

3 Students' attitudes towards digital artefact creation through collaborative writing: the case of a Spanish for specific purposes class

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Abstract

Studies on collaborative writing practices are not new (Reynolds, Wooley, & Wooley, 1911), neither is the interest in collaborative writing supported by computers (Sharples, 1993). With the advent of Web 2.0, there has been an immense increase in research examining web-based collaborative writing, particularly in L2 contexts (Cho, 2017; Kessler, 2013; Sevilla-Pavón, 2015; Yim & Warschauer, 2017). The present study follows this research path by analysing perceptions of technology-assisted collaborative writing as well as collaborative writing processes in a Spanish for specific purposes class. Eight students from the Cyprus University of Technology (CUT), Department of Communication and Internet Studies, participated in the study. The data were elicited over five collection times, which included two digital artefact creations (an out-of-class and an in-class collaborative writing task), a pre-Questionnaire (preQ) and post-Questionnaire (postQ), and a focus group interview. The analysis of the data revealed that the students' perceptions are mediated by task type, which in turn also affects collaborative writing patterns being the out-of-class activity the one that presents a wider variety of writing styles as well as a more balanced participation among students.

Keywords: digital artefact creation, collaborative writing, Google Docs, L2 Spanish.

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1. Introduction

In recent years we have observed that the advance of collaborative culture has transformed the way in which we communicate. Kessler (2013) points out that despite the fact that the nature of our communication practices has changed outside education “it seems there is little reflection on the potential that these changes have to offer to language teaching and learning” (p. 313). However, he also recognises that there has been a significant amount of interest in the collaborative construction of knowledge, particularly in writing, within contemporary technology contexts. This interest has been reflected in many studies that explore the nature of collaborative writing from different perspectives. For instance, early research discussed designs for synchronous and asynchronous collaborative writing through computer mediated communication and group editor applications from a conceptual model of cooperative work (Miles et al., 1993).

More recently, Cho (2017) investigated synchronous web-based collaborative writing and the factors that mediated interaction among language learners. The author claimed that (1) modes of communication (text-chat and synchronous voice-chat), (2) task representations, “set of rules that regulated and guided the subject’s actions and interactions” (Cho, 2017, p. 47), (3) matches/mismatches between participants’ self-perceived, and (4) other perceived roles and perceptions of peer feedback were the mediating factors on the quality of the collaboration. Another study that explored synchronous and asynchronous collaborative and collective writing was conducted by Sevilla-Pavón (2015). The author examined collective authorship and collaborative writing within a digital storytelling project carried out in a technical English class of aerospace engineering. She found that collaboration and collective writing allowed her students to assume different roles at different times: *writer*, *editor*, *reviewer*, *team leader*, and *facilitator*.

Wang et al. (2015a), using a document visualisation tool called DocuViz (Wang et al., 2015b), analysed how students from a project management class wrote collaboratively using Google Docs. The authors found three patterns of collaboration: *outline*, *example*, and *best-of-each*. More recently, Olson, Wang, Zhang, and Olson (2017), also using DocuViz, analysed the use of Google

Docs among engineering undergraduate majors. They found six patterns of collaborations: *from scratch*, *outline*, *assignment*, *example*, *assign people*, and *informal discussion*. Yim et al. (2017) examined the impact of synchronous collaborative writing in student's writing style, quality, and quantity. The analysis of their data revealed four styles of writing: *main writer*, *divide and conquer*, *cooperative revision*, and *synchronous hands-on*. The researchers highlighted that the “Divide and Conquer style tended to produce better quality text, particularly in content and evidence, whereas Main Writer style had the lowest scores in those areas” (Yim et al., 2017, p. 476). As for quantity and quality, they claimed that “[b]alanced participation and active editing behaviours predicted better writing quality (e.g. content, evidence, lexical frequency) and quantity” (Yim et al., 2017, p. 476).

As Yim and Warschauer (2017) synthesised in their study of current methodological approaches to researching collaborative writing, research has mainly focused on collaborative writing outcomes, perceptions of collaborative writing, and collaborative writing processes. The present study focuses on the last two research strands. In particular, we explore students' attitudes towards digital artefact creation through collaborative writing in a Spanish for specific purposes class. The study steps on the learning theory of constructionism (Papert, 1980, 1993; Papert & Harel, 1991) defined as:

“[i]ncluding, but going beyond, what Piaget would call ‘constructivism’. The word with the *v* expresses the theory that knowledge is built by the learner, not supplied by the teacher. The word with the *n* expresses the further idea that this happens especially felicitously when the learner is engaged in the construction of something external or at least shareable [...] a sand castle, a machine, a computer program, a book” (Papert & Harel, 1991, p. 1).

