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# Brainwriting and Idea Selection in a Crowd-Supported Multi-Touch Table and Tablet Environment

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## ABSTRACT

We propose an adaption and extension of the 6-3-5 brainwriting method using tablet computers and a multi-touch table. This table and tablet environment supports the group as well as the individual throughout the ideation process and is complemented by a website that incorporates crowd ratings into the process. Doing this, we improve the traditional 6-3-5 method, minimizing organizational efforts, adding anonymity and integrating external, crowd-powered input into the process. We also advance the method to include a group tool for sorting and evaluating ideas, as well as providing valuable documentation of ideation processes.

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## KEYWORDS

Ideation; Groups; Brainwriting; Multi-Touch Table; Tablet computers; Crowd



**Figure 1: The team at the multi-touch table with working stations for tablet computers.**

## INTRODUCTION

Brainwriting is a creative technique used to generate ideas; participants have a limited amount of time to write down ideas regarding one topic. The technique minimizes production blocking as known in brainstorming (i.e. waiting one's turn to contribute) by allowing everyone to work simultaneously [3]. Moreover, the fear of evaluation by others can be minimized by making all input anonymous. While the process of writing down ideas might impair spontaneity and increase the chances of participants censoring themselves, dynamic electronic brainwriting systems can lessen this negative effect [1]. Also, crowds can be used to improve electronic brainwriting to rate ideas independently. This provides objective feedback to evaluators later in the process, helping them to avoid pitfalls like group think or authority biases.

### 6-3-5 BRAINWRITING

Brainwriting 6-3-5 [7] is a brainwriting method used in small groups, see Figure 2 (framed part). The process starts with six people each writing down three ideas in five minutes. Then, each person hands their notepad to the person on their right and they start again. They write down three new ideas in five minutes, inspired by the other ideas on the notepad. After six rounds, a total of 108 ideas has been created within 30 minutes.

The method can be used to generate many ideas in a short amount of time and includes all the advantages of brainwriting techniques. However, the method requires considerable organizational efforts (e.g., time and resources), its strict time frame might constrain creativity in some participants and the analog process does not allow for anonymity during the ideation process.

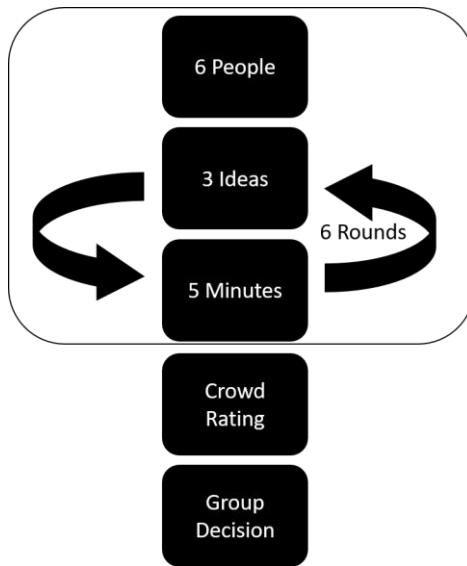
## IDEA SELECTION

Traditionally, after the brainwriting phase, an evaluation of all ideas takes place to select the best one(s). Individuals and groups alike are prone to social and cognitive biases during this decision phase that may lead to suboptimal selections. For instance, individuals in a group often select winning ideas by adjusting their argumentation to what they assume the group wants (group think) or by selecting ideas of people with higher social standing (authority bias).

