Japanese University Students' Use of Online Machine Translators for English Writing Tasks

Jack Bower

Abstract

Free Online Machine Translation (OMT) services are readily accessible for Japanese students of English. However, to date no research has been conducted into how Japanese students are employing OMT for L2 writing tasks. This paper represents an exploratory study in this area. The results of a survey into student usage of online machine translation (OMT) for L2 writing homework by first year students at Hiroshima Bunkyo Women's University (HBWU) in Japan are presented here. Results indicate that the majority of students are using OMT as a tool to assist with expression in the manner of a dictionary, rather than as a shortcut to translate entire texts as some teachers may fear. The survey respondents demonstrated some awareness of the strengths and weaknesses of OMT. However, it is clear that learners would benefit from a formal introduction to OMT. In addition, L2 writing classes should be trained how to use OMT as a reference tool.

Introduction

Both the Freshman and Sophomore English curriculums at the Bunkyo English Communication Centre (BECC) at HBWU allocate a large portion of student assessment to a portfolio made up of written tasks. Anecdotal evidence from observing students working on writing tasks, and from unusual language presented lead teachers to suspect that some students were using OMT to assist their English writing homework. As an English language teacher I was concerned

that some students may have been getting an unfair advantage by using OMT as a shortcut on writing tasks. I was also concerned that students may have been circumventing the language learning purpose of writing tasks which is to elicit forced output, which in turn may facilitate incidental learning of vocabulary and grammar. I thought it important to investigate the frequency and manner in which students were using OMT in order to make informed decisions about the place of writing tasks in the curriculum and assessment.

Literature Review

This section will provide a short introduction to free OMT services. It will then outline the potential drawbacks and benefits of foreign language students using OMT for L2 writing tasks.

Free OMT services provide textual translation between a variety of language pairs, including Japanese and English. OMT is provided by several internet companies such as Google, Yahoo! and Excite. These services allow users to translate text from one language to another almost instantly. Rapid development of OMT in recent years has been driven by ever faster and cheaper computer processors along with increased online availability of content in other languages, which necessitates rapid translation. This swift technological advance has led some to speculate that machine translation (MT) may eventually make language teaching redundant (Cribb, 2000). However, in its current form OMT is far from perfect. OMT produces many grammatical errors. Particularly with longer strings of text, it frequently produces incomprehensible output (Niño, 2009, Tachibana, Masui & Takada, 2007).

Research (Ruthven-Stuart, 2008) has shown that English language teachers in Japan have difficulty discriminating written production from low-level English learners which has used OMT from written work which has not used OMT. This is especially true when learners use OMT to translate short chunks of language, or when learners post-edit their translation in order to correct OMT mistakes. Thus language teachers are presented with the problem of not being able to ascertain the extent and type of student usage of OMT. While a pilot experiment (Sommers, Gaspari and Niño, 2006) showed that it may eventually be possible to detect OMT plagiarism using statistical methods, software to detect OMT plagiarism is not yet available.

Concerns about Student Use of OMT for L2 Writing Tasks

The potential dangers of L2 learners using OMT for writing tasks are fourfold. Firstly students will be exposed to erroneous language forms in OMT output. Secondly, if students use OMT to translate extended texts without attention to pre or post-editing they are unlikely to learn from the writing process. Thirdly, if students are using OMT as a quick short-cut to complete writing tasks this would be unfair to students who put in the effort of writing unassisted by OMT. Finally, it is a waste of teacher time to correct student work that is largely unedited OMT output.

A concern often voiced by teachers is that students may believe OMT flawed output to be correct. This could lead to incorrect L2 language modeling which might in turn lead to uptake of incorrect L2 grammar. Some researchers believe that learners, particularly those with a low-level L2 ability, may have a tendency to

overestimate the reliability and accuracy of OMT output (Tachibana et al, 2007).

