11 Identifying collaborative behaviours online: training teachers in wikis

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Abstract

In this paper we explore the data gathered from a group of nine in-service teachers who were trained online to become future telecollaborative teachers. Participants from different countries worked in two small groups in a wiki designed specially to facilitate discussion and collaboration. Tasks included reading and reviewing articles on telecollaboration, critically analysing examples from authentic exchanges, organising a hypothetical exchange and designing a tool for its assessment. Analyses of the pattern, scope and nature of user contributions as reliable measures of collaborative behaviours by wiki-users were carried out on the data gathered from six wiki pages and corresponding discussion pages. Findings and discussion elaborate on the collaborative behaviour (or lack thereof) observed among participants.

Keywords: distance learning, teacher training, telecollaboration, wikis.

1. Introduction

In recent years, the use of wikis in the classroom has become very popular due to their pedagogical benefits as "participatory technologies" (Ajjan & Hartshorne, 2008, p. 71). Most authors agree on the collaborative nature of wikis and their suitability to foster interaction. Thus, a number of studies have emphasised that wikis facilitate reflection and collaboration (Lund, 2008).

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Other authors have described them as enhancers of peer interaction, group work and collaboration, as opposed to competition (Li, 2012). According to Boulos, Maramba, and Wheeler (2006) they are excellent resources for the learners' own construction of knowledge and Weeler, Yeomans, and Wheeler (2008) mention that wikis have the ability to keep learners connected, so that they feel closer to one another and more engaged in the learning task. Wikis are also considered highly democratic by authors such as Lee (2010), since they disperse individual power and all participants have an equal status and the right to contribute or edit entries. They are unique in that they serve as a platform for scaffolding and fostering student-centred learning and allow for the incorporation of multiple perspectives.

In contrast to the benefits mentioned above, other studies have reported less encouraging findings. Thus, authors such as Forte and Bruckman (2006) have mentioned how their students did not work consistently in the wiki and tended to post the largest edits close to the assessment deadline, while "smaller contributions like sharing resources and giving evaluations were more consistently spaced out over many days preceding due dates" (p. 184). Along the same lines, authors such as Cole (2009) reported that their students did not contribute to the wiki at all over an entire semester, despite the fact that it was integrated as an activity on their courses.

Finally, other authors have mentioned how, even "even when participation is relatively high, much of the work [is down] to a relatively small proportion of contributors (Carr, Morrison, Cox, & Deacon, 2007). These and other findings suggest that wikis [may not be] inherently collaborative" (Judd, Kennedy, & Cropper, 2010, p. 343), and, therefore, more research needs to be carried out on the nature of collaboration in wikis. In order to contribute to current research, we decided to use a wiki as an online tool to train nine in-service teachers from different countries in order to become future telecollaborative teachers. Telecollaboration is a complex activity that requires teachers to work in collaboration with one or more teachers who belong to a different culture and are in distant locations. Therefore, fostering collaboration among participants was of primary concern, and this study attempts to find answers to the following

research question: did the teachers who worked online in small groups in a wiki engage (or not) in collaborative behaviours?

Although most studies on educational wiki implementations tend to be perception-based, a growing number of studies have drawn on the data generated by wikis to support their research on student participation (Cole, 2009). In order to provide answers for our research question, we decided to follow this trend and analyse participation and interaction as reliable measures of collaborative behaviour by wiki-users (Judd et al., 2010; Trentin, 2009).

2. Project outline

2.1. Context and participants

The participants in this study were nine in-service teachers who enrolled for a semester on the course *Intercultural Collaborative Exchanges in Virtual Environments*, which was delivered online as part of their Master's Degree on Information and Communications Technology (ICT). Five were teachers of Spanish as a foreign language; two were based in Colombia, two others in Cyprus and one in Spain. Three other participants were teachers of English as a foreign language, all based in Spain. The last student was a teacher of French as a foreign language, also based in Spain. As regards gender, six participants were female and three were male. They were all native Spanish speakers, with the exception of one student who had Greek as her mother tongue. As mentioned elsewhere, "[t]he level of experience with the use of the technology was very similar and they had [little or] no previous experience in telecollaboration, although they were familiar with the use of some ICT tools (blogs, wikis, Skype, hangouts and Google+)" (Vinagre, 2015, n.p.).

