

# Comparing lexical complexity using two different VE modes: a pilot study

Tomotaka Shiroyama<sup>1</sup>

**Abstract.** The aim of this study is to compare how two different Virtual Exchanges (VE) contribute to language learning in a Japanese university context. Task-Based Language Teaching (TBLT) using VE has been a focus in this study. There are huge advantages of using technology in language teaching such as increasing language use opportunities, feedback, and others (Lee, 2016). However, many recent TBLT and VE studies have focused on students' interaction in the classroom (Hagley, 2020). This study investigated whether two different types of VEs have the potential to promote 'real-world communication' in a university context. The findings show that there was no significant difference regarding lexical complexity between both modes. The result suggests that both modes are unlikely to enhance students' vocabularies.

**Keywords:** virtual exchanges, task-based language teaching.

## 1. Introduction

VE has incorporated TBLT in some instances but others have focused more on supplementing classwork with VE to allow students to participate in international interactions. Hagley (2020) notes that unless VE is incorporated into the syllabus, "EFL often became an academic activity with few chances to use English in real-world communicative events" (pp. 74-75). Ribeiro (2016) argues that in studies on synchronous computer-mediated communication, there has not been enough attention paid to the interaction between Non-Native Speakers (NNS) and Native English Speakers (NES). To solve this, the current study focuses on interactions between NES and NNS using Synchronous VE (SVE), with an online chat, and

---

1. Nagoya University, Nagoya, Japan; reading2671@gmail.com; <https://orcid.org/0000-0002-1587-2085>

**How to cite this article:** Shiroyama, T. (2022). Comparing lexical complexity using two different VE modes: a pilot study. In B. Arnbjörnsdóttir, B. Bédi, L. Bradley, K. Friðriksdóttir, H. Garðarsdóttir, S. Thouéšny, & M. J. Whelpton (Eds), *Intelligent CALL, granular systems, and learner data: short papers from EUROCALL 2022* (pp. 358-363). Research-publishing.net. <https://doi.org/10.14705/rpnet.2022.61.1484>

Asynchronous VE (AVE), with a forum discussion in the TBLT framework. This study refers to the question:

RQ1. Are there any differences in lexical complexity between the discourse produced using SVE and AVE when NES interact with NNS?

This research explores how VE can be utilized effectively by English instructors in the TBLT framework to enhance college students' communicative abilities.

## **2. Method**

### **2.1. Participants**

Eight participants took part in this research. They were all university students and over 18 years old and signed consent forms to take part in this study. The participants were divided into a target group of L1 Japanese students of English (N=7, one male and six females) and an L1 British English interlocutor participant. According to self-reported information in a background questionnaire, the target group were pre-intermediate (equivalent to TOEIC Listening and Reading 550), their mean age was 20 years old (range 19-21), their average length of living abroad in English-speaking countries was one week (range zero to three weeks), and the average time spent studying English was 9.7 years (range six to 17 years). I targeted pre-intermediate students because most students in Japanese universities are pre-intermediate level.

### **2.2. Instruments**

In this research, two decision-making tasks (see [supplementary materials](#), Appendices A and B) and a background questionnaire (see [supplementary materials](#), Appendix C) were used as research instruments.

### **2.3. Data collection**

The data collections were conducted remotely several times on different dates. I divided the seven participants in the target group randomly into two groups, Group A and Group B. One interlocutor worked on tasks with seven students (three from Group A and four from Group B). Each student in the target group was asked to do two different decision-making tasks with the same interlocutor. The students in Group A were to work on a task for 20 minutes using SVE, the online chat (Zoom)

first, and then AVE, the forum discussion (Microsoft Teams). The Group B students were to work on a task using AVE, forum posting (Microsoft Teams) first, and then on another task using SVE, the online chat (Zoom). For the forum posting task, each group posted their opinions at least three times a week. In order to resolve the effect of posting order, the modes of VE and tasks are counterbalanced.

### **3. Results**

#### **3.1. Lexical complexity**

Lexical diversity is one of the measurements of lexical complexity. In the current study, I will follow [McCarthy and Jarvis's \(2007\)](#) definition of lexical diversity as “the range and the variety of vocabulary deployed in a text by either a speaker or writer” (p. 459).

