Does Coercing the Use of a Group Awareness Tool Help Groups Achieve More Equal Participation?

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Abstract: Unequal participation is a source of frustration during collaboration. Group awareness tools (GATs) facilitate monitoring of the collaboration and help groups regulate the distribution of participation. However, the effectiveness of these tools depends on students' tool-use. In this work-in-progress paper, we describe the design of a field-experiment (n = 57) in which we examined if coercing active processing of the information provided by a GAT promotes equal participation and increases students' satisfaction with the collaboration.

Introduction: Regulating collaboration using group awareness tools

Social loafing during collaborative learning (Aggarwal & O'Brien, 2008) reduces the opportunities for interactions which are associated with learning (e.g., giving explanations) and also causes dissatisfaction (Capdeferro & Romero, 2012). Thus, the regulation of participation is crucial for effective collaborative learning. Group awareness tools (GATs) can support regulation of the group by visualizing information relevant for coordination, such as participation. While research on GATs for participation has not identified direct effects of GATs on the distribution of participation, results suggest that students' use of the GAT is important for its effectiveness (Janssen et al., 2011). Phielix and colleagues (2011) showed that a collaborative reflection task which included discussing the information offered by a GAT (peer assessment of group members' social performance) and planning future steps for the collaboration helped groups engage more actively in regulation of their collaboration. In a field-experiment we investigated if an additional reflection activity which aimed at increasing groups' deliberate processing of the information from the GAT helped them achieve more equal participation. Data collection has just been finished at the time of submitting this paper, hence the results will be presented at the conference.

Method

We conducted a field-experiment in an online-course on computer-mediated communication at a German university to investigate if coercing students to co-reflect on participation information from a GAT fosters equal participation (RQ1) and satisfaction with the collaboration (RQ2). Further, we explored the groups' reflection processes. The course was offered on the university's LMS Moodle. In each course topic (duration: two weeks), students were provided with learning material (video lecture, literature, quiz) and collaborated in small groups to solve a joint task. These tasks required groups to select and summarize theoretical aspects relevant for the current task, derive and evaluate possible solutions for the problem, and propose a solution. Groups used private forums for coordination and private group wikis to construct the answer text. 57 undergraduate students majoring in various humanities (66.7% female; age: $M = 23.82$; $SD = 3.31$) volunteered to participate in the study for monetary reward. Participants were randomly assigned to one of two experimental conditions. Within their respective condition, students were randomly assigned to groups of four (or five, in order to avoid groups with less than 3 members). The seven groups in the GAT+CoR condition ($n = 31$) received a GAT and completed a mandatory co-reflection activity, the six groups in the GAT condition ($n = 26$) only received the GAT. The *group awareness tool* visualized the word count in the group forum and group wiki as stacked bars without dials (see Figure 1). On mouse-over, the absolute word count was displayed next to the bars. The GAT was always visible in Moodle and the graph was automatically updated every time a student made a new contribution to the forum or wiki. Students could view a short explanation of the GAT in a collapsible text box below the IDs.

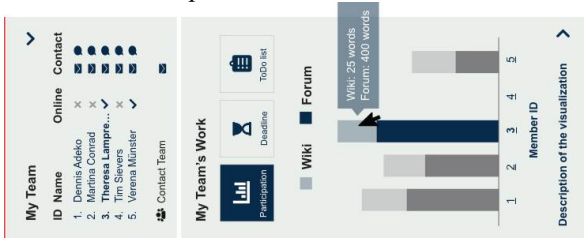

Figure 1. GAT which visualizes word count. On mouse-over, the absolute word count was revealed.

The *reflection activity* was based on Phielix and colleagues (2011) and was implemented on Moodle together with the GAT following the model proposed by Wise (2014): A familiarization email grounded the pedagogical intend of the GAT by describing the importance of active and equal participation during collaboration and how this is represented in the GAT. To retain students' agency over the interpretation of the GAT and the regulation of the collaboration, students individually set a goal for the distribution of participation in the group, reflected on the current distribution of participation, and collaboratively discussed if regulation of the collaboration was necessary and which actions should be taken. Specifically, students answered two questions individually (questions 1 and 2), and discussed two questions collaboratively (questions 3 and 4). Question 4 also required a group to compose a joint answer in a collaborative writing tool. (1) In your opinion: How should participation be distributed during collaboration in a team like yours? Explain. (2) Take a look at the visualization: How well is the participation in your team currently distributed? Give a rating from 1 (bad) to 5 (good) and explain it. (3) Examine the visualization again and post your rating into the forum. (4) Discuss your individual ratings and agree on a rating. Is it necessary to change the way you participate? Develop a plan and set specific goals for your team regarding the distribution of participation. Write down your plan in Etherpad.

At the start of the collaboration, all participants received the familiarization email. Students in the GAT+CoR condition were also informed about the schedule for the reflection activity. At the end of the first week, students in the GAT+CoR condition completed individual reflection. The co-reflection activity was performed at the start of the second week. At the end of the study, students answered a post-questionnaire online. *Participation* was measured by the total number of words each student had contributed to the group's forum and wiki. Based on this, *equality of participation* was calculated using the gini-coefficient (c.f., Janssen et al., 2011). This coefficient assesses the deviation from equal distribution, ranging from 0 (perfectly equal distribution) to 1 (perfectly unequal distribution). *Satisfaction with the collaboration* was measured with four items that captured satisfaction with the coordination, and the result of the collaboration, willingness to stay in the team, and overall satisfaction with the collaboration. *Collaborative reflection and the derived plan* in the group forum and Etherpad were analyzed using the coding schema used by Phielix and colleagues (2011).

Expected findings and contribution of the study

We investigated the effect of coercing students to process and reflect the information provided by a GAT on equal participation and satisfaction with the collaboration. We expect that the collaborative reflection leads to active processing and catalyzes regulation of participation. Consequently, groups that received a GAT and performed the co-reflection will achieve a more equal distribution of participation (H1) and satisfaction with the collaboration (H2). By analyzing the reflection activity in the groups' forums and written plans, we will be able to better understand collaboration norms and the collaboration processes which are required for leveraging the feedback provided by a GAT. Taken together, we hope to advance CSCL research by gaining insights into boundary conditions for the effectiveness of collaboration support, especially GATs, and shed light onto regulation processes which are initiated by this type support.

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