



A study on the Effect of Telecollaboration through Social Networking on Reading Comprehension and Vocabulary Learning: The Case of Iranian Female High School EFL Learners

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Abstract

Technology enhanced instruction has been a paramount issue in recent decades leading to a shift in educational context. Moreover, telecollaboration as an electronically mediated intercultural communication has been introduced for the purpose of foreign language learning as well as the development of intercultural competence. Along this way, the present study was an attempt to probe on the effect of social networking through mobile assisted language learning (MALL) instruction (i.e., WhatsApp) on high school students' reading comprehension and vocabulary learning. Furthermore, the difference between the effect of social networking through WhatsApp on the learners' reading comprehension ability and vocabulary learning was compared. The design of the study was quasi-experimental with pre-test/post-test and the experimental and control groups. To do so, 60 female high school learners were homogenized using the Oxford Placement Test. Reading comprehension and vocabulary pre- and post-tests were administered among the learners to examine the effect of MALL instruction through WhatsApp on the learners' reading comprehension and vocabulary learning. To analyze the data, independent samples t-test and MANOVA were used. Findings showed the outperformance of the experimental group over the control group in both reading comprehension and vocabulary learning. However, no statistically significant difference was found between the learners' reading comprehension and vocabulary learning when they received social networking instruction through WhatsApp. Therefore, it can be concluded that using MALL can have beneficial effects on EFL learners' reading comprehension and vocabulary.

INTRODUCTION

Technology has been utilized for pedagogical purposes for over than half a century. Existing technologies and upcoming communication devices have

provided more sophisticated view of Computer-Assisted Language Learning (CALL) in the late 1980s (Chapelle, 2001). Almost similarly to CALL, Mobile-Assisted Language Learning (MALL) is one of the latest methodology and research areas in language instruction, which has been popular since the introduction of practical mobile applications (McGuigan & Weil, 2008). The era of technology enhanced language instruction has sufficiently prompted language scholars to have a more reasonable view of using technology in language classroom, which demands more thoughtful research to be done in this area of research. For teachers, it can be of a lot of benefits to integrate technology with instruction. Moreover, learners can benefit more since they can engage in more classroom interaction as well as peer and teacher support (Zurita & Nussbaum, 2004). Nowadays, using multimedia and social networking for language learners is widely applicable on the internet, and computer systems can be freely used in educational institute (Latt, Lally, Lipponen, & Simons, 2007). In the present study, from among all social networking platforms, WhatsApp was used. The reason behind it is the ease that WhatsApp is providing to all the users. The application is very user friendly. You can not only exchange words with people but you can also share the pictures, videos and various other files through whats App in few seconds. Another reason was the compatibility of this application with almost every smart phone and the exclusive features of making groups and doing chat together.

Telecollaboration is defined as “institutionalized, electronically mediated intercultural communication under the guidance of a linguacultural expert (i.e., a teacher) for the purpose of foreign language learning and the development of intercultural competence” (Belz, 2003: 2). In fact, telecollaboration has impacted language acquisition, which differentiates a modern language classroom from a traditional one in terms of learning environments in which interaction can take place (Akiyama & Saito, 2016). Hence, multimedia tools in the language classrooms have been regarded as an effective tool because of its benefits for having interactive, creative, and problem-solving speaking, writing, listening, and reading skills (Zurita & Nussbaum, 2004). To date, as stated by Kukulska-Hulme (2015), language learning has positively been affected by mobile learning. MALL is an ideal solution to language learning barriers in terms of time and location (Miangah & Nezarat, 2012).

However, learning a language skill or sub-skill is still a universal source of

anxiety (Suleiman, 2014), which requires more consideration to be taken by teachers regarding the effective application of mobile apps on the one hand, and being aware of the most popular and applicable mobile apps in the foreign language society for better effectiveness in the classroom on the other (Hoffert & Sandberg, 2001). As technology devices have existed in every context, educators are required to thoughtfully introduce effective techniques, such as MALL, to be integrated into classroom instruction for better teaching of language skills and sub-skills. Some studies focused on the effect of using WhatsApp on language skills/sub-skills such as speaking, reading and vocabulary (e.g., Abdul Fattah, 2015; Ahmed, 2019; Barhoumi, 2015; Hamed, 2017; Jafari & Chalak, 2016), but to the researchers' knowledge, no one has worked on both learners' reading and vocabulary learning. Therefore, the present study aimed to investigate the effect of using social networking through WhatsApp on reading comprehension and vocabulary learning of Iranian female high school EFL learners. Moreover, the study examined the statistically significant differences that might potentially exist between the effect of social networking on reading comprehension and vocabulary learning of the learners.

