

Comparing Uptake of Lexical Items Across Online Media

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Abstract

この事例研究は同時コンピューター媒介コミュニケーション (SCMC) とボイスチャット (音声のみ) の効果を新規学習語彙の習得における比較を目的とする。このために特別に作成されたタスクを前述二つのメディアを使用して行い、会話記録とデジタル録音を分析後、実験直後の語彙テストとしばらく後のテストを実験参加者に行った。結果が示すよう、メディアの種類とボイスチャットによる語彙習得には関連性が見られた。特に、この特別なタスクでは高いレベルで語彙の記憶が可能となった。本研究で得られたデータは、二つのメディアの相互作用が変化し、その利用が第二言語習得にどのように影響するかを言語教員に提示する。

The purpose of this case study is to compare the effectiveness of synchronous computer-mediated communication (SCMC), text-chat and voice-chat (audio only), in relation to uptake of newly acquired lexical items. To achieve this goal, specifically designed tasks were completed using both media, conversation transcripts and digital recordings were then analyzed and immediate-post and delayed-post vocabulary tests were given to participants. Results showed that there was in fact, a causal relationship between the media type and lexical acquisition with voice-chat in particular, in combination with this specialized task, yielding higher levels of memory recall. The data obtained from this project aims to give teachers a better understanding of how interactions between students on the two media can vary and how usage of each may affect second language acquisition (SLA) to a greater or lesser extent.

Keywords: Synchronous computer-mediated communication (SCMC), text-chat, voice-chat, language related episodes (LREs), language uptake

1 Teaching with Technology in the Twenty-First Century

Introduction

As we continue to move forward into the twenty-first century, technological resources which can support second language (L2) learning have improved dramatically. Access to such resources too, has spread to such an extent now, that for the greater number of educational institutions it has become common place. What remains to be a challenge for teachers however, is the ever persistent dilemma of how to effectively incorporate such technology to enhance L2 learning. Different technologies have different strengths and weaknesses, and if CALL is to be used successfully, instructors must be provided with a clearer picture as to what exactly these are (Donaldson & Maggstrom, 2009). With greater access comes greater use, which in turn means greater responsibility on researchers to provide a link with classroom practices and curriculum design so that practical applications for such tools can be utilized to their full extent.

1.1 Current Research on Synchronous Computer-Mediated Communication (SCMC)

Over the past two decades much of the research carried out in relation to SCMC and SLA has revolved around synchronous written chat, more commonly known as text-chat. Located at a point between spontaneous oral language and the formal written form (Smith, 2003), the benefits of this unique medium of communication have been stated numerous times. These include such things as increased learner output (Sullivan & Pratt, 1996), greater learner involvement (Kern, 1995), more in-depth discourse (Chun, 1994), less anxiety (Satar & Ozdener, 2008), and higher motivation (Warschauer, 1996b). The most commonly stated of these however is its ability to amplify students' attention to form (Warschauer & Kern, 2000). Given the fact that this medium necessitates a slower pace of communication exchange as compared to face-to-face, coupled with the fact that all participant utterances remain as a record on screen, much has been said about its ability to afford learners more time to contemplate issues of form while attending to meaning. This has in turn led to speculation about a possible link between the time learners spend online focusing on form and increases in their rate of grammatical development (Pellettieri, 2000), spoken fluency (Abrams, 2003), lexical improvement (Smith, 2004), and ability to negotiate meaning (Blake, 2000).

On the other hand, it should be noted that very little research has been done to date on the benefits to SLA of voice-chat activities. Qualitative data remains very limited and many questions are still left unanswered. It is crucial now that researchers look for answers to such questions as: 1) What practical applications does SCMC have in

relation to second language acquisition? 2) What ways can task types possibly affect this? and, 3) How applicable is such new linguistic knowledge taken from SCMC to the real world? While such assertions have attracted the attention of many researchers and educators alike in the field of CALL, it is clear that there is still much that needs to be examined and scrutinized before we are to recognize SCMC's true capabilities.