Within the constructionism theory, Resnick (1996) introduces the concept of *distributed constructionism* based on the use of computer networks to support students working together on design and construction activities. According to Resnick (1996), distributed constructionism is characterised by three

categories: discussing constructions, sharing constructions, and collaborating on constructions. The first one is illustrated through the use of a forum for discussing construction activities. The second one is exemplified through texts, images, or videos that can be copied and/or reused by others. And the third category involves the use of computer networks to support students “not only to share ideas with one another, but to collaborate directly, in real time, on the design and construction projects” (Resnick, 1996, p. 282).

The theory of constructionism has been applied to some extent to language learning studies (Rüschhoff, 2004; Rüschhoff & Ritter, 2001), with some of them investigating collaborative writing practices (Parmaxi & Zaphiris, 2015; Parmaxi, Zaphiris, & Ioannou, 2016). However, there is no study up to date that has been conducted within this theory to investigate students’ perceptions of collaborative writing and collaborative writing processes. The present study aims to fill this gap. More specifically, the study addresses the following research questions.

- What are students’ initial beliefs and attitudes regarding collaborative writing with the use of technology in a Spanish for specific purposes class?
- Do students’ attitudes towards collaborative writing evolve and change after collaborative writing experiences with the use of technology?
- To what extent are students’ beliefs and attitudes reflected on their actual collaborative writing practices?

2. Method

2.1. Research design

To address these research questions, a mixed-method case study approach was employed. This methodology combines a quantitative research component with qualitative case study, where the former provides an objective assessment of learners’ attitudes towards collaborative writing and actual collaborative writing

practices, and the latter aims to understand and interpret the behaviours of individual learners (Duff, 2008).

2.2. Context and participants

The research was carried out at the Language Centre of the CUT, within the Spanish 2 (LCE 631) course. This is an elective course that concentrates on the learning of Spanish for academic purposes. The general objective of the course is to enable students to communicate in Spanish at the level A1+/A2 of the Common European Framework of Reference (CEFR) on issues related to the students' field of studies. The course is based on the use of new technologies for teaching and learning purposes.

Eight students from the CUT Department of Communication and Internet Studies, participated in the study. The mean age of all the participants at the start of data collection was 22.62 (range 22-23) with four males and four females. Participation in this study was voluntary. The participants of the study were anonymised with the use of pseudonyms (Nespor, 2000).

2.3. Instruments

The instrumentation consisted of students' digital artefacts, preQ and postQ, and a focus group interview. Students' digital artefacts consisted of two collaborative writing tasks. The first one focused on a descriptive writing activity in the context of publishing a project. More specifically, students were divided in groups in order to write asynchronously collaborative texts that described Cypriot cities using Google Docs. It was an out-of-class activity. At a later stage, students converted their documents into an interactive publication using the digital magazine Calameo². The second collaborative task consisted of writing a text synchronously. This text focused on historical buildings in the Cypriot city of Limassol. This was an in-class activity. The text was later used to produce a video of those buildings.

2. <https://en.calameo.com/>

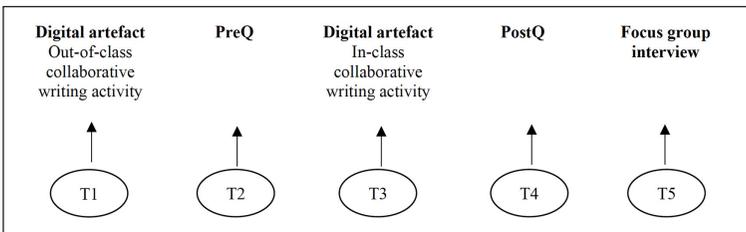
The preQ and postQ were used to measure change in students' attitudes towards collaborative writing after two collaborative writing experiences in a Spanish for specific purposes class. The questionnaires, adapted from Gökçe (2001), included open-ended questions and a rating scale. In the 16 items from the rating scale, students were asked to rate their perceptions towards collaborative writing based on a five-point Likert scale (1=completely disagree, 2=disagree, 3=neutral, 4=agree, 5=completely agree). The items from the scale were presented beneath the heading *What do you think about digital artefact creation through collaborative writing?*

The focus group interview was selected as an instrument to explore students' beliefs about collaborative writing with Web 2.0 technologies. The interview was set up with a small group of eight participants and lasted about 25 minutes. Group interaction was based on a list of questions pertaining to the results of the preQ and postQ as well as the data obtained from the digital artefacts.