RESEARCH METHODOLOGY

The design of this quantitative study was quasi-experimental with pre-test/post-test and two experimental and control groups. In the present study, 'telecollaboration through social networking' (WhatsApp here after) was considered as the independent variable and Iranian 'reading comprehension and vocabulary learning' were regarded as dependent variables. The main purpose of the study was to see if the effect of using WhatsApp on the participants' reading comprehension and vocabulary development.

Participants

To gather data for this study, from among 80 elementary students, studying in 11th grade of high school, 60 were opted for the present study after taking the Oxford Placement Test. All the participants were selected from teenagers (between 15 to 16 years of age) to see how young learners would respond to telecollaboration through social networking. It should also be noted that the participants were randomly divided into one experimental group including 30 and one control group (30 learners).

Instruments

The first instrument was the OPT (Oxford Placement Test) applied to test the homogeneity of the participants in terms of their target level of proficiency. Then, in order to collect data to analyze the first research question, a researcher-made pre- and post-tests of reading comprehension was taken by the learners. In order to ensure the reliability of the pre- and post-test, a pilot study was done with 25 learners with the same characteristics as the study participants. Reliability coefficient was found to be 0.78, which seemed to be a reasonable measure of reliability as highlighted in Farhady, Jafarpour, and Birjandi (1994). Moreover, to answer RQ2 and look into the effectiveness of WhatsApp on the learners' vocabulary learning, a researcher-made pre- and post-tests of vocabulary were taken by the participants of the study whose reliability was measured to be 0.79. It should be noted that in the present study, WhatsApp was used as the social networking since it is more user-friendly for the students at this age.

Procedures

Pre-experimental Phase

Initially, the OPT was administered among 80 students from which sixty students were selected to be assigned to the experimental and control groups.

Pre-test

After that, the reading comprehension and vocabulary pre-tests were administered to diagnose their initial knowledge of reading and vocabulary.

Experimental Phase

In this step, the experimental group received ten two-hour treatment sessions of telecollaboration through social networking by WhatsApp, working on the reading comprehension tasks provided by the teacher. The learners were given a complete explanation regarding the purpose of the research and that they need to stay online. The teacher invited the participants to hold the online sessions by creating a group and added the selected participants. In order to stimulate the learners' participation, the teacher gave them bonus to do their best in the WhatsApp group.

The learners were provided with reading comprehension activities, which encouraged language learners to engage in classroom interaction by working with their peers as well as the teacher. There were 10 reading comprehension passages taken from the learners' course book (Vision 2) along with other supplementary

materials covered in their syllabus. The teacher, who was the researcher herself, started the instruction by making a warm-up and directed the learners' attention to the passage by uploading some pictures and discussing the title in WhatsApp. The learners were expected to have textual interaction with their classmates by typing their opinions. Warm-up aimed at enhancing the learners' attention to interactively focus on the target passages. The reading comprehension passages included some vocabularies, which were highlighted, bolded, italicized, and underlined, aiming to indirectly activate the learners' noticing of target vocabularies through reading comprehension. The teacher gave the learners some time to read the text on their own and then share their general understanding of the topic. In order to directly take the effect of social networking into account, strategy instruction was not the focus of the present study, and the teacher solely guided the learners to focus on the target words by asking a lot of comprehension questions and involving the majority of the participants in the context of online learning environment. The teacher gave textual feedback on the learners' written answers for the purpose of better comprehension of the passages.

The learners were also encouraged to have peer interaction while working on the selected tasks of reading. In fact, the purpose was to provide an online environment for the learners to textually interact with their classmates and the teacher for the purpose of better comprehension and vocabulary learning, as well. However, no technology enhanced instruction or online learning environment was applied in the control group and they underwent traditional instruction of reading comprehension and vocabulary without benefiting from mobile apps. In other words, Grammar Translation methodology was applied through learners' attention was directed at the explicit statement of the meaning of the sentences and difficult vocabularies. No peer or teacher-learner interactions were practiced in the control group.