A second concern about student usage of OMT for writing tasks is that by using OMT unthinkingly to translate large chunks of L1 into L2 for writing assignments, students may miss language learning opportunities. One benefit of L2 writing may be that it serves as a form of forced output which could foster L2 grammatical development and accuracy. This thinking is based on a second language acquisition theory known as Swain's output hypothesis (1995). Swain observed that children in immersion programs in Canada did not reach levels of native-like proficiency even after years of immersion. She hypothesized that output may be necessary for learners to move from comprehension, which is semantic use of language, to production, which is syntactic use of language.

> *Output may stimulate learners to move from the semantic, open-ended non-deterministic, strategic processing prevalent in comprehension to the complete grammatical processing needed for accurate production. Output, thus, would seem to have a potentially significant role in the development of syntax and morphology. (1995, p.128)*

Writing is a special form of forced output that allows learners to spend more time processing before producing language than does verbal communication. When seeking to express themselves in their L2 through writing, learners have time to refer to dictionaries, textbooks and other resources. Writing teachers hope that through the process of forced written L2 output learners may pick up new L2 structures and vocabulary. However, if a language learner simply translates from

L1 to L2 using OMT forced output is avoided.

Another major concern about student use of OMT for writing tasks is that as McCarthy (2004) points out in the case of take-home translation assignments it is unfair on students who put in the effort to complete their translation themselves to have students who rely on OMT graded in the same way. McCarthy's concern applies equally for L2 writing assignments. In addition, a student who relies heavily on OMT might be able to achieve the same grade as a student who invests more time and effort into their writing work without the help of OMT. This is unfair on the students who have put in the work of producing their own L2 written output without OMT assistance.

Finally, while the utility of teacher feedback on writing is subject to debate (see Ferris, 2004 for a summary), it is obvious that teachers will be wasting their time giving feedback on output that has been thoughtlessly churned out from an OMT. It is also highly unlikely that students who hand in extended OMT output would revise teacher corrections.

Potential Benefits of OMT Usage

Potential benefits that have been attributed to OMT include fostering increased language awareness, an ability to translate at the phrasal and clausal level, and increased accuracy of writing.

Some researchers have argued that when used properly MT may result in increased awareness of differences between L1 and L2 grammar and forms. Ball

(1989) recommended using mistakes from MT output as a source of errors to be corrected by language learners. Anderson (1995) and Richmond (1994) also both used MT as a model of bad language. Anderson had students post-edit MT output either using L2 reference works for translation into L2 or native speaker intuition for translation into L1. Richmond, on the other hand, gave students a model L2 text and had students pre-edit the L1 input until the MT output matched the L2 model text. He believes that this can raise student awareness of differences between L1 and L2 grammar. Niño (2008a) also found that having students discuss and correct MT output can be useful for fostering focus on form and increasing language awareness.

One clear benefit of OMT over a dictionary is its ability to work at the phrasal level. Dictionaries only allow for searches at the single word level and require the user to search deeper into a word entry to find examples of grammar or syntax. While still far from perfect, OMT can give learners an indication of how to express their ideas at the phrasal or clausal level much faster and sometimes more effectively than using a dictionary. However, due to OMT's current inability to handle either anaphoric or cataphoric references in a text, it is recommended that learners do not use OMT to translate texts longer than a single clause (Tachibana et al., 2007). Using commercial machine translation software as a tool for translation work is now common practice amongst translation professionals and has proven itself to be a very useful tool for this purpose. Indeed the vast majority of research into the use of MT lies in this area. Niño (2008a) compared the output of English to Spanish translations from machine translators, students without the help of machine translators and students post-editing MT output. She found that transla-

tions involving the post-editing of MT output had the fewest errors. It is possible that L2 writing making careful use of OMT might also result in fewer overall errors than L2 writing unassisted by OMT.

Justification

While strong arguments exist, both for preventing student use of OMT for writing tasks on the one hand and for encouraging judicious use of OMT on the other hand, a first necessary step to deciding on an institutional policy toward OMT usage is to obtain information on students' actual usage patterns and level of awareness of the strengths and weaknesses of OMT. To the best of my knowledge this study is the first attempt to answer these questions.