1.2 Incidental Focus on Form/Language Related Episodes

Long and Robinson (1998) define focus on form as periodical shifts of attention to linguistic features which are initiated by learners or teachers when perceived problems with comprehension or production arise. Similarly, Swain (2001) also describes Language-Related Episodes (LREs) as segments of learner interaction in which they either talk about or question their own, or others' language use within the context of carrying out a given task in the L2. These incidents or episodes have in the past been used in both face-to-face, as well as online case studies as indicators of L2 learning in progress, which has been proposed to act as a type of stepping stone towards SLA.

1.3 Justification for Carrying out Current Research

The goal of any second language teacher is to help learners achieve competency in the L2 that is transferable from the classroom to the real world. This then should also be said about any computer technology used within the classroom. While many researchers hypothesize on the benefits SCMC, more notably text-chat, has on improving both students' speaking and writing skills (Salaberry, 2000, Kotter, 2001, Pellettieri, 2000), such assumptions while interesting are yet to be fully explored.

As Xu (2005) notes, "given the differences between the computer and the oral and written media, teachers and researchers should caution in equaling the students' sociolinguistic performance in SCMC to their sociolinguistic competence in real life" (p. 7). While it has been speculated that features of CMC may indirectly enhance L2 development, "few studies [...] have directly addressed the effect CMC environments have on the sequence and rate of development of grammatical features of target language such as morphology or syntax" (Salaberry, 2000, p. 6). Judging from literature available on this issue, debate continues within the research community as to the nature of online interaction and its suitability in relation to current teaching approaches to tasks being carried out in these environments (Peterson, 2010).

2 Research Background

This research study was developed in response to a previous comparative

investigation into the perceived and provable benefits of text-chat and voice-chat, which used the number and types of LREs as well as participant questionnaires to contrast the media (Edwards & Young, 2013). The conclusions drawn from this research pointed to distinct advantages for the use of both media (which were also substantiated by participant impressions) particularly when combined with targeted teaching objectives. Text-chat was found to be beneficial for developing communication skills as well as to promote grammatical and lexical accuracy in concordance with contemporary research (Chun, 1994, Pellettieri, 2000, Smith, 2004). Voice-chat on the other hand endorsed negotiation of meaning, production of modified output and pronunciation and listening skills, pointing to the need for further investigation into the benefits of online voice-chat activities to SLA. Perhaps the most compelling result though pertaining to this initial research project was that participants seem to experience more LREs through using voice-chat rather than text-chat, running contrary to initial expectations. It was noted however that although less LREs were present in the text-chat results a considerably larger proportion of time was invested in the resolution of individual LREs using this media. This elicited such considerations as to whether the length of time spent on a specific language item could result in higher uptake by participants. Within the confines of this first investigation however, the retention levels of the knowledge acquired from the LREs was not tested and so specific language uptake remained unproven. Following on from this research then, the present comparative study was designed to answer the following questions:

- Is the online media text-chat more conducive to longer LREs than those on voice-chat?
- If so, does this affect language uptake?

2.1 Participants

The participants for this project were four English major, low-intermediate level university students, with TOEIC scores between 525 and 560. The participants were highly motivated individuals who participated in the project in a voluntary capacity.

2.2 Procedure

The participants were asked to attend three research sessions. In the first two sessions, two activities per person were completed, one using text-chat and one using voice-chat. In the third session participants were asked to complete a written test, which was designed to elicit the new, LRE-generated, lexical items, to test levels of language uptake. Questionnaires were then completed with the purpose of ascertaining

participants' experiences and impressions of using both media. It should also be noted that participants worked with the same partner for all activities and that the research sessions were conducted at the following intervals: Session 1: Day 1, Session 2: Day 12 and Session 3: Day 14.