Post-test

After ten sessions of reading and vocabulary instruction through social networking by WhatsApp, the participants took the reading comprehension and vocabulary post-tests to set the stage for later comparisons.

Findings and Discussions

Analyzing the effect of social networking on the learners' reading comprehension ability

The first research question of the study aimed at investigating the effect of social networking on the learners' reading comprehension ability. Therefore, after checking the normality assumptions, pre- and post-test scores of the experimental and control groups were compared (Table 1).

Table 1: Independent-Samples T-Test for the Reading Comprehension Pretest of the Experimental and the Control Groups

	Levene's Test for Equality of Variances		t-test for Equality of Means				95% Confidence Interval of the Difference		
	F	Sig.	t	df	Sig. (2-tailed)	(2-Mean Difference)	Std. Error Difference	Lower	Upper
Equal variances assumed	.181	.673	.827	58	.414	1.4000	1.6923	-2.0322	4.8322
Equal variances not assumed			.833	35.987	.410	1.4000	1.6808	-2.0088	4.8088

P-value resulted from Levene's test is more than .05 (p=.673), which indicates the equality of variance. Independent samples t-test reveals that the significance level is more than .05 (p= .414, df= 58 ,t= .82), specifying no significant differences between the experimental and control groups' mean scores of the learners' reading comprehension ability for the pre-test (mean difference= 1.40). Table 2 contains information for the post-test results for the experimental and the control groups.

Table 2: Independent-Samples T-Test for the Reading Comprehension Posttest of the Experimental and the Control Groups

	Levene's Test for Equality of Variances		t-test for Equality of Means				95% Confidence Interval of the Difference		
	F	Sig.	t	df	Sig. (2-tailed)	(2-Mean Difference)	Std. Error Difference	Lower	Upper
Equal variances assumed	1.476	.232	4.815	58	.000	6.7111	1.3938	3.8843	9.5379
Equal variances not assumed			4.905	34.034	.000	6.7111	1.3682	3.9306	9.4915

As to Table 2, p-value from Levene's test indicates that the variance of the two groups is equal since it is more than .05 (p=.232). The significance level is less than .05, demonstrating that there exists a significant difference between the

experimental and the control groups (mean difference=6.71). In other words, independent samples t-test highlights the outperformance of the experimental group over the control group in their reading comprehension ability.

Analyzing the effect of social networking on the learners' vocabulary learning

The second research question of the study looked into the effect of applying social networking on the learners' vocabulary learning. In order to take into account, the experimental and control group learners' performance on the pre- and post-test of vocabulary learning through MALL instruction, the paired samples t-test was conducted (Table3).

Table 3: Independent-Samples T-Test for the Vocabulary Pretest of the Experimental and the Control Groups

		Levene's Test for Equality of Variances						t-test for Equality of Means	
		F	Sig.	t	df	Sig. (2-tailed)	(2-Mean Difference)	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
Equal variances assumed		.295	.591	-1.553	58	.130	-2.7333	1.7603	-6.3148 .8481
Equal variances not assumed				-1.593	32.515	.121	-2.7333	1.7161	-6.2268 .7602

Concerning Table 3, p-value from Levene's test is more than .05, resulting in the equality of variance. Inferential data reveals that there is no significant difference between EG2 and CG on the reading comprehension pre-test (p= .130 ,df= 58, t= - 1.55), and there is a rare difference between the two groups' mean scores (mean difference=-2.73). Thus, findings showed that the experimental and the control groups acted similarly before the treatment sessions of social networking. The inferential analysis of mean differences between the two groups on the post-test is provided in the following Table.

Table 4: Independent-Samples T-Test for the Vocabulary Posttest of the Experimental and the Control Groups

		Levene's Test for Equality of Variances						t-test for Equality of Means	
		F	Sig.	t	df	Sig. (2-tailed)	(2-Mean Difference)	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
Equal variances assumed		3.842	.058	1.324	58	.003	2.6666	2.0143	-1.4315 6.7649
Equal variances not assumed				1.259	23.885	.003	2.6666	2.1174	-1.7047 7.0380

Table 4 indicates that p-value resulted from Levene's test is more than .05,

indicating the equality of variance. Independent samples t-test reveals that the level of significance is less than .05 ($p = .003$, $df = 58$, $t = 1.32$), highlighting statistically significant difference between the experimental and the control groups. Therefore, it can be concluded that social networking through WhatsApp had statistically significant effect on the learners' vocabulary learning.

