

Can a ‘shouting’ digital game help learners develop oral fluency in a second language?

Jennica Grimshaw¹, Walcir Cardoso², and David Waddington³

Abstract. This study examines the development of oral fluency in a Computer-Mediated Communication (CMC) environment that uses a ‘shouting’ digital game as a pedagogical tool: Spaceteam ESL⁴. Spaceteam ESL is a game for mobile devices that involves time-sensitive aural exchanges among players (English learners), with great potential to promote fluency development (via speed) in a non-threatening environment (mediated by the game, a CMC tool). 20 high-beginner/low-intermediate English as a Second Language (ESL) learners participated in the study, divided into two groups: an experimental group (n=11), which played the game for 15 minutes as a warm-up in class for a period of six weeks, and the control group (n=9), which was engaged in ‘traditional’ classroom activities such as info gap, story retelling, and other interactive activities for the same period of time. The study followed a mixed-methods design with pre-, post-, and delayed post-tests to measure developments in oral fluency (measured via the computation of number of syllables per second). The results suggest that mobile games such as Spaceteam ESL have the potential to assist in fluency development, but further investigation is needed.

Keywords: MALL, digital gaming, fluency development.

1. Introduction

Fluency development, which refers to the automatization or fluidity of speech (Derwing, Munro, Thomson, & Rossiter, 2009), is largely concerned with the temporal aspects of speech. According to Nation and Newton (2008), encouraging fluency development “is important at all levels of proficiency” (p. x). Unfortunately,

1. Concordia University, Montréal, Canada; jennica.grimshaw@gmail.com

2. Concordia University, Montréal, Canada; walcir.cardoso@concordia.ca

3. Concordia University, Montréal, Canada; david.waddington@concordia.ca

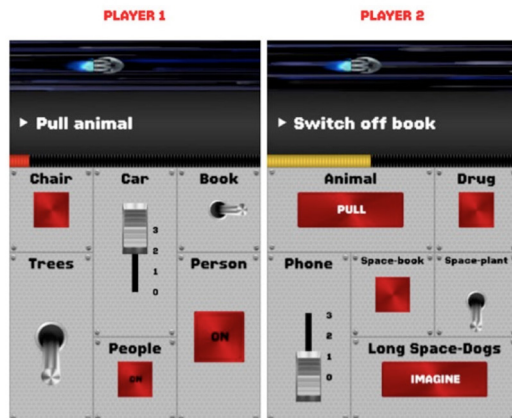
4. Adapted from the original Spaceteam mobile game by David Waddington and Walcir Cardoso of Concordia University in 2015.

How to cite this article: Grimshaw, J., Cardoso, W., & Waddington, D. (2016). Can a ‘shouting’ digital game help learners develop oral fluency in a second language?. In S. Papadima-Sophocleous, L. Bradley & S. Thoušny (Eds), *CALL communities and culture – short papers from EUROCALL 2016* (pp. 172-177). Research-publishing.net. <https://doi.org/10.14705/rpnet.2016.eurocall2016.557>

because these activities do not encourage the acquisition of new language items but rather focus on practicing known items, they are often not addressed in the classroom due to time constraints (Nation & Newton, 2008). Anxiety and/or a low level of Willingness To Communicate (WTC), which often limits output production (Gregersen & MacIntyre, 2014), may further reduce chances for fluency development (Horwitz, Horwitz, & Cope, 1986).

The current study proposes the use of Spaceteam ESL, a free mobile game available on Android and iOS as a fluency development activity, and investigates its effect on fluency development. Developed by David Waddington and Walcir Cardoso, and based on the original Spaceteam mobile game created by Henry Smith of *Sleeping Beast Games* (SleepingBeastGames.com), Spaceteam ESL is an interactive digital game for mobile devices. In teams of two to four, players must engage in real-time computer-mediated interaction with other players to navigate a spaceship. Each player is presented with a unique panel of buttons and dials (labelled with randomly generated noun-verb-adjective combinations based on vocabulary frequency bands); time-sensitive orders also appear on-screen. Players must give orders to one another by reading them aloud (intelligibly) from their panels while simultaneously receiving (via listening) and interpreting commands to manipulate buttons and dials on their own panels. Players have a limited amount of time to communicate these instructions and/or carry them out (see Figure 1 for the game interface).