2.3 SCMC Tools

Although there are many software packages which support text-chat and voice-chat communication, for the purposes of this study the free software Skype was employed. Skype software allows for worldwide communication using video-conferencing, instant messaging and also voice-chat communication (through the use of a microphone) to computers, landlines and cellphones. It was chosen primarily for its ease of use, its ability to support both aspects of the research project, its prevalence in online interactions and both students' and researchers' familiarity with it. Advancements in video-conferencing technology have led to a point where it can be said to be synonymous with face-to-face communication. For this reason the project focused solely on text-chat and voice-chat, which were judged to have properties that are unique to online settings.

2.4 Activities/Tasks

For the purposes of this study eight information-gap activities were created with four activities being completed per session (two per person). The activities were designed to maximize LRE production, specifically related to easily testable, lexis based LREs. Lexis based LREs as defined by Swain (2001) are instances where learners search for lexical items and/or choose from among competing lexical items. The activities were also designed to promote negotiation of meaning to facilitate greater exposure to, and interaction with the new vocabulary.

An example LRE is shown below. It was taken from the transcripts made of participant interactions on voice-chat. It shows participant 1 requesting information regarding the word 'wheelchair', its spelling and also usage.

Example LRE

Participant 1: There is a man near crash car ...

Participant 2: Ok ...

Participant 1: He ... What What is he he riding riding?

Participant 2: Wheel ... Wheelchair

Researcher: Mmm

Participant 1: Wheelchair?

Participant 2: Man Man is on ... on ride ...?

Researcher: Hmmm ... Ride ... Not so much ride no ...

Participant 2: Ahhh ... Is sitting ...

Researcher: Yes

Participant 2: ... Sitting on wheelchair

Researcher: Sitting on?

Participant 2: Sitting at?

Researcher: No ... sitting ...

Participant 2: Sitting ... Sitting in ... Sitting in wheelchair

Researcher: Yes exactly ...

Participant 1: Wheelchairs spell please

Participant 2: Ok ... W-H

Participant 1: W-H

Participant 2: E-E

Participant 1: E-E

Participant 2: L

Participant 1: L

Participant 2: Chair

Participant 1: Chair ok

All activities adhered to the same basic pattern for ease of comprehension for participants and to allow for accurate comparison of results. One task as seen in Figs. 1 & 2 consists of a picture of a scene, with worksheet A additionally having a range of associated vocabulary in both Japanese and English and worksheet B comprising of a note box and space to write five sentences.

A Busy Park Scene⁴

English	Japanese
Sand Castle	砂の城
Sandbox	砂場
Build	立てる
Hop Scotch	あひり遊び
Play marbles	ビー玉遊び
Marble	ビー玉
Seesaw	シーソー
Swings	ブランコ
Swing	飛ぶ
Slide	滑り台
To slide	滑る
Skipping rope	縄跳び
To skip	跳ぶ

Fig. 1 Worksheet A

A Busy Park Scene⁴

Items Box

Fig. 2 Worksheet B

2.5 Method

The first part of the activity involved participant B (the person who has worksheet B) gathering as much grammatical/lexical information about the scene as possible from their partner participant A, to enable them to create a written description of the scene for the second part of the task. This process was executed utilizing one of the chosen media (text-chat or voice-chat). Upon collecting enough information the roles of the participants were switched, new scenes were given to both partners and the process of information collection was repeated using the same SCMC. On fulfillment of the information exchange, five sentences describing participants' respective scenes and incorporating the new lexical items were individually written to complete the task. This whole process was then repeated per session for the second SCMC.