Research Questions

1. *How widespread is the use of OMT on portfolio writing tasks for BECC students?*
2. *What are student attitudes toward the use of OMT for completing writing assignments?*
3. *In what ways do students tend to use OMT on writing tasks?*

Methodology

A survey was administered to all second-year English students studying at Hiroshima Bunkyo Women's University in the first semester of 2009. The survey asked students to answer items about how they had used OMT for writing tasks which were submitted in a writing portfolio in the previous academic year. A total of 258 students responded to the survey. The respondents were all Japanese

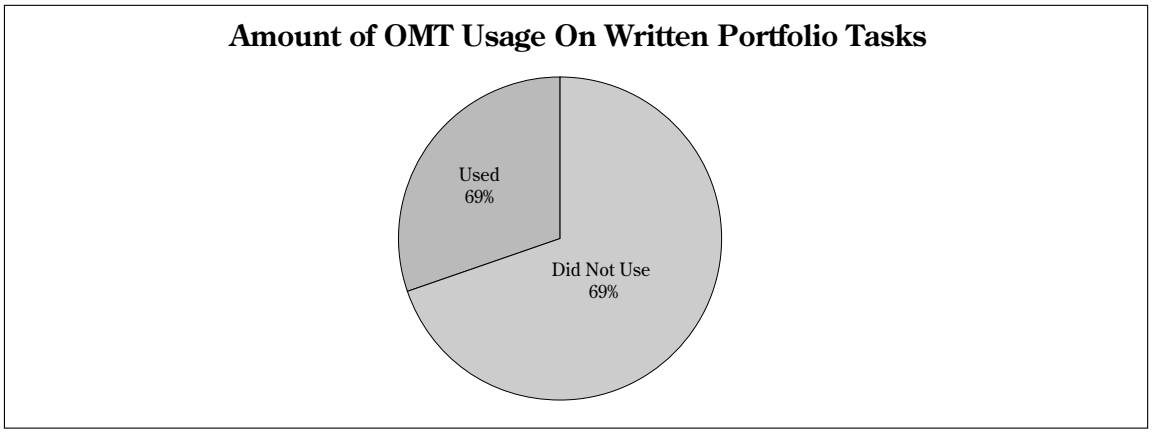
females with the vast majority aged 19 or 20. Only around 20 of the students were English language majors. The rest of the respondents took English classes twice per week as a compulsory component of their studies in the departments of Welfare, Psychology and Early Childhood Education. Most respondents had an English ability of beginner to pre-intermediate level. The survey was administered online in the students' L1 (Japanese) using the online survey tool SurveyMonkey.

Results

Amount of Usage

When asked whether or not they used OMT on portfolio tasks, of 265 responses 69% (182) of students responded that they had not used OMT and 31% (83) of students responded that they had used OMT. The results are illustrated in the pie chart below.

Graph 1. Amount of OMT Usage on Written Portfolio Tasks



Most Popular Services

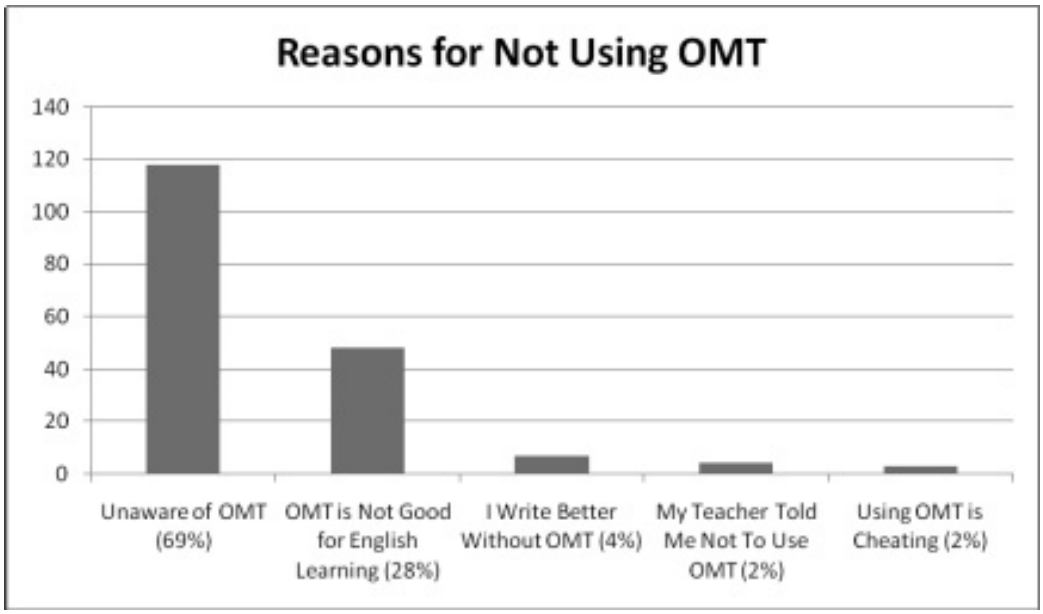
The vast majority of usage was spread between three OMT services. Yahoo Translate was by far the most popular OMT used by 65.3% of users in the survey