Figure 1. Spaceteam ESL interface, as demonstrated on the panels of two players from the same team



Spaceteam ESL fulfils Nation and Newton's (2008) requirements of fluency development activities: it encourages players to speed up the use of language items

(e.g. previously acquired vocabulary, phonological features such as segments) and to process a large amount of input in order to understand the interlocutor's intended meaning in an efficient, fluent manner. Results of a pilot study (Cardoso, Grimshaw, & Waddington, 2015) suggest that Spaceteam ESL may also reduce anxiety and increase WTC in learners, while encouraging higher levels of oral output. The current study focuses its attention on the development of the temporal aspects of oral fluency, such as rate of speech and pause length (operationalized here as the number of syllables a person produces per minute), as these features relate closely to Derwing et al.'s (2009) definition of fluency. Accordingly, the study asked the following research question: Does playing Spaceteam ESL affect fluency development in second language learners?

2. Method

20 students from two high-beginner ESL classes (B1-B2 based on the Common European Framework of Reference for languages) at a French-language college in Canada participated in the study. One class acted as the experimental group ($n=11$), which played the game for 15 minutes as a warm-up in class for a period of 6 weeks (the treatment), and the other acted as the control group ($n=9$), which engaged in 'traditional' but interactive classroom activities such as info gap for the same period of time.

Quantitative data were collected for all participants from the pre-, post-, and delayed post-tests. For each test, participants were recorded telling a short story about their summer vacation. Syllables Per Minute (SPM) were calculated from the recording samples collected from the participants.

3. Results

A repeated measures factorial design test was conducted to measure the difference between the treatment and control groups from pretest to two post-tests, in which the independent variable was the treatment and the dependent variable was SPM, the measure of oral fluency adopted. Results indicate that there was no significant difference in improvement between groups over time (Table 1), $p=.395$.

Paired-samples t-tests were also conducted, one for the treatment group and one for the control group. Overall, the treatment group increased their fluency performance from the pre-test ($M=108.27$, $SE=8.36$) to the post-test ($M=111.09$, $SE=8.76$).

However, this difference, -2.82 , BCa 95% CI $[-17.64, 12.01]$, was not significant $t(10)=-.42, p=.68$, and represented a small-sized effect, $r=0.13$. The control group, on the other hand, decreased in performance from the pre-test ($M=112.67, SE=10.21$) to the post-test ($M=101.78, SE=7.71$). As was the case with the experimental group, this difference, 10.89 , BCa 95% CI $[-4.71, 26.48]$, was also found to be not significant $t(8)=1.61, p=.146$, but represented a medium effect size of $r=0.5$.

Table 1. SPM for storytelling task

Group	Pre-test		Post-test		Delayed Post-test	
	M	SD	M	SD	M	SD
Treatment	108.27	127.72	111.09	27.71	120.27	25.82
Control	112.67	30.63	101.78	23.13	123.78	29.59

While the results indicate that there was no significant difference in fluency improvement between the treatment and control group between the three tests, they do show a trend in the data. This trend suggests that although there was no significant improvement over time, the treatment group did appear to improve slightly between the pre- and post-tests, whereas the control group decreased in performance between these same tests. Participants in the treatment group continued to improve through the delayed post-test; the control group, interestingly, also improved from pre-test to delayed post-test, despite their decline in performance at the post-test. A limitation in the study may explain these results: participants had a one-week break between treatment weeks five and six. Week 6 was the final treatment session and participants had a class evaluation that same day; the post-test was also conducted during this session. Participants therefore had not practiced English for two weeks and were distracted by their evaluation. We acknowledge that this may have had an impact on their fluency (SPM) scores. Despite this, the treatment group continued to show a trend of improvement over the inconsistent results observed for the control group at the post-test. This may suggest that the use of Spaceteam ESL as a warm-up activity was a more effective 'refresher' for English after vacation than the activity the control group engaged in. The control group may have instead required more time and exposure to English to perform at their normal level.

4. Conclusions

The study investigated the effects of playing the mobile teambuilding game Spaceteam ESL on fluency development and found that there was no significant difference between the treatment and control groups. However, evidence shows a trend in which the treatment group outperformed the control group slightly from pre-

test to post-test. It is possible that these results were due to some of the limitations of the study: in addition to facing participant attrition over the six-week period (the initial participant pool consisted of over 50 participants), the researchers also experienced inconvenient timing of the post- and delayed post-tests, as discussed in the previous section. Further research under more controllable conditions and a longer period of treatment is needed to determine how much the game can truly influence the development of oral fluency.