2.4. Data collection

The current study was longitudinal. The data collection process lasted two months and involved five data collection points. The five data collection times are shown in the diagram in Figure 1.

Figure 1. Data collections times



2.5. Data analysis

Students' digital artefacts were analysed with DocuViz, a tool that displays the entire revision history of Google Docs and investigates the patterns of

collaborative creation of documents (Wang et al., 2015b). Quantitative data, mainly frequencies and percentages, were analysed for three categories: *contribution*, *edit of self*, and *edit of other*.

The quantitative data from the questionnaire were analysed with SPSS 26. Mean (M) and Standard Deviation (SD) were used to show differences from the preQ to the postQ. In addition, the paired-samples *t*-test was performed to identify if any variation in the students’ responses were significantly different (Larson-Hall, 2010). Negatively worded items were reversed before analysis (Dörnyei, 2010). The open-ended questions were coded according to the analysis of data reduction, which involves first and second level coding, resulting in groups of categories followed by a quantitative analysis.

The qualitative data from the focus group interview were digitally recorded, translated from Greek into English, and transcribed, followed by the analysis of themes (or key issues) that emerged from students’ responses “not for generalising beyond the case, but for understanding the complexity of the case” (Creswell, 2007, p. 75).

3. Results and discussion

3.1. Results from students’ digital artefacts

The analysis of the students’ digital artefacts illustrates the students’ attitudes towards collaborative writing. The patterns of collaborative creation obtained from the Google Docs with DocuViz for the out-of-class collaborative writing activity are displayed in Table 1.

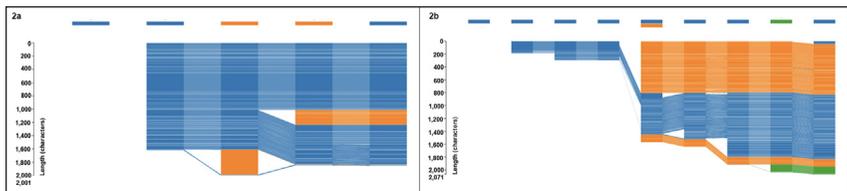
Table 1. Results from the out-of-class collaborative writing activity

Group	Participant	Contribution		Edit of self		Edit of other	
		N	%	N	%	N	%
G1	Anna	1,625	87.7	3,575	81.57	0	0
	Stavria	228	12.3	808	18.43	432	100

G2	Demetra	1,048	53.72	4,066	70.24	44	83.02
	Sophia	903	46.28	1,723	29.76	9	16.98
G3	Aristos	2001	47.27	2,683	50.29	22	5.1
	Spyros	2,232	52.73	2,652	49.71	409	94.9
G4	Pablo	2,086	79.92	5,665	83.43	61	10.95
	Giason	524	20.08	1,125	16.57	496	89.05

Table 1 shows two main tendencies in the out-of-class collaborative writing activity: (1) unbalanced participation, as in G1 and G4, and (2) balanced participation, as in G2 and G3. The first category presents the characteristics of the *main writer* style (Yim et al., 2017) where a main writer, Anna (G1) and Pablo (G4), dominates, while the other writers, Stavria (G1) and Giason (G4), barely contribute (see Figure 2a). In the balanced participation category, two paths can be observed: the first one is depicted by the *cooperative revision* style (Yim et al., 2017) where each writer writes their own part and freely edits each other’s text, as in G2 (see Figure 2b), and the second path is described by the *synchronous hands-on* style where “members create sentences together by simultaneously building up on each other’s text” (Yim et al., 2017, p. 473), as in G3. Interestingly, this group, even though the activity had been assigned to be completed out-of-class, decided to work synchronously.