2.2. Activities and tools

The teachers had to work collaboratively in two small groups in a wiki. They had to carry out a series of activities that included reading and reviewing

articles on telecollaborative learning and then exchanging views on different aspects of telecollaboration (i.e. theoretical and pedagogical principles, models of telecollaboration, critical analysis of examples from authentic exchanges, guidelines for implementation of projects, task design and assessment).

Participants also had to organise a hypothetical exchange and design a tool for its assessment. These tasks were designed to foster collaboration among participants so that they gained a deeper understanding of what collaboration entailed through hands-on experience. A summary of the tasks is provided below in Table 1.

Table 1. Tasks to be carried out in the wiki[2]

	Unit	Activity
1	Experiencing telecollaboration	Working in groups: select, read, upload, summarise and review one article about CSCL on your wiki page. Comment and discuss articles with your group members and decide jointly on possible applications to your FL classroom.
2	Organising a telecollaborative project	Decide with your group members how to organise your own exchange. You will need to include guidelines, activities and tools you would use, and justify your decisions.
3	Developing tools for the assessment of telecollaboration	Design a tool that allows you to assess different aspects of telecollaboration (e.g. portfolio, learning diary, questionnaire, etc.).

Each group, as detailed in Vinagre (2015), was "provided with three blank wiki pages on which to develop their entries, and they were encouraged to use the discussion facility to interact with other group members" (n.p.). All teachers also had access to the wiki pages of the other group and the tasks were the same for both groups.

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3. Method

The study was exploratory and attempted to identify whether those behaviours that characterise collaboration and that the teachers had read about, studied and critically analysed during the first task were reflected in their own interaction in the wiki. Data was gathered from the contributions on the six (three per group) wiki pages and their corresponding discussion pages. Then, quantitative and qualitative analyses of the pattern, scope and nature (participation and interaction) of user contributions were carried out in order to identify (in) effective collaborative behaviours.

3.1. Level of contribution

In the wiki, the student-teachers carried out a total of 99 page revisions and contributed a total of 700 lines (sentences) to the wiki pages, with a total word count of 17,213. When analysed individually, we found that almost 11.6% of all edits were superficial, resulting in no change to the textual content of the page, whilst a further 5.2% involved changes to a single line (sentence) of text. As discussed in Vinagre (2015) and in line with Judd (2010, p. 346), we believe that this may be due to the fact that participants were saving the pages a number of times during longer editing sessions (they made an average of 3.6 edits per session). Finally, 83.2% of all edits involved changes to three or more sentences of text. Table 2 and Table 3 show a summary of the contributions per group and member to the total activity in the wiki (all participants' names have been changed).

Table 2. Summary of contributions to the wiki by Group 1

Name	Page revisions in wiki	Text lines	Contribution to total text in wiki	Discussion posts in wiki	Contribution to total discussion comments in wiki
Gloria	22	149	16.9%	29	20.2%
Emma	11	125	16.4%	28	19.5%
María	23	53	10%	39	27%
Pablo	5	40	8.1%	7	4.8%
Total	**61**	**367**	**51.4%**	**103**	**71.5%**

Table 3. Summary of contributions to the wiki by Group 2

Name	Page revisions in wiki	Text lines	Contribution to total text in wiki	Discussion posts in wiki	Contribution to total discussion comments in wiki
Rosa	12	93	15.6%	11	7.7%
Ángela	8	103	11.1%	8	5.5%
Óscar	7	39	9%	8	5.5%
David	4	44	7.4%	5	3.5%
Penélope	7	54	5.5%	9	6.3%
Total	**38**	**333**	**48.6%**	**41**	**28.5%**

