Self-Guiding Group Support Systems: Can groups use GSS without support?

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Abstract
Research has indicated that Group Support Systems are most successful when offered in combination with facilitation or at least training. However, the need for human support creates a serious barrier for use. In this paper, we evaluated the use of a GSS for a multi-step creativity task. The groups using this GSS got no training, no experience, and no support, and all handed in a report with the requested results. We will explore the way it worked, the nature of the tool that enabled this way of working, and their results.

1. Introduction
Collaboration is a critical skill and competence in organizations. Frost and Sullivan surveyed 946 decisions makers, globally using a collaboration index, and found that collaboration is a key driver of performance in organizations, its impact is twice the impact of strategic orientation, and five times the impact of market and technological turbulence [1]. Organizations face the challenge of increasingly complex processes and tasks. To deal with this complexity, organizations often need the expertise of several people to solve problems, make decisions, and accomplish tasks.

However, groups have not been able to overcome the challenges of collaboration (e.g., free riding, dominance, group think, inefficiency) by themselves [2, 3]. Especially when group size increases productivity tends to decrease, and conflict tends to increase [4]. Another factor that can increase the challenges of collaboration and group work is the involvement of multiple actors and stakeholders, which increases interdependency and the complexity of conflict resolution [5].

Collaboration support can in some circumstances enable groups to accomplish their goals more efficient and effective [6, 7]. Groups can use support from facilitators, people that are skilled in creating interventions to support effective and efficient collaboration, often in combination with collaboration support technology. Both technology and facilitation can be used to structure the effort of group members. Collaboration support technology offers mostly tools to collect and combine input from participants in activities such as brainstorming and voting [2], and, especially in combination with facilitation it can help to integrate and converge input, and to build consensus [8].

While collaboration support has proven to help in some circumstances, it is challenging to implement collaboration support in organizations [7, 9-11]. Lab and field studies in collaboration support show conflicting results [6, 12, 13]. Research has indicated that collaboration support often depends on a single champion, and when this person leaves the facilities are abandoned [14]. Further, the training of a facilitator can take a significant amount of time and effort, and is often offered in a master-apprentice style [15]. Finally, it can be challenging to create a business case for collaboration support [16, 17], especially because of the costs of hardware and human resources. Therefore researchers have been looking at possibilities to build the interventions and support of a facilitator into the technology, and to make the use for both facilitators and participants highly intuitive.

In this paper, we present findings from a case study with a tool in which participants assign one person among them to take up the role of facilitator, and run a small brainstorm followed by a convergence process by themselves, without training, and without professional facilitation support. The only support they got was a 1 page instruction on how to log in to the system.
In the remainder of this paper we will first discuss the background on GSS and collaboration support tools. Next we will describe our method, the case study and its results. Finally we will describe a discussion and conclusion with suggestions for further research.

2. Background

GSS offer groups tools for collaborative brainstorming (ideation), clustering and sometimes voting. Key characteristic’s of these systems are that they offer anonymity to reduce barriers for participation, that they enable parallel work to increase efficiency and that they offer data structuring and processing tools that enable groups to immediately discuss e.g. voting or clustering results. Further they allow users to create automatic minutes of the results [2, 18].

Fjermestad and Hiltz found that in 200 experimental sessions with GSS 63% reported training their subjects. In the field, only 37% got training however, 63% was supported by a facilitator, while only 30% got such support in experimental setting. We cannot infer the percentage that got neither training nor facilitation support, but we expect that this is small. Further a significant amount of studies did not report at al on the use of technology.

<table>
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<td>Chauffeur</td>
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</table>

Table 1: Training and facilitation support in GSS sessions

While the difference between sessions in the context of research experiments and field studies are fairly different, both seem to generally offer their groups support in using the technology. Tasks in experimental setting are often more simple and take less time, and thus do not need facilitation support. However, apparently they do need training to operate the technology for the specific task.

The facilitation task is described extensively in GSS literature [15, 19-23]. With respect to collaboration support technology, the task involves preparing and configuring the technology, instructing how to use it and operating the technology during the session. Facilitators often use a training activity to familiarize the participants with the technology.