group. 24% of respondents used Excite Translate, and 14.7% used Google Translate.

Reasons for Not Using OMT

As illustrated in Graph 2, of the 170 respondent who claimed not to have used OMT for writing and who responded to this question 118 said that they had not used OMT because they were unaware of its existence, 48 said that they did not use OMT because it is not good for English learning, seven felt that they could write better without using OMT, four said that their teacher had told them not to use OMT; and just three students reported that they did not use OMT because they felt that it was cheating.

Graph 2. Reasons for Not Using OMT

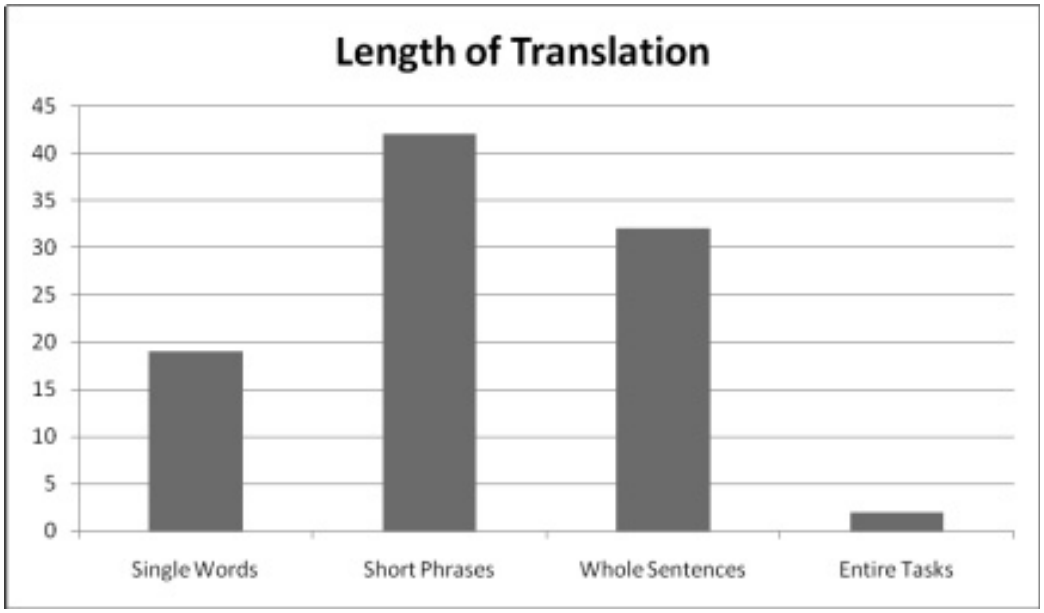


Length of Translation

Of a total of 76 respondents, 19 indicated that they mostly used OMT for

translating single words, 42 reported that they generally use OMT to translate short phrases, 32 students reported using OMT to mostly translate whole sentences; and just two respondents admitted using OMT to translate an entire writing task. For this question respondents were allowed to choose more than one response. The results are presented in Graph 3 below.

Graph 3. Length of Translation



Attitudes to Using OMT – Descriptive Statistics

A selection of the results from Likert scale questions regarding attitudes to OMT usage on writing tasks is presented in Table 1. Respondents were asked to rate if they agreed with the statements with 1 indicating that they strongly agree and 5 indicating that they strongly disagree.