Analyzing the difference between the effect of social networking on the learners' reading comprehension ability and vocabulary learning

The third purpose of the study was to explore the difference between the learners' reading comprehension and vocabulary learning as the result of being exposed to MALL instruction through WhatsApp. As for the comparison of the three mean scores of reading comprehension, vocabulary, and the control groups' pre-test, a multivariate analysis of variance (MANOVA) was run (Table 5).

Table 5: MANOVA Statistics for the Reading and Vocabulary of the Experimental and the Control Groups' Pretest

	Value	F	df	Sig.	Partial Eta Squared
Pillai's Trace	.301	7.97	3.000	.001	.902
Wilk's Lambada	.391	7.97	3.000	.001	.902
Hotelling's Trace	.452	7.97	3.000	.001	.902
Roy's Largest Root	.341	7.97	3.000	.001	.902

Table 5 demonstrates no significant difference between the reading comprehension and vocabulary of the control groups' mean scores ($F_{2, 57} = 2.79$, $p = .071$), which shows the similarity in the learners' reading comprehension and vocabulary learning before the treatment sessions. Also, MANOVA was run to compare the mean scores of reading comprehension, vocabulary learning, of the experimental and the control groups on the post-test (Table 6).

Table 6: MANOVA statistics for the Reading, and Vocabulary, of the Experimental and the Control Groups' Post-Test

	Value	F	df	Sig.	Partial Eta Squared
Pillai's Trace	.265	2.79	3.000	.071	.023
Wilk's Lambada	.361	2.79	3.000	.071	.023
Hotelling's Trace	.564	2.79	3.000	.071	.023
Roy's Largest Root	.236	2.79	3.000	.071	.023

As to Table 6, it can be concluded that there existed a significant difference between the reading comprehension and vocabulary post-tests of the experimental and control groups ($F_{2, 57} = 7.97$, $p = .001$). Thus, it can be inferred that learners' reading comprehension and vocabulary learning were different from each other and with the control group. To highlight the difference among the three

mean scores, the following Table was provided.

Table 7: Games-Howell Multiple Comparison Statistics for the Posttest of the Groups

(I) Groups	(J) Groups	Mean Difference			95% Confidence Interval	
		(I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
Reading	Vocab	4.04444	1.98255	.129	-.9803	9.0691
	Control	6.71111*	1.36822	.000	3.3585	10.0637
Vocab	Reading	-4.04444	1.98255	.129	-9.0691	.9803
	Control	2.66667	2.11748	.003	-2.6229	7.9563
Control	Reading	-6.71111*	1.36822	.000	-10.0637	-3.3585
	Vocab	-2.66667	2.11748	.003	-7.9563	2.6229

*. The mean difference is significant at the 0.05 level.

Table 7 shows that a significant difference can only be observed between the experimental group's reading comprehension with the control group ($p = .000$, 95% CI = 3.35 to 10.06). Similarly, a significant difference is seen between the experimental group's vocabulary learning with the control group ($p = .003$, 95% CI = -2.62 to 7.95), while no significant difference was observed between the learners' reading comprehension and vocabulary learning ($p = .129$, 95% CI = -.98 to 9.06). In fact, there was no statistically significant difference between the effect of social networking on reading comprehension and vocabulary learning of Iranian female high school EFL learners.

The present research was carried out to look into the effectiveness of social networking through WhatsApp on the learners' reading comprehension ability and vocabulary learning. As to the quantitative findings of the study aiming to measure the pre- and post- test scores of the learners in the experimental and control groups, it was found that the experimental group significantly outperformed the control group after the treatment (i.e., MALL instruction through WhatsApp), demonstrating that technology enhanced instruction was quite successful in helping the learners to improve their reading comprehension and vocabulary learning. In other words, the experimental group, which was taught through technology instruction, benefited from WhatsApp in comparison with the control group, which underwent the traditional method of reading comprehension and vocabulary learning without technology application. Hence, the study, to a large extent, revealed that technology enhanced instruction can be utilized at the service of teaching reading comprehension within communicative context. The present study found empirical support to those of Hara (2004), Young (2006), and Diaz and Ngoc (2014) who concluded that technology enhanced instruction can pave the way for the

learners to engage in an interactive learning environment and be as an active learner in the language learning process.