2.6 Task Rationale

After a short trial period at the initial stages of the project, it was agreed to employ information gap tasks that were explicitly designed to have a high degree of specificity over the number and type of LREs participants encountered. The rationale behind this was that the LREs experienced needed to be successfully resolved, simple and straightforward for testing purposes (hence the use of lexis-based LREs as opposed to form-based LREs), and for comparative reasons each participant needed to experience

the same minimum number of LREs per activity. Pertaining to these restrictions: careful thought was given to scene selection, to ensure new vocabulary was encountered; a relatively large quantity of vocabulary was provided on A worksheets and dictionary use was not permitted; researchers also participated in the on-line conversations in a supervisory capacity, across both media, as an additional resource for students to ensure successful resolution of LREs and to guarantee LRE quotas.

2.7 Testing/Data Compilation

Testing to determine the amount of uptake of the individual lexical items gleaned from the experiences of the LREs took place after all tasks were completed in the third session. The participants were given only one test but this test incorporated all new lexical items from the second session two days previously (an immediate post-test) as well as all of the items from the activities done in the first session, fourteen days preceding (a delayed post-test), twenty new individual vocabulary items per participant in total (ten from each session with five items being from text-chat and five items from voice-chat activities). Participants were unaware that the new lexical items would be tested for in the third session, to avoid undue consideration or study of those items, in keeping with the research method set out by Loewen in his investigation into Incidental Focus on Form and Second Language Learning (2005).

The written test took the same form as the original activities. Participants were given the same images (this time without the additional vocabulary) with previously described items clearly indicated and they were instructed to write five descriptive sentences to include the target language. Tests were unique and personalized for each participant to account for individual gaps in language knowledge. Specific LREs were included in a test when an individual had instigated the LRE through asking their partner a question about that specific item, as this was taken as a sign of recognition of a deficit in their own language knowledge. This approach ensured that previously unknown language was being tested for. Delayed post-tests were undertaken on the recommendation of Lin, Huang, and Liou (2013), as a result of their meta analysis of SCMC effects on SLA in order to determine the longer term retention effect of SCMC on language learning.

The test data was evaluated on a point system as follows: Incorrect answer = 0 points. Partially correct answer = 1 point (Partially correct refers to correct answers with spelling mistakes or answers which were deemed close enough to indicate sufficient knowledge of the original item). Correct answer = 2 points (Answers were exact replicates of the initial items). Each participant's score was then tallied for both SCMC types with the purpose of ascertaining how much retention of lexical information could be achieved from both session one and session two.

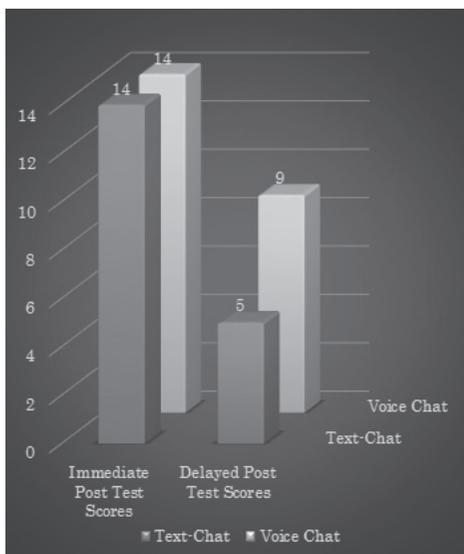


Fig. 3 Correct and partially-correct test answers for both media

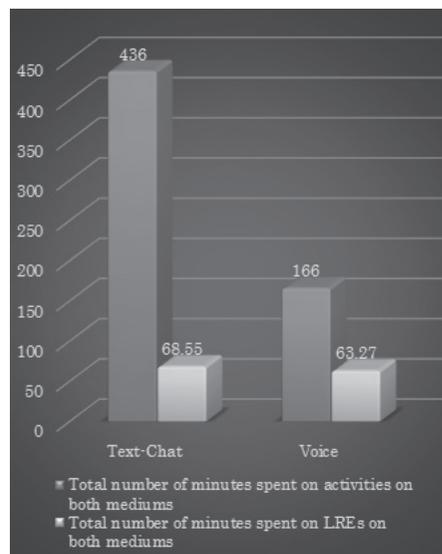


Fig. 4 The total time spent on tasks and LREs for both media

3 Results and Analysis

As presented in Fig. 3, a compilation of correct or partially correct answers for the immediate post-test items showed there to be no difference in the participants' ability to recall recently learned vocabulary on either of the two online media with a total of fourteen points for each. The delayed post-test scores however revealed a significant disparity in favor of voice-chat over text-chat, with a 45% higher rate of recollection of new lexical items (nine points to five points).