Figure 2. (2a) Collaborative writing patterns of G1 during the out-of-class activity: *main writer* style³; (2b) collaborative writing patterns of G2 during the out-of-class activity: *cooperative revision* style⁴



3. According to the developers of DocuViz: “each column represents the document at that moment with authorship of the segments of text noted in colour. The height of the bar represents the amount of text; successive columns represent time moving left to right. The sections between columns help the eye track the placement of text over time plus the additions and deletions. Additions are right facing openings; deletions are right facing contractions. Moves are blocks of identical text that have been repositioned. They are shown with a crossing bar between slices. The little bar at the top of the columns shows by colour who was present in that slice of time” (Wang et al., 2015a, p. 1869).

4. See [supplementary materials](#) for bigger screenshots

Regarding collaborative writing practices from the second task, which was completed by the students in the classroom, variations in students' collaborative writing patterns were observed. Results from this task are displayed in [Table 2](#).

Table 2. Results from the in-class collaborative writing activity

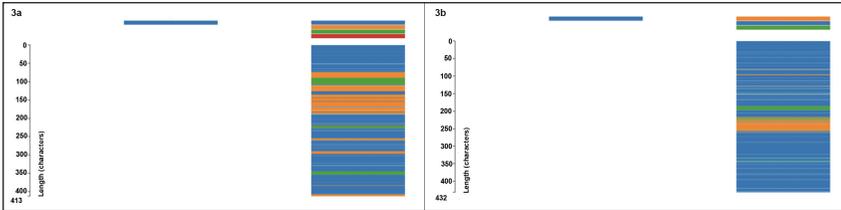
Group	Participant	Contribution		Edit of self		Edit of other	
		N	%	N	%	N	%
G1	Anna	280	67.96	573	62.55	98	42.24
	Pablo	97	23.54	297	32.42	87	37.50
	Stavria	35	8.5	46	5.02	47	20.26
G2	Sophia	375	91.02	670	95.99	43	51.19
	Demetra	37	8.98	28	4.01	41	48.81
G3	Spyros	1,010	92.92	1,032	89.51	0	0
	Aristos	77	7.08	121	10.49	10	100

Results from [Table 2](#) show a change in the collaborative writing patterns for G2 and G3, which moved from the balanced participation category (during the out-of-class activity) to the unbalanced participation category (during the in-class activity). G1 remains in the same category, with Anna again as the *main writer*, despite the incorporation of Pablo, who during the out-of-class activity was also the *main writer* of his group (G4). This tendency is negatively interpreted by some participants, as it will be shown in the responses from the open-ended questions where 57.1% of the students complained about unbalanced workload.

Another characteristic of the in-class collaborative writing activity is that only G2 presents an equal amount of peer editing, introducing some of the features of the *cooperative revision* style. Interestingly, in G3 the two members seem to have assumed two distinct main roles ([Sevilla-Pavón, 2015](#)): *writer*, as in the case of Spyros with 92.92% of the contribution to the task and the *editor-reviewer*, as in the case of Aristos with 100% of the editing of other.

[Figure 3a](#) and [Figure 3b](#) illustrate the tendencies of the in-class collaborative writing activity.

Figure 3. (3a) Collaborative writing patterns of G1 during the in-class activity: *main writer* and *synchronous hands-on* styles combined; (3b) collaborative writing patterns of G2 during the in-class activity: *main writer* and *synchronous hands-on* styles combined⁵



3.2. Results from the questionnaires

Results from the preQ and postQ show statistically significant differences in only one item out of the 16 that constitute the rating scale, asking about students’ perceptions on digital artefact creation through collaborative writing. This item (Q15: “Disagreements in my group demotivated me”) was related to the lack of motivation for collaborative writing given to disagreements among the members of a group.

For the paired-samples *t*-test (preQ $M=3.75$, $SD=1.28$; postQ $M=4.37$, $SD=1.06$) the 95% CI for the difference in means is -1.247 , $-.002$ ($t=-2.376$, $p=.049$, $df=7$). The scores for this item represent a reverse-coded Likert scale score, in which the converted score, slightly below 4 for the preQ and above 4 for the postQ, represents the Likert scale point 2.0 or Disagree. This indicates that participants’ motivation did not change despite groups’ disagreement.

Table 3 displays the results for the remaining items where significant differences were not found.

