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Understanding UI Design for Creative Writing: A Pilot Evaluation

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Abstract. This paper describes a new study about how youths react when they use creative writing environments to express themselves. In this pilot study, we present reactions of young students in India, in a between-subjects design using MS Word as baseline and a "calm" and relaxing writing tool called OmmWriter. We analyze the influence of this type of tools to assess if a creative writing user interface can positively influence the productivity and mental well-being of users. Writing has been one of the most important developments of human civilization, but people are often unconscious of how long and complicated this path has been. However, understanding the creative writing user interface is a necessary activity if one wishes to shape future tools. Following a triangulation from results and qualitative data, we could notice that this experience increased the students' desire to write more, every day.

Keywords: Creative Writing tools; Human Computer Interaction; Creativity Support Tools; User Interface Design; User Experience Design.

1 Introduction

The best way to view the proliferation of human civilization is to look at the different ways we have to write. Writing is one of the most important human activities and one of the oldest. The increasing adoption of computerized tools caused people to express themselves more easily and more often.

In this paper we report a pilot evaluation with students in India, using two different creative writing tools: MS Word, our baseline, and OmmWriter a Zen-like tool. We briefly describe the methodology, procedure and some results, triangulating data from different sources to assess if a creative writing UI can positively influence the productivity, mental well-being and creativity of users. We close this pilot study by performing a reflection and discussion about results and also presenting future work.

2 Related Work

Technology is changing over the past last decades. The intensification of digital computing accelerated writing in all its forms, and people in today's society have a much easier access to reading and writing. Whether you're script-writing a novel or imagining a new commercial ad, the process of writing depends on prewriting that leads you after to a draft, which is then to be revised [7]. Chang et al. [3] refer that a good storyteller usually needs good inspiration during the story construction process. Other researchers [4] have studied the role of storytelling technologies to encourage collaboration and to reflect design suggestions made by children themselves. Creativity includes discovery or invention of a significant idea, pattern, method, or device that gains recognition from accepted leaders in a field [5] and is the ability to produce work that is unexpected, high in quality and useful [1]. Some researchers, such as Carrol and Latulipe [2] considered that is a challenge to measure when a person is actually being creative. Broadly speaking, the same authors, argue that there is no consensus in how to measure creativity or when a person is "in the moment" of creativity, and there is a challenge in evaluating creativity support tools. Even with decades of creativity research, there is no single, agreed upon methodology for evaluating how well a creativity support tools to aid the creativity of its users [8]. There are also different studies to overview and measure the creativity behind ideas [9] but a lack of research work in creative writing user interfaces and tools, a gap this paper attends to address by giving insights to future work. Christiaans [10] suggest that as long as no absolute criterion of creativity exists, the assessment of creativity remains dependent on subjective judgment. He refers that design can include more objective aspects that mainly involve the functionality and technical quality of the design.

3 Field Study of Creative Writing User Interfaces

We designed and conducted one pilot experiment in order to investigate if a creative writing UI can positively influence the productivity, mental well-being and the creativity of users. As an introduction to the following experiments, we will focus on some characteristics of participants. Since we were interested in empowering youths by providing them with creative writing tools, we targeted teenagers that normally attend to a non-profit organization in India. The institution develops capacities for building environments in schools for children, quality of life through education, and for students to be capable of having better curriculums and new skills of development. These

teenagers came from middle class families, some already have business and others are working with their parents. Figure 1 illustrates the environment where the study took place.

Figure 1. Youths in the institution establishment.

In the next sections, we will describe the evaluations, including the participants, method, procedure and results of each. All the data taken from the experiments was made completely anonymous.

Study: OmmWriter vs. Word

We conducted a user study to address the following research questions:
RQ1: *can a "Zen-like" UI positively influence the productivity of users?*
RQ2: *can a "Zen-like" UI positively influence the mental well-being of users?*
RQ3: *can a "Zen-like UI positively influence the creativity of users?*

Participants

A total of 10 students were involved in this preliminary study (aged between 10 and 16 years old). There were three females and seven males. We conducted five sessions and used PCs. Participants had computer and Internet experience.