With text-chat's unique hybrid form of synchronous written communication; its ability to slow down interaction and amplify linguistic awareness among learners (Warschauer & Kern, 2000), it can be said that these results were somewhat confounding. Given that the average amount of time it took each group to complete the tasks on text-chat was calculated to be double that of voice-chat (1 hr. 23 minutes as opposed to 41 minutes 30 seconds), it might seem logical that such prolonged periods of engagement would in turn lead to longer LREs. This however was found not to be the case for this case study (Fig. 4). In fact the difference between the average amounts of time spent discussing new lexical items per activity on the two media ending up being negligible at 17 minutes 8 seconds on text-chat as compared with 15 minutes 48 seconds on voice-chat.

What is more, a word count of the LREs experienced (both written and spoken) on

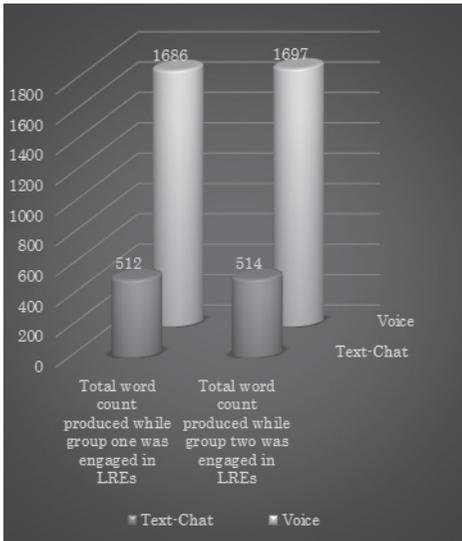


Fig. 5 Word counts for LREs for both mediums

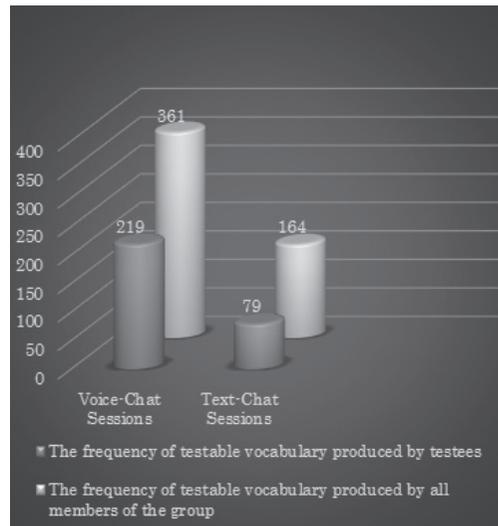


Fig. 6 The frequency testable vocabulary items were produced and encountered for both mediums

each medium also revealed that in actuality, three times as much discussion took place about new lexical items on voice-chat (Fig. 5).

Skehan (1998), through his limited capacity model, argues that human beings have a limited capacity to process information, hence, task content and language accuracy end up in competition with each other for a learner's attention. As the very nature of text-chat seems to afford participants an optimal learning environment, with a more relaxed pace of interaction than traditional face-to-face communication, and the bonus of maintaining a record of exchanges on screen, it is interesting to find that this did not in fact lead to higher test scores when compared to voice-chat.

Looking specifically at the time ratio it took each of the groups to complete the tasks versus the time spent engaged in LREs it becomes apparent that, in the tasks that were set up for this project, voice-chat was the more effective of the two media. This can be seen by the fact that LREs in voice-chat occupied 38.1% of the total time spent on the tasks, in contrast with LREs in text-chat which took up only 15.7% of the total time spent. This indicates that voice-chat affords a more efficient use of time, where maximizing experiences of LREs is the goal, as in this instance.