5. See [supplementary materials](#) for bigger screenshots

Table 3. PreQ and postQ' results on students' perceptions towards digital artefact creation through collaborative writing

Questions	PreQ		PostQ		Paired-Samples t-test results			
	M	SD	M	SD	95% CI	t-value	p-value	
Q1: I'd rather write with a group than alone.	3.38	1.06	2.75	0.89	-.141	1.391	1.930	.095
Q2: I got the chance to express my views in the group.	3.63	0.92	3.88	0.99	-1.411	.911	-.509	.626
Q3: Writing together we spent more time planning papers than I do when I write alone.	3.25	1.28	2.75	0.89	-.841	1.841	.882	.407
Q4: Writing together we spent more time checking spelling, punctuation, and grammar than I do when I write alone.	3.38	1.06	3.5	1.2	-1.498	1.248	-.215	.836
Q5: Every member of the group worked equally in writing the paper.	3.25	1.58	3.5	1.41	-1.966	1.466	-.344	.741
Q6: I learned new ways to brainstorm from my group.	3.63	1.06	3.13	0.99	-.499	1.499	1.183	.275
Q7: I learned new ways to plan writing from my group.	3.25	1.04	3	1.2	-1.072	1.572	.447	.668
Q8: I learned new ways to organise a paper from my group.	3.5	0.93	3	1.07	-.499	1.499	1.183	.275
Q9: I would like to write in a group again.	3.38	1.06	3	0.93	-.058	.808	2.049	.080
Q10: It is interesting to share ideas and write about them.	3.75	1.28	3.88	1.25	-1.423	1.173	-.228	.826
Q11: I felt more confident in group.	3.25	1.28	2.63	1.19	-.853	2.103	1.000	.351
Q12: Writing with my group had positive effects on my motivation.	3.25	1.16	3.38	1.19	-.954	.704	-.357	.732
Q13: Writing in a group did not help to improve my writing skills.	3.12	1.13	3.25	1.49	-1.344	1.094	-.243	.815

Q14: Our writing was more creative in group writing.	4	0.76	3.5	1.2	-.499	1.499	1.183	.275
Q16: Group members learned something from me.	2.88	1.25	2.75	1.16	-1.094	1.344	.243	.815

The results presented in Table 3 can be divided into two groups: (1) increased positive attitudes towards digital artefact creation through collaborative writing in postQ, and (2) decreased positive attitudes towards digital artefact creation through collaborative writing in postQ. The first group includes items 2, 4, 5, 10, and 13 which were related to collective writing roles, work distribution, script copyediting, sharing ideas, and motivation. The opposite direction is represented by items 1, 3, 6, 7, 8, 9, 11, 14, and 15. These items are related to willingness to work in a group again, planning stages, boosting confidence, and creative writing.

Two open-ended questions from the questionnaires provide a preliminary explanation for these results. The first one, which asked about the positive aspects of group writing, reveals that ‘exchange of opinions and ideas’ was considered as one of the most valuable aspects of collaborative writing (preQ: 60%, postQ: 44.4%), followed by ‘applicability in the future workplace’ (preQ: 20%, postQ: 11.1%), ‘equal work distribution’ (preQ: 10%, postQ: 11.1%), ‘improvement of writing skills’ (preQ: 10%, postQ: 22.2%), and ‘motivation’ (postQ: 11.1%). The second open-ended question, related to negative aspects of group writing, shows an important percentage of students complaining about ‘unbalanced workload’ (preQ: 57.1%, postQ: 44.4%), followed by ‘disagreement among group members’ (preQ: 14.3%, postQ: 33.3%), ‘incompatible working schedules’ (preQ: 14.3%, 11.1%), ‘fear of expressing one’s thoughts’ (preQ: 14.3%), and ‘different level of knowledge among team members’ (postQ: 11.1%).

3.3. Results from the focus group interview

The focus group interview took place in order to clarify students’ responses from the questionnaires and collaborative writing patterns observed in the Google

Docs. The topics discussed included writing roles, script copyediting, sharing ideas, and motivation that in the postQ obtained higher positive perceptions from the students, as well as planning stages, willingness to work in a group again, boosting confidence, and creative writing that received higher negative perceptions in the postQ.