Method & Setting

This study was organized based as a true experiment on a between-subjects setting using repeated measuring. To minimize the existence of confounding variables, two groups of student were created: a control group that used MS Word as a baseline, and an experimental group that used the Zen-like creative writing user interface of OmmWriter. The order of the two conditions was counterbalanced, participants were random allocated and every participant was equally likely to be allocated to each group. Creativity and mental well-being were measured using subjective, quantitative (Liker-based scale) daily surveys which were constructed from the Flow Theory's concepts [6]. Before starting the first session, the experimenter explained the scope of the study and the session rules. Each group was instructed to start by answering the daily

challenges and then responding to a daily survey. During the experiment, the two groups were seated in separated in different rooms.

Procedure

The study consisted in three phases: *writing a specific challenge* using the addressed tool, *answering a survey,* and *rating the creativity* of written data. The time was limited (30minutes) for each writing challenge. No time limit was set for completing the writing tasks. After each session, the participants were asked to fill out a very short Likert scale survey about how the daily experience made them feel.

Writing a specific challenge. In each session, participants received a writing task (writing prompt) to initiate their writing. We gave the same writing challenges to all students. Examples of the writing task included: "*Write about a time when you used your inner strength to get through a tough situation"; "Who is your Hero and why?"; "Write about when someone hurt your feelings"; "Have you ever took a risk?"; "If you could change the world what would you do and why?"*. These were conceived by one of the authors and it was taking into account the age of the participants.

Answering a survey. In each session, participants fill out an online survey that was based on the Flow Theory dimensions: (i) intense and focused concentration on the present moment, (ii) sense of personal control or agency over the situation or activity, (iii) loss of reflective self-consciousness, and (iv) distortion of temporal experience. Participants ranked a seven-point Likert with the evidence scale for 1 (totally disagree) and 7 for (totally agree), based on questions such as: e.g. "*I felt very concentrated during the challenge"; "I lost track of time during the challenge"*, etc.

Rating the creativity. After finishing the five sessions of the experiment, we asked participants to read their written data, and to rate their creativity. They were asked to provide a value ranked in a 5-point Likert with the evidence scale for 1 (not really) and 5 (very much).

Results

We evaluated the study from a perspective that triangulates the results, using the answers from the surveys, the statements of the interviews and the qualitative measurable information of the writing challenges. Results show that the number of test items can be considered with a good consistent in the scale used from the questionnaire on seven-point Likert scales. From our control group and experimental group we can view in Table 1 the listed demographic characteristics for each group.

		Control Group	*Experimental Group*
Age	10-11	1	2
	12-13	2	2
	14-15	1	1
	16	1	0
Gender	Female	1	2
	Male	4	3
	No. Participants	5	5

Table 1. Demographic information for participants in each group

To assess the productivity of the users we started counting the number of words written per participant in each tool (Table 2). Regarding data dispersion users in the control group using MS Word (baseline) wrote more words, than those in the experimental group using OmmWriter.

	Microsoft Word	*OmmWriter*
Mean	45.80	42.08
St. Error	6.7	5.1
Median	34	35
St. Deviation	33.66	25.44

Table 2. Statistics from number of words written

Although students were curious about the experience and excited to know what challenges were proposed, triangulating these results with semi-structured interviews allows to say that there is a tendency to increase their desire to write more, and we noticed that day by day. Note that the challenges were the same for both the control group and experimental group, and there was no transfer of learning as we were using a between-subjects experimental design. None of the users had ever taken an experiment such as this one. We could notice that some students liked to answer some challenges than others. When we asked them why that liked, they argue that writing tasks make them thought more about, and more things came into their minds. All participants in this experience, had experience with MS Word, but had no experience with OmmWriter. As we can see from the results, the experimental group showed similar results as the control group, despite the fact that they had never worked with that tool before. To access the participants' mental well-being as well as their evolution along the five days of this study, we asked them to select up to three adjectives from the following list: Surprised, Delighted, Laid back, Depressed, Pacific, Happy, Tired, Bored, Sad, Satisfied, Frustrated, Angry, Serious, Animated, Distressed, Creative and Frightened. Figure 3 displays the total count for each adjective, as selected by the participants. We can see that Happy, Delighted, Satisfied, Relaxed and Serious were the most chosen adjectives, especially when using OmmWriter.

