
Play While You Work: Productive Play for Digital Content Creation

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Abstract

In this paper, I present my ongoing dissertation project investigating playful interaction techniques for productive purposes. The objective is to find out how users can effectively create digital content while actually playing. Building upon and extending the notions of gamification, serious games and games with a purpose, I focus on productive aspects of play where not a task is extended with playful interaction, instead I aim to create playful environments where play is the main activity, while at the same time, productivity can be achieved as a direct result of the game or play activity. A first user study revealed that the approach has a high hedonistic value, low learning curve and creative self-perception. At the same time, the work results are comparable to standard tools in a reproduction task.

Author Keywords

playful interaction, productivity, game research, user interface

ACM Classification Keywords

H.5.2 [User Interfaces]: Interaction styles

Introduction

I'm a first-year doctoral student and researcher in the Digital Media Lab at the University of Bremen, Germany, supervised by Prof. Dr. Rainer Malaka. My dissertation work

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CHI PLAY'17 Extended Abstracts, October 15–18, 2017, Amsterdam, Netherlands
© 2017 Copyright is held by the owner/author(s).
ACM ISBN 978-1-4503-5111-9/17/10.
<https://doi.org/10.1145/3130859.3133228>

is being conducted in the context of European Research Project “first.stage”, where novel natural user interfaces are researched and designed to improve previsualisation in film, animation, and performing arts. I have a background in computer science with a focus on HCI, user-centered design, and entertainment computing.

Context

Playing is an intrinsically motivated, joyful activity [7] where we learn, explore, solve problems, or can be creative. In the areas of gamification, serious games, and playful interaction [6, 10, 9], elements of play and game design are used in contexts other than pure entertainment with the goal to improve aspects like performance, task enjoyment, physical fitness, or human computation tasks [15, 13, 16]. In practice, gamified applications often center around the work activity by adding game elements to a non-gaming task, while serious games are often specifically designed for entertainment, potentially enhancing user experience in a certain context (i.e. education, training, or health), and conveying a message (i.e. knowledge, skill, or content) [10]. Both gamification and serious games establish end-user productivity in different forms and facilitate the positive aspects of play and game.

However, I argue that the potential of play in creative productivity applications can be used more thoroughly, so that the work result can be a direct outcome of the play activity. Playing would be the process of working itself, resulting in a work experience with creative freedom, chances for serendipitous creations, enjoyment, and a low learning curve.

Research Objectives

Current research does not adequately explore the creative potential of play for creative productive purposes, although

there is potential for the improvement of creative work, long-term motivation, and learnability. It is further not known how play-centered applications can be designed with a specific work outcome in mind. In my dissertation I aim to explore how play can be used for creative productive purposes to facilitate positive psychological properties (i.e. flow, creativity, problem solving, serendipity). Based on this, I present the following research questions:

R1: How can play be used in a way that creative productivity can be achieved?

R2: What are the key benefits of productive play compared to regular productivity applications?

R3: How can productive play applications be designed so that a certain task is fulfilled in a play-centered way?

Literature Review

Games and play have been researched in many non-playing contexts like gamification [6], serious games [10], or games with a purpose [16] and prove to be beneficial in other contexts than pure entertainment. In relation to productive outcomes of play, it has been pointed out that play is not the opposite of work, and that we have to question the often stated unproductivity of game and play [11, 3]. Existing implementations of playful productivity applications and the use of existing games for the generation of content in a productive manner prove factors of enjoyment, learnability, and creative expression [4, 14]. From a theoretical point of view, different models for the description, analysis, and classification of games have been developed, that build the foundation for a further categorization and analysis of productive play applications [1, 8]. Regarding the implementation, there are different models and patterns that guide my efforts directing the practical applicability of productive play applications [2, 12]. Fundamental to the understanding and concepts of play, different works describe psychological and



Figure 1: Gun spawned barrel



Figure 2: Laser spawning



Figure 3: Grenade spawning

social foundations and implications [7], as well as the theory of *Flow*, that relates to productive play [5].

Research Methods

I have defined the following research objectives based on my research questions in order illustrate what kind of methods I plan to use throughout my studies.

O1: Development and evaluation of different play prototypes. Using software prototypes, user studies in the form of lab experiments will be conducted. Quantitative and qualitative data (case studies, interviews, focus groups) will be collected with both novice users and practitioners from related fields. This mixed method approach generates data for the evaluation as well as for the construction of a theoretical framework and design guidelines.

O2: Analysis of existing design frameworks and examination of extensions / integration approaches. In the theoretical part, existing frameworks will be analyzed with regard to compatibility to my approach and extensions will be proposed, so that further analysis and classification of play-based productivity is possible.

O3: Generation of a design process of productive play environments. Based on the prototype implementations, guidelines for the development of play-based productivity applications will be developed.

Results

A 3D world builder has been implemented and evaluated as a first prototype. Using the metaphor of a first-person shooter, players can playfully create 3D scenes by shooting objects directly into the scene with different weapons for object placement and manipulation. For example, using the gun (Fig. 1), objects are shot into the scene using physics, a laser gun (Fig. 2) is used for precise placement. Users can “load” a grenade (Fig. 3) with a tree object, throw it in the scene and a whole forest is spawned with just one

detonation. A first evaluation of the prototype with 17 participants revealed that the hedonistic and pragmatic quality are significantly increased compared to a representatively configured Unity 3D editor for scene creation. Further results indicate that users were able to adequately re-create a given scene using the shooter, indicating usefulness beyond pure entertainment. Users stated that they enjoyed the shooter very much and thought of it as a useful tool for rapid and creative scene creation. The corresponding paper has been submitted for review to this conference as a work in progress paper.

Status and Next Steps

The work on the dissertation has just started and resulted in a first evaluated prototype. In the next steps, a full analysis of the user study will be done. Here, user generated 3D shooter scenes will be analyzed for their creative potential. Further, the interview data will be analyzed for further evaluation. In future work, more prototypes will be developed, including the introduction of a dynamic rule-making engine where players can define own play-rules at game-time for increased creative potential and mutual encouragement. In parallel, the theoretical foundations will be established based on existing frameworks, design patterns, and guidelines.

Contributions

The current contribution include understanding of how play can be used for productive purposes, how such tools compare to standard tools, and how users perceive the approach. Future contributions will include more prototypes, design guidelines, and integration in current design frameworks.

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