In a further count of the number of times new lexical items were actually spoken or typed throughout the sessions by either the participants or their group members (researcher included) it was discovered that a pattern emerged whereby there were twice as many repetitions of the new vocabulary during voice-chat sessions as there

were on text-chat sessions (Fig. 6). This in turn indicates a potential positive correlation between the number of times participants heard and/or produced new lexical items with their ability to retain that information over longer periods of time. This can possibly be seen as evidence of more active cognitive processes at work on voice-chat in relation to what Swain (1995) referred to as hypothesis-testing and metalinguistic functions.

From these findings it was concluded that while each group did spend significantly longer to complete the tasks on text-chat, this extended period of time did not come from the difficulty of the activity, more so it was due to the challenge of participants having to use a considerable amount of time to direct each other's attention to specific points on the picture through texting. This, coupled with the fact that the new lexical items remained on their computer screens throughout the sessions, may have actually led to a feeling of less urgency among participants, hence shorter LREs and less repetition of new vocabulary. In contrast to Skehan's model, when the language task at hand is less demanding and perhaps not collaborative (this meaning there was no negotiation or construction of joint meaning) there may have been a detrimental effect to the tasks done on text-chat which may have caused a certain level of complacency and motivation to wane over time.

Voice-chat on the other hand, while forcing participants to rely solely on their listening skills to receive and make sense of new input may have actually helped create an environment more conducive to greater use of working memory. It can be conjectured that, the attention needed to focus on task content was not at such a point where it impeded language accuracy yet participants were not put in a situation where they could be at total ease. The much higher repetition of new lexical items on voice-chat is indicative of this. The importance of repetition is self-evident. Much research has stated the importance of second language learners' use of repetition for conversational participation and language learning (Veslemoy, 2005, Büyükbay & Dabaghi, 2010). As Prins (2006) states, "repetition enhances comprehension, because it provides learners with opportunities to process input". This in turn has often been associated with positive effects on uptake as well, and can be corroborated in this study as a key factor as to why voice-chat proved the more effective of the two media.

3.1 Participant Feedback

At the end of the third session participants were asked to complete a short questionnaire, giving them the opportunity to reflect on their learning experiences using both media. This was considered important, as in some cases, what learners perceive to be potentially beneficial and/or authentic learning experiences does not always correlate with researchers' findings. Although it was the researchers' contention



Fig. 7 Questionnaire results as to the ease of learning new vocabulary for both mediums

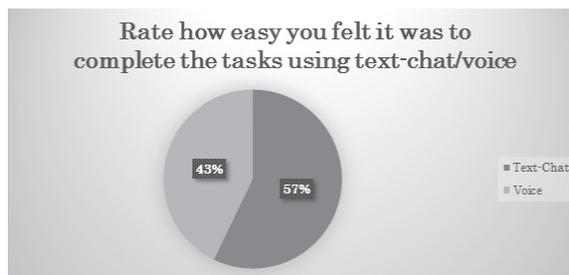


Fig. 8 Questionnaire results as to the ease of completing tasks using both mediums



Fig. 9 Questionnaire results as to how easy it was to understand partners on both mediums

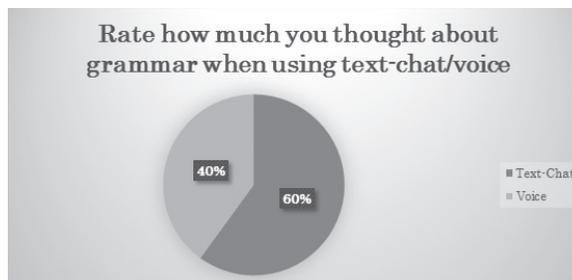


Fig. 10 Questionnaire results as to how much participants thought about grammar on both mediums

that the simplicity of the tasks and lengthy time period needed for participants to complete them on text-chat may have contributed to lower levels of language uptake this was not reflected in the participant feedback.