To analyze lexical diversity, there are some measurements, for example the Type-Token Ratio (TTR), Guiraud's Index (Root TTR), D (VOCD-D), and the Measure of Textual Lexical Diversity (MTLD). However, TTR, Root TTR, and VOCD-D are predisposed to be affected by text length ([DeBoer, 2014](#)). As a result, the current research employed MTLD, because this metric can measure various text lengths. The mean number of words written using SVE was 116.57 words per group, ranging from 59 to 177 words. The mean number of words produced using AVE was 123.28 words, ranging from 19 to 202 words. Therefore, texts varied considerably in length. To calculate the MTLD value, the computational software Coh-Metrix 3.0 was used.

#### **3.2. Results of lexical complexity between SVE and AVE**

In this research, eight participants took part in total. They were divided into two groups: a target group (N=7) and a group of intercalators (N=1) for the target group. The discourse of the target group was measured on the same dependent variable (i.e. the MTLD value) under two different conditions (i.e. SVE and AVE). For this research design, a paired-sample *t*-test was thought to be the most appropriate test. In order to judge whether the data set in the current research met with the assumptions of a paired-samples *t*-test, the difference between the two VE forms (SVE and AVE) was initially calculated. Then, the assumption of normality and no outliers was confirmed. As evaluated by inspection of a boxplot, outliers were not seen. The different scores were also normally distributed, as shown by

Shapiro-Wiki's test,  $p=.063>.05$ . As a result, to examine differences using MTLTD between SVE and AVE, it was calculated that a paired-samples  $t$ -test was the most appropriate statistical test. Descriptive statistics for MTLTD in discourse in SVE and AVE are illustrated in Table 1. The results of a paired-samples  $t$ -test indicated that there was no statistically significant difference between the MTLTD scores in the two VE modes,  $t(6)=1.181, p=.282$ .

Table 1. MTLTD using SVE and AVE

SVE (Chat)		AVE (Forum)	
Mean	SD	Mean	SD
64.52	18.46	54.09	12.63
Note. N=7.			

#### 4. Discussion

The current research was motivated by a desire to explore how different modes of VEs can be utilized effectively in the TBLT framework. Shiroyama (2021) argues that more than one mode of VEs is insufficient. Considering this, this research investigated the discourse features using two different forms of VEs and focusing on lexical complexity. Regarding task types, Shiroyama (2021) criticized that several studies used open-ended tasks, whereas this research employed decision-making tasks.

Regarding lexical complexity, this study was not consistent with Hwang's (2008) study. She states that the AVE group produced 'a richer vocabulary' as well as 'more complex written language' compared with the SVE group. However, any comparison between this research and Hwang's study requires caution. First, Hwang used different groups for the two modes. Consequently, the different result might have come from the difference in the participants in each group. Second, Hwang examined lexical complexity by analyzing lexical diversity as 'the square root of the double number of tokens' while this study employed lexical diversity calculated using the MTLTD. The different types of activity (i.e. discussion in the case of Hwang's research) may have affected lexical aspects of participants' language production.

#### 5. Conclusions

This research has examined the potential for the integration of different forms of VEs and TBLT. The finding in this research indicates that there was no statistically

---

significant difference regarding lexical complexity using SVE and AVE. For future research, firstly it will be necessary to examine not only lexical complexity and grammatical complexity points, but also fluency and accuracy to be able to effectively utilize VE within the TBLT framework. Another direction would be to focus on students' language production when they work with different proficient interlocutors because today many young people tend to use language exchange applications i.e. Hello-Talk, Tandem. Conclusively, it is necessary to discover the ways in which VE can assist language learners to enhance their target language abilities.

## 6. Acknowledgements

In writing this paper, I was really warmly supported by many individuals, and especially three people. First of all, I am very grateful to Mr Anthony Robins, who is a current Toyohashi Japan Association for Language Teaching (JALT) president. He helped me with carrying out this study. Also, his feedback and tutorial advice regarding my research have been most useful. Without his guidance, I would not have published this article.