Table 1. Attitudes to Using OMT for Portfolio Tasks

	Strongly Agree **1**	**2**	**3**	**4**	**Strongly Disagree** **5**	Average	**n**
OMT is useful for portfolio tasks	10.8%(8)	46.1%(35)	28.9%(22)	10.5%(8)	1.3%(3)	2.51	76
OMT is easier to use than a bilingual dictionary	16%(12)	38.7%(29)	30.7%(23)	12%(9)	2.7%(2)	2.47	75
I think using OMT for portfolio tasks is cheating	2.6%(2)	19.5%(15)	42.9%(33)	26%(20)	9.1%(7)	3.19	77
I think my teacher realizes when I use OMT for portfolio tasks.	18.7%(14)	33.3%(25)	40%(30)	6.7%(5)	1.3%(1)	2.39	75
Using OMT improves my portfolio grades	1.3%(1)	16.9%(13)	32.5%(25)	33.8%(26)	15.6%(12)	3.45	77
Using OMT for portfolio tasks helps me to learn English	9.1%(7)	33.8%(26)	33.8%(26)	15.6%(12)	7.8%(6)	2.79	77

Open Answer Question

130 of the respondents provided a written response to a final open-answer question on the survey. Of those responses 103 were meaningful. The final open answer question read as follows.

Are there any comments you wish to make about using online translation for portfolio tasks? If there is anything you want to say please comment here. For example: I learnt new words by using OMT, my teacher scolded me for using OMT. Please give examples of successful or unsuccessful use.

The open answer responses can be grouped into the following categories. (Note that some responses fell into more than one category.)

1. I want to try using OMT. I want to learn how to use OMT.(20)
2. I tried using OMT but I was unsatisfied with the output.(19)
3. I didn't know about OMT.(13)
4. OMT is convenient/useful.(12)
5. OMT can be useful for learning new grammar or vocabulary.(12)
6. I prefer to use a dictionary.(7)
7. I think I will learn better by writing without using OMT.(6)
8. OMT is useful to use as a reference.(5)
9. It's okay to use OMT as a last resort.(5)
10. OMT is useful for reading.(5)
11. I was told that it's not good to use OMT.(4)
12. OMT is useful when used appropriately.(4)
13. I don't think that OMT use is cheating.(4)
14. Other.(10)

Analysis and Discussion

This section first uses analysis of the survey data to answer each of the three

research questions. The debate about the pros and cons of L2 students using OMT for writing tasks is then revisited and discussed in light of the survey findings. Recommendations for learner training in OMT are then outlined. Finally, ideas for further research in this largely unexplored area are presented.

The first research question examines the extent of student usage of OMT for portfolio writing tasks. The survey results show that the use of OMT for writing tasks is fairly widespread, with roughly a third of respondents (31%) indicating that they had used OMT when completing portfolio tasks. This rate of usage was much higher than I had suspected before administering the survey. I generally detect between two and four instances of OMT use for each class of around 25 students, which means I am picking up a rate of between 8% and 16% of OMT usage. The actual usage level indicated by the survey results is much higher (31%) showing that a lot of OMT use on writing tasks was slipping below the radar.

Regarding the second research question: "What are student attitudes toward the use of OMT for completing writing assignments?" the survey results showed a range of student attitudes. Overall it can be seen that students who used OMT for portfolio tasks found it useful for completing tasks with the average Likert scale response at 2.51. In general, students also found OMT easier to use than a bilingual dictionary with an average Likert scale response to the statement "OMT is easier to use than a bilingual dictionary" of 2.47. This is probably because OMT provides nearly instant translation of text and does not require scanning through and interpreting information on word usage and multiple meanings as does a dictionary entry. On the other hand, it should be noted that some students appear

to have tried OMT and found that it did not help them with their writing. Eight respondents disagreed and three respondents strongly disagreed with the statement that "OMT is useful for portfolio tasks." In addition 19 respondents to the open answer question indicated that they had tried using OMT, but were dissatisfied with the output. This shows that several respondents were aware that OMT output is frequently unreliable.