To add more value concerning the effectiveness of MALL instruction, Zervas and Sampson (2014) as well as Rossing, et al. (2012) demonstrated the practical and effective application of mobile applications in providing an interactive learning atmosphere (Wilson, 1996). It helps teachers and learners to have more meaningful cooperation (Sharples, 2000), which ultimately leads to success in the language learning process. In fact, as argued by Gorsky and Blau (2009), MALL instruction and social networking in an online language instruction context can be positively applied in the language classroom to direct the learners' attentions to the tasks provided by the teacher, assisting the teacher to smoothly follow the plans through mobile. Moreover, the learners are the beneficiaries of teacher and peer feedback (Baran, et al., 2013).

Findings of this study are similar to those found by McGuigan and Weil (2008) and Baleghizadeh and Oladrostam (2010) who concentrated on the positive effect of MALL on the learners' improvement in language skills. Moreover, Zervas and Sampson (2014) argued that MALL seems to provide a more facilitative learning setting through which learners can easily access to the teachers' tasks. In fact, MALL paves the way for the learners to enjoy distant education and be involved in a stress-free learning environment and at the same time receive teacher and peer support online.

Conclusion

As mentioned before, this study probed on the effectiveness of social networking through WhatsApp on the learners' reading comprehension ability and vocabulary learning. The results of the first research question analyses highlighted the outperformance of the experimental group over the control group in their reading comprehension ability. Moreover, analyzing the second research question showed that social networking through WhatsApp had statistically significant effect on the learners' vocabulary learning. However, the results of the third research question analyses indicated that there was no statistically significant difference between the effect of social networking on reading comprehension and vocabulary learning of Iranian female high school EFL learners.

On the whole, the findings of the present study revealed that the learners in the

experimental group significantly outperformed the control group, denoting that WhatsApp assisted learners to improve their reading comprehension and vocabulary learning significantly. The findings of the present research demonstrated that MALL instruction could lead to more improvement in the learners' reading comprehension and vocabulary learning. This can be greatly dependent on the Iranian learners' preference and willingness to use mobile apps, particularly WhatsApp or other mobile apps, such as Telegram. In other words, WhatsApp, which is one of the most popular apps among Iranian mobile users, can be positively and efficiently applied at the service of language education by assisting the learners to improve their reading comprehension and vocabulary learning, as highlighted in the present study.

The findings of the study contributed to the fact that MALL instruction should be productively applied as an appropriate methodology, which seems to be beneficial for both learners and teachers. Furthermore, being taught by WhatsApp, learners can overcome their reading comprehension difficulties since they are exposed to an interactive learning environment in which they seem to be more interested to enhance their comprehension. In addition, MALL techniques can enhance the learners' motivation because technology instruction paves the way for them to have more interaction with their peers as well as the teacher, leading to improvement in their reading comprehension and vocabulary learning. Finally, teachers are always seeking new and productive ways to foster communicative learning settings in teaching language skills or sub-skills, and online language instruction can assist them to fulfill their goals by involving the learners in the communicative context of learning.

References

- Abdul Fattah, S.F. (2015). The Effectiveness of using WhatsApp messenger as one of mobile learning techniques to develop students' writing skills. *Journal of Education and Practice*, 6 (32), 115-127.
- Ahmed, S.T. (2019). Chat and learn: Effectiveness of using WhatsApp as a pedagogical tool to enhance EFL learners reading and writing skills. *International Journal of English Language and Literature Studies*, 8 (2), 61-68.
- Akiyama, Y., & Saito, K. (2016). Development of comprehensibility and its linguistic correlates: A longitudinal study of video-mediated telecollaboration. *The*

Modern Language Journal, 100(3), 585-609.