As can be seen in Figs. 7 to 10, while the variation in percentage breakdowns of the graphs cannot be seen to be significantly dissimilar, overall there does appear to be a general consensus in favor of text-chat over voice-chat. Participants actually indicated that they felt it was somewhat easier to learn new vocabulary and complete tasks on text-chat, as well as understand other group members' utterances and contemplate their own use of grammar. This indicates that even though the test results for this case study proved voice-chat to be more effective of the two media it does not mean that the participants did not recognize text-chat as being a useful learning tool. Perhaps under different task conditions, text-chat may in fact also be utilized to support higher levels of language uptake.

3.2 Research Limitations

It should be acknowledged that this research was conducted under some limitations. The purview of the research was small with only four participants so the data volume was therefore modest. Attention should also be drawn to the fact that the online media of text-chat and voice-chat utilize different language skills. Text-chat employs both reading and writing skills while voice-chat, in contrast, enlists speaking and listening skills. The degree to which participant preferences, comfort levels and strengths in the employ of these skills was not ascertained and so the scope of influence of these factors on the final results could not be calculated. Whether the results achieved can be attributed to the nature of the media or the nature of the skills themselves is beyond the capacity of this study but calls for further research pointing specifically to the need for a control group to determine the significance of such factors.

While instigation of LREs was given to mean the presence of previously unencountered lexical items or a gap in knowledge for that participant, this could also indicate an incomplete or partial knowledge of that lexical item. This would mean that a correct test result for a particular item could in actuality mean a consolidation of previous knowledge and not necessarily the uptake or acquisition of new information (Loewen, 2005).

The test-type for this investigation was deemed to be a 'scaffolded' productive test type. The participants were required to 'produce' the target vocabulary in a written form. Had the tests been spoken or more receptive in nature, decontextualized or required manipulation of the target items, then the results may have been divergent.

Finally, while researcher interaction was primarily limited to monitoring, such

interaction does include the ‘human factor’, so it is difficult to ascertain how much this presence may have inhibited or influenced participant output.

4 Conclusion

Text-chat and voice-chat, while both being varieties of synchronous online communication both have the power to create very different interactional environments. In answer to the original research question, of whether the online media text-chat is more conducive to longer LREs than those on voice-chat and how or if this affects language uptake, it can be concluded that although a longer time was spent on task on text-chat this did not equate to longer periods spent actually focusing on resolving LREs. In actuality, results suggest that voice-chat was more conducive to uptake in this instance as it led to larger LRE word counts as well as more repetition of the target vocabulary. This seemed to be a key factor in greater retention in the longer term of the new vocabulary items acquired by participants. That being said however, while this is but one case study, the scope of which being very limited, it still helps shed more light on the dynamics of online communication and its relevance to language learning.

Factors such as L2 proficiency, language objectives, task set-up, time limitations, as well as participant groupings all play an interconnecting role with the medium through which a task is carried out and have the power to alter expectations and results. The research and conclusions presented within this study then irrefutably point to a need for further comparative investigations into the uses for and the effectiveness of, voice-chat and text-chat on SLA. Of specific interest are task-types and testing methods, with task-type perhaps being the greatest variable for whether, and the degree to which, language acquisition takes place.

Future investigation should take into account a wider variety of communicative tasks and their effect on incidental noticing. Test-type also needs greater consideration to clarify how to best account for previous participant knowledge and how that may affect test outcomes. “Only through a more transparent characterization of SCMC conditions in future effectiveness studies can we then ascertain which features may or may not trigger the processes involved in SLA and truly capitalize on the communication opportunities afforded in different SCMC environments” (Lin et al., 2013, p. 134).

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