While a majority of respondents who used OMT for writing tasks regard it as useful and easy to use, they did not generally regard OMT as an easy way to improve their grades. The statement "Using OMT improves my portfolio grades." got an average response of 3.45 on the Likart scale, indicating that more students disagreed with the statement than agreed with it. A majority of respondents also thought that their teacher could detect their OMT usage. The statement "I think my teacher realizes when I use OMT for portfolio tasks." received an average response of 2.39. This is an interesting result, because respondents appear to be overestimating their teachers' ability to detect OMT usage. Both my anecdotal observations and Ruthven-Stewarts (2008) exploratory research indicate that teachers have trouble detecting OMT usage when it is used for short strings of text.

Attitudes to the fairness of using OMT for writing tasks also presented a mixed picture. Respondents were split on whether or not using OMT for portfolio tasks was a form of cheating. The average Likert scale response to the statement "I think using OMT for portfolio tasks is cheating." was 3.19. Thirty-three respondents or 42.9% did not feel strongly either way and chose the middle response on the Likert

scale. This range of attitudes may be due to the fact that students have stumbled across OMT or been introduced to it by their friends. Lack of formal guidance on OMT usage has left students to make up their own minds on the ethics of OMT.

With regard to respondent attitudes to the utility of OMT as a language learning tool there was again a range of responses. However, more respondents regard OMT as useful for language learning than as not useful with the average Likert scale response to the statement "Using OMT for portfolio tasks helps me to learn English" being 2.79. The open answer responses also show more nuanced attitudes and more awareness of the strengths and weaknesses of OMT than I had suspected before conducting this survey. The following response categories to the open answer question are illustrative. Twelve respondents indicated that "OMT can be useful for learning new grammar or vocabulary." Five respondents stated that OMT "is useful as a reference," and five respondents stated that "OMT is okay to use as a last resort." The following quotes illustrate the attitudes of some more aware learners:

> *I think OMT can be useful for learning depending on how you use it. You shouldn't just copy the OMT output. You can learn depending on how you change the words.*

> *If you translate everything, it won't benefit you, but you can learn from the OMT output. If you don't know the English, there is no alternative but to use it.*

Next we will turn to the manner in which respondents use OMT on writing tasks.

As can be seen in Graph 3 respondents rarely used OMT to translate an entire portfolio task from Japanese to English, with only two respondents indicating that they had done this. OMT was mainly used to translate short phrases (42 responses) and whole sentences (32 responses), the third highest level of usage was for translating single words (19) responses. This is encouraging information for BECC English teachers as it clearly shows that students in general are not abusing OMT. Translation of short phrases is exactly the function for which OMT in its current form is most suited (Tachebana et al, 2007). Online machine translation of complex sentences can however be problematic, so more research is needed to see how learners are utilizing OMT for sentence level translation.

It the light of these survey results it is clear that three of the four areas of concern regarding student use of OMT outlined in the literature review are largely unjustified in this context. I will address each of the four concerns in turn. Firstly, the concern that students may take erroneous OMT output to be perfect is not supported by the survey data. Actually, many respondents indicated that they had tried OMT and were unhappy with the output (19 of the open answer respondents). In addition, of those respondents who had not used OMT for any portfolio tasks 48 indicated that the reason they had not used OMT was because "OMT is not good for language learning." Further concerns based on a fear that students might translate extended or entire tasks from Japanese to English and thus avoid language learning opportunities and make error correction redundant are also invalidated by the survey data which indicates that the respondents over-whelmingly used OMT for short phrases and for sentences. This indicates that students are using OMT with some discrimination.

On the other hand, the survey data does not offer much insight into whether students who use OMT get an unfair advantage for grades. Given the current low accuracy of OMT translation (Niño 2008b, 2009, Tachibana et al 2007) however, it is unlikely that increased OMT usage would result in a higher grade. The survey results also indicate that students are using OMT more for its convenience than for its accuracy.