- Baleghizadeh, S., & Oladrostam, E. (2011). The effect of mobile assisted language learning (MALL) on grammatical accuracy of EFL students. *MEXTESOL Journal*, 34(2), 1-10.
- Baran, E., Correia, A. P., & Thompson, A. (2013). Transforming online teaching practice: Critical analysis of the literature on the roles and competencies of online teachers. *Distance Education*, 32(3), 421-439.
- Barhoumi, C. (2015). The Effectiveness of WhatsApp mobile learning activities guided by activity theory on students' knowledge management. *Contemporary Educational Technology*, 6(3), 221-238.
- Belz, J. A. (2003). Linguistic perspective on the development of intercultural communicative competence in telecollaboration. *Language Learning & Technology*, 7, 68-117.
- Brown, H. D. (2007). *Principles of language learning and teaching*. White Plains, NY: Pearson Education.
- Chapelle, C. (2001). *Computer applications for second language acquisition: Foundations for teaching, testing, and research*. New York: Cambridge University Press.
- Diaz, M. K., & Ngoc, T. H. (2014). Corrective feedbacks in the context of online English teaching. *IEEE Conference on e-Learning, e-Management and e-Services (IC3e)*, 36-39.
- Farhady, H., Jafarpour, A., & Birjandi, P. (1994). *Testing language skills*. Tehran: SAMT Publications.
- Gorsky, P., & Blau, I. (2009). Online teaching effectiveness: A tale of two instructors. *International Review of Research in Open and Distance Learning*, 10(3), 1-27.
- Hamed, M.M. (2017). Using WhatsApp to enhance students' learning of English language "experience to share". *Higher Education Studies*, 7(4), 74-87.
- Hara, N. (2004). [Review of Web-based learning and teaching technologies: Opportunities and challenges, edited by A. Aggarwal]. *Information Society*, 20(2), 153-154.
- Hofferth, S., & Sandberg, J. (2001). How American children spend their time. *Journal of Marriage and Family*, 63(2), 295-308.
- Jafari, S., & Chalak, A. (2016). The Role of WhatsApp in Teaching Vocabulary to Iranian EFL Learners at Junior High School. *English Language Teaching*, 9 (8),

85-92.

- Kukulska-Hulme, A. (2015). Language as a bridge connecting formal and informal language learning through mobile devices. In W. Lung-Hsiang, M. Milrad, & M. Specht (Eds.), *Seamless learning in the age of mobile connectivity* (pp. 281-294). London: Springer.
- Kukulska-Hulme, A., & Shield, L. (2008). An overview of mobile assisted language learning: From content delivery to supported collaboration and interaction. *ReCALL*, 20(3), 271-289.
- Latt, M. D., Lally, V., Lipponen, L., & Simons, R.J. (2007). Online teaching in networked learning communities: A multi-method approach to studying the role of teacher. *Instructional Science*, 35, 257-286.
- McGuigan, N. C., & Weil, S. (2008). Use of study TXT as a form of mobile learning in an accounting decision-making course. *The International Journal of Learning*, 15, 281-299.
- Miangah, T. M., & Nezarat, A. (2012). Mobile-assisted language learning. *International Journal of Distributed and Parallel Systems (IJDPS)*, 3(1), 309-319.
- Rossing, J. P., Miller, W. M., Cecil, A. K., & Stamper, S. E. (2012). iLearning: The future of higher education? Student perceptions on learning with mobile tablets. *Journal of the Scholarship of Teaching and Learning*, 12(2), 1-26.
- Sharples, M. (2000) The Design of personal mobile technologies for lifelong learning. *Computers and Education*, 34, 177-193.
- Suleiman, Y. (2014). Arab(ic) language anxiety teaching a "condition." *Al-Arabiyya Journal of the American Association of Teachers of Arabic*, 47, 57-88.
- Wilson, B. G. (1996). Introduction: What is a constructivist learning environment? In B. G. Smith (Ed.), *Constructivist learning environments* (pp. 3-8). Englewood Cliffs, NJ: Educational Technology Publications.
- Wilson, G., & Stacey, E. (2004). Online interaction impacts on learning: Teaching the teachers to teach online. *Australian Journal of Educational Technology*, 20(1), 33-48.
- Young, S. (2006). Student views of effective online teaching in higher education. *American Journal of Distance Education*, 20(2), 65-77.
- Zervas, P., & Sampson, D. G. (2014). Facilitating teachers' reuse of mobile assisted language learning resources using educational metadata. *IEEE Transactions on Learning Technologies*, 7(1), 6-16.

Zurita, G., & Nussbaum, M. (2004). Computer supported collaborative learning using wirelessly interconnected handheld computers. *Computers and Education*, 42(3) 289-314.