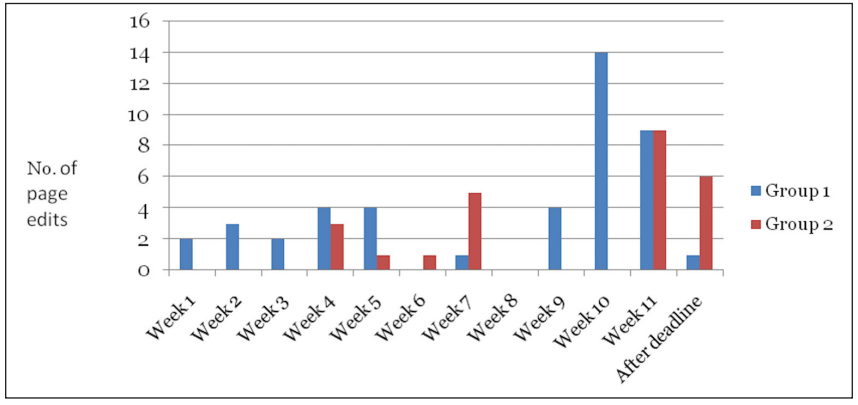
As can be seen above, there was not a great difference between both groups regarding their contribution to the total text in the wiki. However, Group 1 contributed 51.4% of the total text despite having one member less than Group 2. More noticeable differences refer to the discussion comments written by each of the groups. Thus, Group 1 wrote 103 comments (71.5% of the total), whereas participants in Group 2 wrote 41 (28.5%). On average, participants in Group 1 made one comment per page edit, whereas participants in Group 2 did not comment that often. In Group 1, the number of comments per wiki page varied from 19 to 52, whereas in Group 2 it varied from 0 to 21. In Group 1, all comments were sent within the task deadline, whereas 10 comments were sent after the deadline in Group 2.

3.2. Timing of contributions

The comparative analysis between both groups (Figure 1) show that participants in Group 1 started working on their tasks during the first week and worked regularly (although not very productively at the beginning) throughout the entire time allocated to the tasks, with only one edit being made after the deadline. Group 2 started to work in Week 4 and had two productive weeks, Weeks 7 and 11. The week after the deadline was also quite productive for Group 2, although page edits were carried out only by two students who had personal problems and could not finish the tasks on time, so an extension to the deadline was granted. The majority of the teachers' contributions were made during the last few days

before the deadline, with 18 page edits (26%) being made during the last week of the activity, 14 (20%) during the previous week and seven (10%) of the edits being made after the deadline.

Figure 1. Group comparative of temporal distribution of page revisions over the time allocated for tasks[3]



All nine students contributed to the wiki on three days and six students contributed to the wiki on five days. Some students (4) contributed to the wiki on six days and three contributed on seven days. Two students contributed on nine days and one contributed on ten days or more. No student contributed more than 13 days.

3.3. Nature of contributions

A content analysis was carried out in order to code the teachers' contributions following a modified version of Judd et al.'s (2010) coding scheme (Table 4). A comment was coded into a category if part or all of it matched the description. Each utterance was independently coded by two researchers and the results were then combined in order to ascertain number and scope of messages a) within the wiki (all users), b) within the groups, and c) from individual students.

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Table 4. Categories of comments from content analysis (modified from Judd et al., 2010)[4]

Category	Description
Reply	A comment in response to an existing comment.
Collaboration	A comment that showed that the author was attempting to develop a shared understanding of some aspect of the page content. Explaining and elaborating. Seeking input and feedback. Reflecting and monitoring. Looking for consensus.
Organisation	A comment that showed that the author was attempting to organise the task or workload among his/her peers. Initiating activities, setting shared tasks and deadlines.
Content	A comment concerned with factual content on or relevant to the target page. Providing information and feedback. Sharing knowledge.
Editing	A comment that concerned some aspect of page editing or relevant to the target page.
Individual	A comment directed at an individual.
Group	A comment directed at the group generally.

All comments were scored in at least one of the categories (group or individual and others as applicable). Although findings in the editing and individual categories were very similar or identical in both groups, the findings relating to the rest of the categories were significantly different (Figure 2).