We thus can conclude that current GSS generally require additional support either from a facilitator or trainer [2, 19, 24]. However, the need to offer both technology and support creates significant costs and therefore a barrier for use. Groups cannot just access a GSS and use it, they need to approach a facilitator or trainer, prepare the session and appropriate the technology.

Researchers have been exploring possibilities to support facilitation and the appropriation of technology [25, 26]. Further, researchers are working towards tools to integrate the instructions of the facilitator in the technology [27]. One key direction to achieve this is to restrict use of the technology to only those functions that avail the capabilities required for the group activity. The tool used in our experiment offers these functionalities. In our experiment we explored whether this enables users to go through a multi-step creativity process without training or facilitation.

Method

To understand the effect of using the GSS without facilitation or training support we worked with a GSS named TeamSupport (www.teamsupport.net). The tool offers an online anonymous GSS environment for creativity tasks. The tool has a build in process of four steps; brainstorming, clustering, grouping (within clusters) and discussion of the resulting ideas. The process therefore supports both a divergent phase and a convergence process to support groups in identifying ideas and converging these to a small set. The tool requires the group to appoint a facilitator who is afforded more capabilities than the other group members by the tool, and has a coordinating role. This facilitator has however, no experience, no facilitation skills, and no support from professional facilitators. The person fulfilling the facilitation role is thus a complete novice. The facilitator sets up the brainstorm session, invites the other participants (verbal through chat or e-mail) and types in the brainstorm topic or question. Participants can add ideas. The facilitator can move the group to the next step in which they discuss the ideas and cluster them. There is a next step button, and the facilitator can close the previous activity.
entirely when finished. The facilitator has the ability to cluster ideas, the participants can follow along and give suggestions. In the next phase, the group combines ideas in each cluster that are the same or similar into so-called groups. These are grouped and re-labeled to capture the key ideas of the group. In the last step, these ideas can be discussed and comments can be added, to capture the discussion. In figure 1 several screenshots of the tool are visible.

Figure 1a: Brainstorm

Figure 1b: Clustering in buckets

Figure 1c: Grouping items together

Figure 1d: Adding remarks

To see if this way of restriction enables groups to use the GSS without training or the support of a professional or experienced facilitator we asked student groups to use the tool. In 2008 and 2009 first year students of a bachelor program in ‘policy making in engineering’ participated in a project course. The students had to analyze a problem case presented by a problem owner from business. In 2008 this was a hospital department manager who presented a problem in effectively using the Deming cycle for business process improvements. In 2009 this was a consultant/accountant presenting a problem of improving the financial administration of a ministry in a developing country. Students worked for 8 weeks on the project going through a process of problem analysis, modeling, solution finding, evaluation and reflection. Half way in the project they are assigned to brainstorm with their group of 4-6 students to identify solutions for the problem case. Their assignment was to use the Team Support tool and to brainstorm at least 30 ideas. They got a 1 page instruction on how to acquire an account for the tool, how to log in and how to start the session. In the second year the vendor offered a video on their website with instruction on how to use the tool. One student indicated that their student facilitator looked at it. We do not expect that many students used this video. We asked all students to fill out an exploratory evaluation questionnaire. A limitation is that some students filled this out alone, while others filled it out with their group.

Results

We received 53 questionnaires in total. All student groups used the tool successfully and handed in the brainstorming report. We asked the students if the tool was easy or difficult to use and how this was for the facilitator. We used a five point scale: very easy, a little easy, easy, a little difficult, very difficult. The results are listed in table 2. The score for facilitators was not always filled out as some participants did not fulfill this role. The majority found the system very easy (44%) to use and many found it a little easy (36%). The facilitator task was also evaluated as a little easy by most respondents (52%).
Next, we asked if the tool supported the task. 75% reported that the tool was supporting their task. We also asked if the students considered their ideas as creative, see table 3. 4% evaluated their ideas very creative, 52% evaluated their ideas as creative, 40% considered them a little creative and 4% considered them not creative.

On average the groups brainstormed 38 ideas (30 was asked in the assignment), from those they created on average 5 clusters, and 11 groups representing a converged idea. Note that we removed 4 outliers who brainstormed less than 30 ideas and probably interpreted the question as the number of ideas they eventually had after convergence.