Interviews with participants revealed that the treatment group's improvement may be due to an increased motivation that results from game play, as observed in the literature (Wang, Khoo, Liu, & Divaharan, 2008). Oral production is a vital component of fluency development (Nation & Newton, 2008); however, students are less likely to participate orally due to high levels of anxiety and low levels of WTC (Gregersen & MacIntyre, 2014), reducing opportunities for relevant oral interactions (Horwitz et al., 1986). Spaceteam ESL, on the other hand, requires a significant amount of oral production in a limited amount of time in order for teams to be successful. According to one student, his oral production was considerably higher during a 15-minute gaming session than in a three hour class: "more English in more small time... because in class I never speak because I don't like [sic]". Regarding anxiety and WTC, another participant reported that, while playing, he "didn't pay attention about [his] nervousity in English", which allowed him to focus on his speaking skills. Spaceteam ESL therefore creates a favourable environment for oral fluency development, one which will be investigated in further research.

To summarize, Spaceteam ESL offers a combination of features to encourage fluency development, addressing the requirements for it to occur, as outlined by Nation and Newton (2008). The game also offers a fluency development activity that is pre-prepared and ready for use in the language classroom, requiring little preparation from the classroom teacher. Although results between the treatment and control groups were not significant, the data suggest that playing Spaceteam ESL as a warm-up activity has the potential to positively influence the development of oral fluency in L2 learners.

5. Acknowledgements

We would like to thank the people who were involved in different aspects of this study: Henry Smith, Elisabeth Maegerlein, Eric Dahl, Alexandre Dion, Stef Rucco, Nina Padden, George Smith, Lauren Strachen, Tiago Bione, and Kym

Taylor. Finally, we would like to acknowledge the invaluable contribution of the participants and judges.

References

- Cardoso, W., Grimshaw, J., & Waddington, D. (2015). Set super-chicken to 3! Student and teacher perceptions of Spaceteam ESL. In F. Helm, L. Bradley, M. Guarda & S. Thouésny (Eds), *Critical CALL – Proceedings of the 2015 EUROCALL Conference, Padova, Italy* (pp. 102-107). Dublin Ireland: Research-publishing.net. <https://doi.org/10.14705/rpnet.2015.000317>
- Derwing, T. M., Munro, M. J., Thomson, R. I., & Rossiter, M. J. (2009). The relationship between L1 fluency and L2 fluency development. *Studies in Second Language Acquisition*, 31(4), 533-557. <https://doi.org/10.1017/S0272263109990015>
- Gregersen, T., & MacIntyre, P. D. (2014). *Capitalizing on language learners' individuality: from premise to practice*. Bristol: Multilingual Matters.
- Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. *The Modern language journal*, 70(2), 125-132. <https://doi.org/10.1111/j.1540-4781.1986.tb05256.x>
- Nation, P., & Newton, J. (2008). *Teaching ESL/EFL listening and speaking*. New York: Routledge.
- Wang, C., Khoo, A., Liu, W., & Divaharan, S. (2008). Passion and intrinsic motivation in digital gaming. *Cyber Psychology and Behavior*, 11(1), 39-45. <https://doi.org/10.1089/cpb.2007.0004>

Published by Research-publishing.net, not-for-profit association
Dublin, Ireland; Voillans, France, info@research-publishing.net

© 2016 by Editors (collective work)
© 2016 by Authors (individual work)

CALL communities and culture – short papers from EUROCALL 2016
Edited by Salomi Papadima-Sophocleous, Linda Bradley, and Sylvie Thouéšny

Rights: All articles in this collection are published under the Attribution-NonCommercial -NoDerivatives 4.0 International (CC BY-NC-ND 4.0) licence. Under this licence, the contents are freely available online as PDF files (<https://doi.org/10.14705/rpnet.2016.EUROCALL2016.9781908416445>) 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 is not under consideration for publication elsewhere. While the information in this book are 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 that may be made. 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 design by © Easy Conferences, info@easyconferences.eu, www.easyconferences.eu

Cover layout by © Raphaël Savina (raphael@savina.net)

Photo "bridge" on cover by © Andriy Markov/Shutterstock

Photo "frog" on cover by © Fany Savina (fany.savina@gmail.com)

Fonts used are licensed under a SIL Open Font License

ISBN13: 978-1-908416-43-8 (Paperback - Print on demand, black and white)

Print on demand technology is a high-quality, innovative and ecological printing method; with which the book is never 'out of stock' or 'out of print'.

ISBN13: 978-1-908416-44-5 (Ebook, PDF, colour)

ISBN13: 978-1-908416-45-2 (Ebook, EPUB, colour)

Legal deposit, Ireland: The National Library of Ireland, The Library of Trinity College, The Library of the University of Limerick, The Library of Dublin City University, The Library of NUI Cork, The Library of NUI Maynooth, The Library of University College Dublin, The Library of NUI Galway.

Legal deposit, United Kingdom: The British Library.

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 2016.