During the interview the writing roles topic was highlighted, as Demetra says “[w]e usually organise this [task], we divide the parts of the texts, I write the introduction, Sophia writes the main part, then I work on the conclusion”. The student’s comments seem to reflect the *divide and conquer* style proposed by Yim et al. (2017) where the writers write their own parts and rarely edit each other’s text. However, this view contradicts the data obtained from the students’ digital artefacts where Demetra’s and Sophia’s (G2) writing patterns were in line with the *cooperative revision* style (during the out-of-class activity) and the *main writer* style (during the in-class activity). The *main writer* style was particularly discussed because it was the predominant pattern observed during the in-class activity. Spyros, who states his preference to work face-to-face rather than through virtual communication, explains “[w]hen you work face-to-face, one has the ideas and the other writes them, because he or she is quicker with using the keyboard”. This in turn, led to the script copyediting theme. Only Sophia and Demetra (G2) mentioned checking the final version of their text. The other groups, surprisingly, admitted not looking at it because as Pablo (G4 and G1) puts it, “we trust our peers”.

The planning stages were also explored. Many participants reported on the use of different tools, such as Skype, Messenger, or Facebook closed groups, to discuss the ideas for the creation of their texts during the out-of-class activity. Aristos (G3) explained that “[s]omebody has an idea and shares it on Messenger, then the other looks for data or information, and then we start writing together”. This division of work described by Aristos brings up the three forms of distributed constructionism proposed by Resnick (1996): (1) discussing constructions, as G3 did through Messenger; (2) sharing constructions, as they did when they shared the information they looked for; and (3) collaborating on constructions, when they worked on the creation of their digital artefacts.

The willingness to work in a group again was one of the items whose score decreased in the postQ. When asked about the reasons for this, different responses emerged:

“It depends on the topic of the task. There are topics where you prefer to work alone rather than in groups” (Sophia, G2).

“It depends on the people you work with” (Stavria, G1).

“I always had problems with learning other languages so working in groups sometimes helps me but other times not” (Giason, G4).

Giason’s statement led to the last topic examined during the interview: the improvement of language skills with collaborative writing activities. Interestingly, most of the students expressed feelings of doubtfulness with regards to the efficacy of collaborative writing practices in language learning, in Aristos’ (G3) words “[f]or me it is the same, I don’t feel I’m learning more in this way”.

4. Conclusions

This study investigated students’ attitudes towards digital artefact creation through collaborative writing in a Spanish for academic purposes class. It analysed students’ asynchronous and synchronous collaborative writing practices and explored students’ beliefs regarding collaborative writing with the use of technology. A worth mentioning conclusion relates to the group interaction patterns which differed between tasks: while for the out-of-class activity, assigned as an asynchronous collaborative writing task, there were a variety in writing patterns, mainly, the *main writer*, the *cooperative revision*, and the *synchronous hands-on* styles (Yim et al., 2017). The in-class activity presented the same pattern among the groups, that is, *main writer* and *synchronous hands-on* styles combined. Students’ beliefs were also mediated by task type. The questionnaires’ results showed that students perceived more positively their

writing roles, sharing ideas and motivation for the out-of-class writing activity, and more negatively the planning stages, willingness to work in a group again, boosting confidence, and creative writing after the in-class writing activity. In line with the results obtained by Cho (2017), not only did task type influence students' perceptions, but also matches/mismatches between participants and students' self-perceived and other perceived roles have had an influence on shaping students' perceptions, as reported in the focus group interview.

Some limitations of the study should be acknowledged. First, the current study reports a small case research where only eight students participated. Future researchers may recruit a larger sample of participants to offer more robust claims. Secondly, results are solely based on two collaborative writing activities and students' perceptions related to those activities. Future research could benefit from designing a study where more collaborative writing activities are included. These limitations notwithstanding, generate ideas not only for future research but also for language instructors who may consider implementing collaborative writing activities that consider the students' attitudes and beliefs reported in this study, i.e. students' motivation and more active participation in an asynchronous, collaborative writing activity, and their reluctance to participate again in a collaborative writing experience after a synchronous task.

5. Supplementary materials

<https://research-publishing.box.com/s/rsuozmqw60z16fph90t2wu0isgbinu5n>

References

- Cho, H. (2017). Synchronous web-based collaborative writing: factors mediating interaction among second-language writers. *Journal of Second Language Writing*, 36, 37-51. <https://doi.org/10.1016/j.jslw.2017.05.013>
- Creswell, J. (2007). *Qualitative inquiry & research design*. Sage.
- Duff, P. (2008). *Case study research in applied linguistics*. Laurance Erlbaum.