What implications do these results have for formulating an institutional policy toward OMT usage? Banning OMT would seem to be an overreaction as many students are obviously getting some utility from OMT, and quite a few students appear to be using OMT judiciously. Also, when it is used carefully and thoughtfully with shorter textual chunks, OMT has the potential to be beneficial for student language learning.

Given that usage levels of OMT are fairly high and that there appears to be a mixture of student attitudes and usage styles of OMT the next logical step seems to be to educate students on the strengths and weaknesses of OMT, and to train students in some pre-editing and post-editing strategies. However, BECC freshman and sophomore general English students only attend two classes a week and focus more on speaking and listening than writing. Thus, it is unlikely that space could be found in the curriculum for learner training in OMT. Therefore, I suggest giving students in these courses a handout in Japanese which summarizes the weaknesses of OMT such as literal translation, many grammatical and discursive inaccuracies, and unnatural style (Niño, 2009). Examples of flawed OMT translations from English to Japanese would help to reinforce these points.

In the case of English writing classes it would be beneficial to include more detailed training on pre-editing and post-editing strategies as recommended by Tachibana et al (2007). Such training should be done alongside training in bilingual dictionaries, monolingual learner dictionaries and collocation dictionaries. The emphasis of this training should always be on using OMT as a reference tool which has strengths and weakness in comparison to other writing resources.

Further Research

Further research is needed to gain a more nuanced understanding of how students are using OMT on writing tasks. One way to investigate in more detail would be to conduct a think-aloud protocol in which learners report how they are utilizing OMT for a writing task in real time. Think-aloud protocol has been used successfully to investigate student usage of dictionaries (Okuyama & Igarashi, 2007). Combining a think-aloud protocol with screen recording software to show exactly what text students are entering into OMT would provide even more detailed data.

References

Anderson, D. D. (1995) Machine translation as a tool in second language learning. *CALICO,13*(1): 68–97.

Ball, R. V. (1989) Computer-assisted translation and the modern languages curriculum. The *CTISS File*, 8: 52–55.

Cribb, M. (2000). Machine translation: the alternative for the 21st Century? *TESOL Quarterly*, 34:3, pp. 560-569.

Ferris, D. (2004). The "grammar correction" Debate in L2 Writing: Where are we, and where do we go from here? (and what do we do in the meantime . . .?). *Journal of Second Language Writing*, 13, 49–62.

McCarthy, B. (2004). Does online machine translation spell the end of take-home translation assignments? *CALL-EJ Online*, 6:1.

Niño, A. (2008a). Evaluating the use of machine translation post-editing in the foreign language class. *Computer Assisted Language Learning, 21:1, 29-49.*

Niño, A. (2008b). Free Online Machine Translation as a New Form of Cheating in Foreign Language Written Production. *The EUROCALL Review* 14.

Niño, A. (2009). Machine translation in foreign language learning: language learners' and tutors' perceptions of its advantages and disadvantages. *ReCALL* 21:2, 241–258.

Okuyama, Y. & Igarashi, H. (2007). Think-aloud protocol on dictionary use by advanced learners of Japanese. *JALT CALL Journal*, 3:1-2, 45-58.

Richmond, I. M. (1994) Doing it backwards: Using translation software to teach target language grammaticality. *CALL, 7*(1): 65–78.

Ruthven-Stuart, P. (2008, August). *Machine translation websites: Communication tools but an impediment to communicative competence?* Presented at WorldCALL 2008, Fukuoka, Japan.

Sommers, H. Gaspari, F. & Niño, A. (2006). Detecting inappropriate use of online machine translation by language students – a special case of plagiarism detection. *Proceedings of the 11th Annual Conference of the European Association for Machine Translation*. Oslo, Norway, 19-20 June 2006. Pages 41-48.

Swain, M. (1995). Three Functions Of Output In Second Language Learning. In G, Cook & B, Seidlhofer(Eds.) *Principles & Practice In Applied linguistics.* Oxford University Press.

Tachibana, K. , Masui, M. , & Takada, K. (2007). Pursuing a new pedagogy that allows EFL students to correct machine translation errors. 総合政策論集, 6:1, 29-40.