students are expected to master and to use in their written work. Though this paper focuses on scholarly writing, the focus could easily be extended to texts in other ESP fields, such as business English and legal English. Also, further research might examine whether a more intelligent concordancer search tool is on the horizon, insofar as demand for such a tool would be great, especially among those students whose reading proficiency or writing proficiency is limited. A tool that allows for a more effective and efficient language-example search would be very beneficial to bilingual searches, prompts, multi-layer searches of language examples, and even some annotation on language template model sentences. Furthermore, a corpus whose categorization of research fields is more detailed would facilitate users’ searchers. In summary, the research reported here sheds new light on an effective web-based scholarly writing context and points toward possible fruitful exploration of computer-assisted scholarly writing.

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