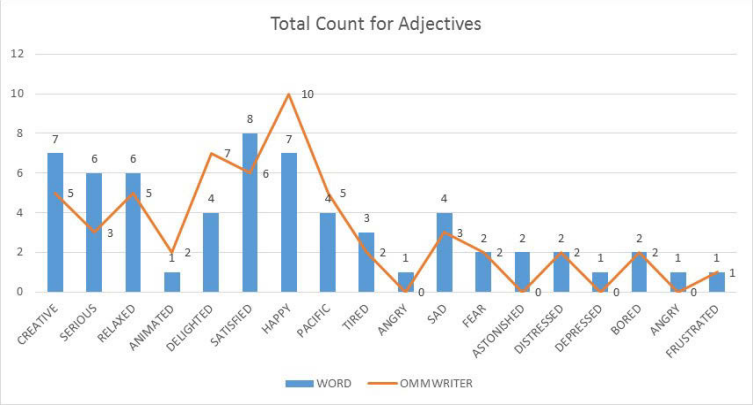

Figure 2. Total count for the adjectives chosen by participants.

By looking at the Figure 3, one can see that the sense of Concentration was not a significant issue for any of the tools we evaluated. The same observation is valid for the Sense of Control dimension, despite the fact that there is a minor difference between tools. The greater difference, was found in Lost of Self-consciousness and Lost Track of Time. According to the interviews, students reported that OmmWriter was effective user interface for feeling better (with music), happier and also more relaxed.

Figure 3. Combined results for five days experience and the different tools involved with Flow Theory.

In the third phase of this experience, we asked students to rate their creativity of all written data per writing challenges (Table 3). This was made after the day five.

	Microsoft Word	*OmmWriter*
Mean	3.32	3.28
St. Error	.21	.20
Median	3	3
St. Deviation	1.07	1.02

Table 3. Statistics about self-rating creativity from written data

Regarding the stories written, and from a creativity perspective, we found some differences between the control group and experimental group, with participants using the calm and relax tool apparently allowing for greater levels of creativity. However, it was not possible to establish this difference with sound confidence. When participants in the experimental group

(OmmWriter) were interviewed, they especially said they liked the background soundtrack, because helped them to express more and in a quiet way, e.g. "*the continuous soothing music, help me to express…"-userOmmWriter.* Based in our observations and from the written data, it can be said that experimental group have a tendency to perform more in future experiences. When interviewed, all express genuine interest in creative writing and most users emphasized that wanted to do this experience for more days, using the tools and the writing tasks *"…it's a good started for writing…"-userMSWord; "I was curious to find out each day, what was supposed to write…"-userOmmWriter.*

4 Discussion and Conclusion

The scope of the pilot study discussed in this paper was design to investigate if creative writing environments can encourage youths to express themselves through creative writing. It was limited to a small number of participants in order to develop analytic methods with a data set. Although the study involved students in India attending the institution, the methods proposed in this study could be used in future work in different institutions. To further shape an evidence base, the study needs to expand to include more days and more different creative writing environments. Also, we need to investigate different ways to measure the creativity, and how it is maintained, and for how long during the long-term usage of the tools. Despite the fact that the pilot study included only a small number of collected data, the need for substantive instructions and encouragement for creative writing environments being used by novices was strongly suggested. During all experiments, it was clear that participants became intensely concentrated to solve the writing challenge. From a qualitative perspective, a loss of reflective self-consciousness was also reported, especially using the OmmWriter tool. Also, it was clear that every participant considered that the writing tasks were a good kickstarter for the creative writing process. We could notice that participants felt somewhat empowered and creative during the experiments. Future work will compare the impact of creativity, satisfaction, productivity per daily challenges in students who have different access to education and will examine the use of different user interfaces for creative writing can empower to express themselves and give them a voice. The biggest limitation of our study it that it doesn't consider the long-term usage of these tools. Therefore, conclusions are limited to an incipient (five days) usage of the different creative writing user interfaces.

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