Teachers in Group 1 posted 52 (36.1%) comments related to content, 93 (64.5%) to collaboration and 46 (31.9%) to task organisation. They addressed most comments to the whole group (86, 59.7%) and replied to other members often (44, 30.5%). Teachers in Group 2 posted 27 (18.7%) comments related to content, a similar number (33, 22.9%) were comments related to collaboration and nine (6.2%) to task organisation. They did not address most comments to the whole group (25, 18%) and only sent 15 comments (10.4%) to reply to other members' comments.

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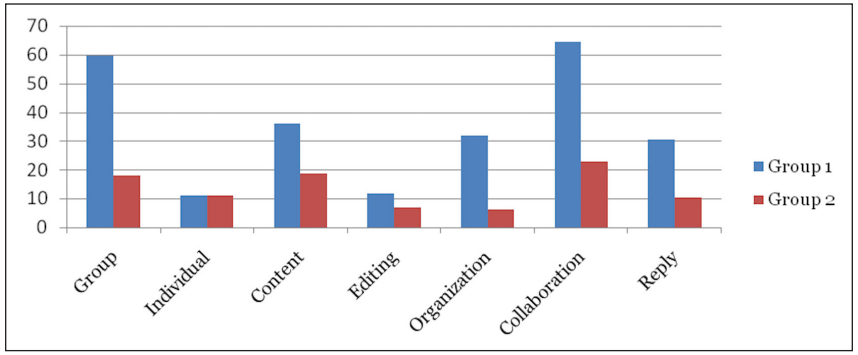
Figure 2. Percentages of comments in each of the seven contextual categories per group (mean of two coders)[5]



4. Discussion

The research question in this study led us to examine the pattern, scope and nature of contributions of nine teachers as reliable measures of collaborative behaviour by wiki-users (Trentin, 2009). Although, as mentioned by Arnold, Ducate, Lomicka, and Lord (2009), these are only quantitative surface indicators which are "not necessarily indicative of a group's success, […] they provide a glimpse into the inner workings of a group and can reflect heterogeneity of participation, roles, social loafing and free riding" (p. 126).

Similar to findings in a previous study (Vinagre, 2015), three members in Group 1 showed collaborative behaviours: they worked regularly and constantly over the time allocated to the task, and engaged in discussion most of the time (looking for feedback, input and consensus) whilst also engaging in fair amounts of contributing (content). Members in this group commented often and they spent a lot of time replying to other members' suggestions, which reflects the participants' efforts at engaging in group discussion and building consensual knowledge.

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Members in Group 2 did not display the same effective dynamics. Their contributions were made late in the activity and very close to the deadline, which means that participants would have had limited opportunities to interact with other members of their group. Two teachers in Group 2 did make a serious effort to contribute regularly, extensively and within the deadlines. Unfortunately, lack of (timely) response from the other group members meant that these participants went ahead and made individual decisions in order to finish the task. Comments were few and far between and there was no activity for three weeks. The majority of teachers in this group, as pointed out by Vinagre (2015), "were happy to contribute from time to time in order to meet the task requirements rather than develop a more equitable, consensual and comprehensive group submission that would require more [regular and consistent] collaboration with the other group members" (n.p.).

5. Conclusion

The findings in this study suggest that an analysis of the pattern, scope and nature of user contributions can signal (in)effective collaborative behaviour by wiki-users as suggested by Judd et al. (2010). In this case, those teachers who engaged in successful collaboration gave priority to fostering social interaction (process) over finishing the task (final product) and collaborative group behaviors were characterised by prompt communication, regular group discussion, timely and relevant contributions, commitment to the task (task organisation, joint responsibility) and consistent participation (Vinagre, 2015).

These findings, although encouraging, are not conclusive due to the small sample size. Therefore, further research needs to be undertaken with larger data sets in order to obtain more significant results. Moreover, data analysis has been restricted to participation and interaction as measures of collaborative behaviour. In order for this study to be complete, an in-depth content analysis is necessary to determine the quality of contributions.

These findings also suggest that designing activities or using technologies that are collaborative does not guarantee that the participants will be successful at

collaboration. Therefore, special attention should be paid to those indicators that allow practitioners to identify and assess collaborative behaviours in group interaction during the learning process.

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