Next, I would like to thank Dr Motoaki Mouri, who taught me during my undergraduate in Japan. He advised me about some academic work such as publications and research presentations. Without his support, I could not have published this study.

Finally, I would like to thank Mr Yoshinobu Shiga, member of Toyohashi JALT. He always encouraged whenever I hit the wall with my studies or academics. Without his gracious support, I could not have published this paper.

## 7. Supplementary materials

<https://research-publishing.box.com/s/nzocd9h2tpisqy11id81ax77dmtdalyu>

## References

- DeBoer, F. (2014). Evaluating the comparability of two measures of lexical diversity. *System*, 47, 139-145. <https://doi.org/10.1016/j.system.2014.10.008>
- Hagley, E. (2020). Effects of virtual exchange in the EFL classroom on students' cultural and intercultural sensitivity. *Computer-Assisted Language Learning Electronic Journal*, 21(3), 74-87.

- Hwang, P. A. (2008). Characteristics and transferability of text-based CMC to oral performance. *English Teaching*, 63(2), 3-21. <https://doi.org/10.15858/engtea.63.2.200806.3>
- Lee, S. M. (2016). User experience of a mobile speaking application with automatic speech recognition for EFL learning. *British Journal of Educational Technology*, 47(4), 778-786. <https://doi.org/10.1111/bjet.12354>
- McCarthy, P. M., & Jarvis, S. (2007). vocd: a theoretical and empirical evaluation. *Language Testing*, 24(4), 459-488. <https://doi.org/10.1177/0265532207080767>
- Ribeiro, A. (2016). Discourse strategies in computer-mediated communication between native and nonnative English speakers. *Electronic International Journal of Education, Arts, and Science (EIJEAS)*, 2.
- Shiroyama, T. (2021). Task-based language learning and teaching using synchronous and asynchronous CMC. *English Usage and Style*, 38, 35-55.

Published by Research-publishing.net, a not-for-profit association  
Contact: [info@research-publishing.net](mailto:info@research-publishing.net)

© 2022 by Editors (collective work)  
© 2022 by Authors (individual work)

**Intelligent CALL, granular systems and learner data: short papers from EUROCALL 2022**  
Edited by Birna Arnbjörnsdóttir, Branislav Bédi, Linda Bradley, Kolbrún Friðriksdóttir, Hólmfríður Garðarsdóttir, Sylvie Thoučsny, and Matthew James Whelpton

**Publication date:** 2022/12/12

**Rights:** the whole volume is published under the Attribution-NonCommercial-NoDerivatives International (CC BY-NC-ND) licence; **individual articles may have a different licence.** Under the CC BY-NC-ND licence, the volume is freely available online (<https://doi.org/10.14705/rpnet.2022.61.9782383720157>) for anybody to read, download, copy, and redistribute provided that the author(s), editorial team, and publisher are properly cited. Commercial use and derivative works are, however, not permitted.

**Disclaimer:** Research-publishing.net does not take any responsibility for the content of the pages written by the authors of this book. The authors have recognised that the work described was not published before, or that it was not under consideration for publication elsewhere. While the information in this book is believed to be true and accurate on the date of its going to press, neither the editorial team nor the publisher can accept any legal responsibility for any errors or omissions. The publisher makes no warranty, expressed or implied, with respect to the material contained herein. While Research-publishing.net is committed to publishing works of integrity, the words are the authors' alone.

**Trademark notice:** product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

**Copyrighted material:** every effort has been made by the editorial team to trace copyright holders and to obtain their permission for the use of copyrighted material in this book. In the event of errors or omissions, please notify the publisher of any corrections that will need to be incorporated in future editions of this book.

Typeset by Research-publishing.net  
Cover photo by © 2022 Kristinn Ingvarsson (photo is taken inside Veröld – House of Vigdís)  
Cover layout by © 2022 Raphaël Savina ([raphael@savina.net](mailto:raphael@savina.net))

ISBN13: 978-2-38372-015-7 (PDF, colour)

British Library Cataloguing-in-Publication Data.  
A cataloguing record for this book is available from the British Library.

**Legal deposit, France:** Bibliothèque Nationale de France - Dépôt légal: décembre 2022.