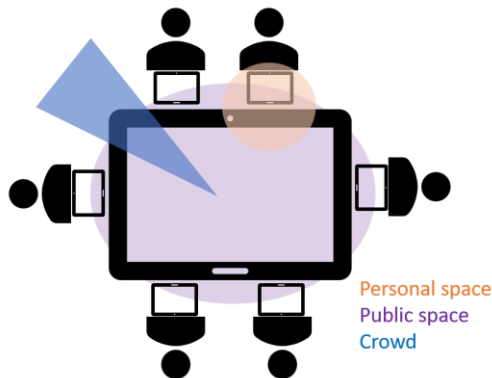
## BRAINWRITING AND EVALUATION IN THE TABLE AND TABLET ENVIRONMENT

### Table and tablet environment

The proposed environment consists of a multi-touch table connected to six tablet computers and complemented by a rating website. The table is a decision-making tool for six to eight people. It



**Figure 2: The 6-3-5 Method (framed) and its extension.**



**Figure 3: The crowd-supported table and tablet environment.**

provides a public space to show, explore, sort, and evaluate ideas. The tablets are individual working stations that offer a private workspace. Individuals can use the tablets to write down and edit ideas, thus offering a simple form to contribute new content, while the table provides advanced programming that includes guided workflows, automated ratings, evaluation processes, and documentation files. The work of the on-site users is supplemented by a crowd that rates ideas on a website.

### **Adapting and Advancing the 6-3-5 Model**

The table and tablet environment works best for six to eight on-site users. To adapt the 6-3-5 method, idea collection is transferred from pen and paper onto the tablets, possibly using an external keyboard to facilitate typing. A surface similar to informal online environments like chat applications allows for “quick and dirty” input, increasing spontaneity and minimizing self-censoring [2]. The tablets then mimic the exchange of notepads preceding the second round of ideation, but adding anonymity to the process. This decreases evaluation apprehension [1] and minimizes biases towards the author of an idea during the ideation process. After six rounds, all users have been inspired by everyone else’s ideas and the core ideation task is completed (see Figure 2).

However, the method can also easily be customized and extended. Tablets could always display everybody’s ideas to everyone else after each round of ideation. That way, the number of inspirations increases significantly. Also, after six rounds of ideation, a quick rating of all ideas could be included at the tablets and at a website, using a crowd to provide external ratings. Each user could select his or her favorite ideas, or rate all ideas to support later discussions and without being influenced by other users. Also, everyone could get familiar with all the ideas prior to the group discussion.

Then, the process can easily be advanced further, to include a group evaluation of all ideas to select winning ideas. For this, the ideas and ratings would be transferred onto the multi-touch table. While users discuss, tablets could still be used to add new ideas or comments. The goal of this phase is the identification of especially promising ideas or solutions. The special affordances of the table make it a very valuable tool to achieve this goal. Users can cluster ideas and come up with a common understanding and representation of how the elements on the table (i.e., ideas) relate to each other. To avoid early selection biases, the table can display certain “interventions”, for instance crowd ratings or on-site user favorites. This facilitates perspective taking and visualizes points of view from more introverted users as well. Making different points of view visible would counteract group think, social loafing, false-consensus, and other social and cognitive biases [4, 5]. Moreover, after some discussion, users could rate ideas again directly on the table, by sorting collaboratively or rating individually. This could be done on different dimensions (e.g., feasibility, desirability, novelty), enabling a more complex, multi-criteria evaluation of ideas. An automatically

generated documentation of the process would include the evaluation outcome on all dimensions and all decisions the group made. It would be available as a pdf file to be further used or stored. The documentation would also include information about which ideas and users inspired new ideas and their evolution throughout the whole process.

## AT THE WORKSHOP

In our contribution to the “Designing Crowd-powered Creativity Support Systems” workshop, we will present our adaption and extension of the very specific 6-3-5 brainwriting method. We will share the latest research on creativity tasks in groups at multi-touch tables, with a special focus on the use of personal and public spaces. Also, we will discuss advantages and disadvantages of including crowds in such processes at different stages and provide theoretical background to social, cognitive and motivational psychological concepts that inform our proposed design. We are very much looking forward to discussions with researchers and practitioners alike, as we work on applied science projects [6] and hope to develop applications that find practical use outside of science as well.

## ACKNOWLEDGMENTS

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