- Dörnyei, Z. (2010). *Questionnaires in second language research*. Routledge.
- Gökçe, I. (2001). *Effects of collaborative writing on attitudes of learners towards writing at Anadolu University preparatory school*. Unpublished PhD dissertation. Bilkent University, Ankara.
- Kessler, G. (2013). Collaborative language learning in co-constructed participatory culture. *CALICO Journal*, 30(3), 307-322.
- Larson-Hall, J. (2010). *A guide to doing statistics in second language research using SPSS*. Routledge. <https://doi.org/10.4324/9780203875964>
- Miles, V. C., McCarthy, J. C., Dix, A. J., Harrison, M. D., & Monk, A. F. (1993). Reviewing designs for a synchronous-asynchronous group editing environment. In M. Sharples (Ed.), *Computer supported collaborative writing* (pp. 137-160). Springer-Verlag. https://doi.org/10.1007/978-1-4471-2007-0_8
- Nespor, J. (2000). Anonymity and place in qualitative inquiry. *Qualitative Inquiry*, 6(4), 546-569. <https://doi.org/10.1177/107780040000600408>
- Olson, J. S., Wang, D., Zhang, J., & Olson, G. M. (2017). How people write together now: beginning the investigation with advanced undergraduates in a project course. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 24(1). <https://doi.org/10.1145/3038919>
- Papert, S. (1980). *Mindstorms: children, computers and powerful ideas*. Basic Books.
- Papert, S. (1993). *The children's machine: rethinking school in the age of the computer*. Basic Books.
- Papert, S., & Harel, I. (1991). Situating constructionism. En S. Papert & I. Harel (Eds), *Constructionism* (pp. 1-11). Ablex.
- Parmaxi, A., & Zaphiris, P. (2015). Developing a framework for social technologies in learning via design-based research. *Educational Media International*, 52(1), 33-46. <https://doi.org/10.1080/09523987.2015.1005424>
- Parmaxi, A., Zaphiris, P., & Ioannou, A. (2016) Enacting artifact-based activities for social technologies in language learning using a design-based research approach. *Computers in Human Behavior*, 63, 556-567. <https://doi.org/10.1016/j.chb.2016.05.072>
- Resnick, M. (1996). Distributed constructionism. In D. C. Edelson & E. A. Domeshek (Eds), *Proceedings of the 1996 international conference on Learning sciences* (pp. 280-284). International Society of the Learning Sciences.
- Reynolds, S., Wooley, B., & Wooley, T. (1911). *Seems So! A working-class view of politics*. Macmillan.

- Rüschhoff, B. (2004) Language. In H. Adelsberger, B. Collis & J. M. Pawlowski (Eds), *Handbook on information technologies for education and training* (pp. 523-539). Springer.
- Rüschhoff, B., & Ritter, M. (2001) Technology-enhanced language learning: construction of knowledge and template-based learning in the foreign language classroom. *Computer Assisted Language Learning*, 14(3-4), 219-232. <https://doi.org/10.1076/call.14.3.219.5789>
- Sevilla-Pavón, A. (2015). Examining collective authorship in collaborative writing tasks through digital storytelling. *European Journal of Open, Distance and E-Learning*, 18(1).
- Sharples, M. (1993). *Introduction*. In M. Sharples (Ed.), *Computer supported collaborative writing* (pp. 1-8). Springer-Verlag.
- Wang, D., Olson, J. S., Zhang, J., Nguyen, T., & Olson, G. M. (2015a). How students collaboratively write using Google Docs. In *iConference 2015 Proceedings*.
- Wang, D., Olson, J., Zhang, J., Nguyen, T., & Olson, G. (2015b). DocuViz: visualizing collaborative writing. In *CHI'15 Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems* (pp. 1865-1874). <https://doi.org/10.1145/2702123.2702517>
- Yim, S., Wang, D., Olson, J., Vu, V., & Warschauer, M. (2017) Synchronous collaborative writing in the classroom: undergraduates' collaboration practices and their impact on writing style, quality, and quantity. In *CSCW'17 Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing* (pp. 468-479). <https://doi.org/10.1145/2998181.2998356>
- Yim, S., & Warschauer, M. (2017). Web-based collaborative writing in L2 contexts: methodological insights from text mining. *Language Learning & Technology*, 21(1), 146-165.



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