We did not instruct the groups on how to use the tool. 55% of the respondents decided to use it in a face to face setting, usually sitting co-located in the computer room at the university. 28% reported that they used msn or another chat tool and worked distributed. 7% reported a combination of these and 6% used no additional communication tools. One group used Skype. The groups spend on average 2 hours on the task and some reported the time for the facilitator which was usually the same, but sometimes slightly longer, on average 30 min longer.

We finally compared the groups working face to face with those working though chat, see table 4. We found that the average time spent when working though chat was longer, (chat 2 hours and 36 min, face to face 2 hours), the groups working with chat however ended up with on average 13 grouped ideas, while the face to face group ended up with only 10. Face to face 17 % scored the use of the tool as participant to be difficult, for facilitators this was 7%. Others scored a little easy to very easy. For the chat group, 13 % of the participants scored difficult or very difficult and 20% of the facilitators indicated this score. We can thus say that for the facilitator role it was not entirely straight forward to work distributed.

<table>
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<th>Creativity of ideas</th>
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</tr>
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<tbody>
<tr>
<td>Not creative</td>
<td>2</td>
</tr>
<tr>
<td>A little creative</td>
<td>21</td>
</tr>
<tr>
<td>Creative</td>
<td>28</td>
</tr>
<tr>
<td>Very creative</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3: Creativity of generated ideas

Besides the quantitative evaluation we also asked the respondents to reflect on the tool and to offer suggestions for improvement.

The most prominent feedback was that the tool was very easy to use. Also the students mentioned the characteristics of GSS (anonymity, parallel communication, automatic minutes) to be supportive. One student mentioned “the tool forced us to really think our solutions though.” Some students indicated that they struggled to understand the tool in the beginning and that the tool did not offer enough ‘overview.’ However, most groups indicated that they understood it after a while. Some indicated that it would be much easier to use a second time. Several requested to add a manual or tutorial with more instruction on how to use the tool. Some students indicated that they did not see the added value. In some occasions this was because they had already identified ideas with their group. A final difficulty was in the discussion phase. Some groups did not succeed in this phase. The reason for this is not entirely clear.

Last, we asked about the anonymity of the activity. Some reported that they discussed ideas and therefore anonymity was reduced or removed. This occurred more in the face to face setting than in the chat setting.
A suggestion has been made about the fact that currently only the facilitator can categorize while group members cannot move ideas into the categories. It would make the process even more efficient and faster if the participants could also do this task. Other suggestions for improvement include the ability to comment on the ideas from others in the brainstorm phase, a help option within the program to guide the user when needed and to incorporate chat functionality in the TeamSupport tool to eliminate the need to work in two applications. Further the tool needs to indicate the rights of the participants and the facilitator separately. This was confusing for some students. One person suggested building in a voting functionality. The developer will implement these features, and accommodate the suggestions of the students in a new release of TeamSupport.

**Discussion and Conclusions**

We find the results highly encouraging. All groups managed to use the tool as intended, and found out how it worked by themselves. The tool offered all benefits of GSS and the students reported that these benefits helped them in their task. Unlike GSS such as GroupSystems Thinktank, this tool does not offer any configurable functionality. This restriction of course limits the applicability of the tool, but it ensures that the participants follow the intended process. The use of a next button and the label of the activities (brainstorm, cluster, group, discuss) offered most groups sufficient instruction to perform the task.

Suggestions for improvement are extending the functionalities with participant clustering, chat, commenting and perhaps voting. Further, some more guidance especially for the facilitator could be useful. This could include a clear instruction. Further, the creativity of the solutions might be improved if the tool would motivate participants with a target or with comments and feedback. We would in addition like to experiment with a timed instruction to the facilitator to motivate the group to come up with better ideas (e.g. after 10 minutes).

Limitations of the study are numerous, as it was an explorative survey. We tried to compensate for the fact that some groups handed in multiple questionnaires, while other groups handed in one. Further we used a categorical scale for feedback. Also we did not get much input on the time difference between facilitators and participants and what facilitators did in this time difference.

Research indicated that a flexible/adaptive facilitation style is beneficial [2, 21]. However, we found that when groups want to use GSS without support, restriction increases the usability and enables groups to follow the process. We will further explore how we can support the appointed novice ‘facilitator’ in supporting the group and increasing the quality of their results.

**Acknowledgement**

We thank TeamSupport for providing the software for this research.

**References**


