
Extracting Design Guidelines for Wearables and Movement in Tabletop Role-Playing Games via a Research Through Design Process

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Abstract

We believe that wearables and movement are perfect fit for enhancing tabletop role-playing (TTRPG) experience, since they can provide embodied interaction, are perceived as character-costumes, enhance ludic properties and increase the connectedness to the imaginary game worlds. By providing these improvements, they can increase the immersiveness and player/character relationship which are critical for an ideal TTRPG experience. To investigate this underexplored area, we conducted an extensive research through design process which includes a (1) participatory design workshop with 25 participants, (2) preliminary user tests with Wizard-of-Oz and experience prototypes with 15 participants, (3) production of a new game system, wearable and tangible artifacts and (4) summative user tests for understanding the effects on experience with 16 participants. As a result of our study, we extracted design guidelines about how to integrate wearables and movement in narrative-based tabletop games and communicate how the results of each phase affected our artifacts.

Author Keywords

Wearable Computing; Role Playing Games; Participatory Design, PnPRPG; Guidelines; Exertion Games; Game Design; Game Research; Tangible Interfaces

ACM Classification Keywords

H.5.2 Evaluation/methodology - Input devices and strategies - Interaction styles - User Centered Design.

WEARPG: Movement-Based Tabletop Role-Playing Game System with Arm-Worn Devices

This is the extended abstract version of “Extracting Design Guidelines for Wearables and Movement in Tabletop Role-Playing Games via a Research Through Design Process” which is prepared for the demonstration of WEARPG game system which was explained in the mentioned paper. For the detailed design process and the design guidelines, please see this document [3].

WEARPG is a RPG system, which relies on wearable and tangible props that provide movement-based gameplay. WEARPG is based on a tesla and steampunk hybrid fantasy world where five elements of air, water, fire, earth and electric dominates the life (download the quick-start guide [here](#)). Characters in this world can use these elements to gain powers. Each character can choose two of these elements as the primary and the secondary. Based on this setting, WEARPG is constructed on four pillars. These pillars are: (1) Movement-Based mini games (2) Elemental Gauntlet, (3) Luck Stone, (4) Game Master Console.



Figure 1: Elemental Gauntlet and the Luck Stone

Movement-Based mini games include seven games which refer to basic movements which are *power*, *reflex*, *precision* and *concentration*. *Power* games are required when the fictional character perform a physically demanding task like swinging a sword. It has two different versions. First one requires swinging the arm as strong as possible while the second one works by squeezing the Luck Stone, which is the augmented die, as hard as possible. *Reflex* games are to be played in situations where the pace is essential. Dodging from an attack or catching something thrown can be the examples. First reflex game is about moving the Elemental Gauntlet in the right timing just after a haptic feedback. Other one requires grabbing the Luck Stone as soon as it turns into the players' main element color. *Precision* moves were designed for situations like shooting an arrow or lock picking where hefty hands are essential. First version of precision games is aiming by using the LEDs on Elemental Gauntlet, while the other is rotating the hand really slow to find the right spot. The last game type, *Concentration* game, is for where focus is needed. Examples can be casting a spell

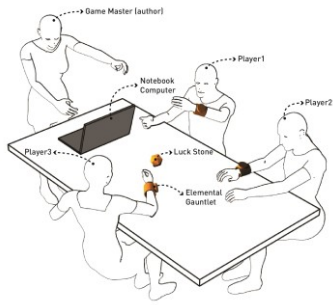


Figure 2: Game Setting

or focusing on something for remembering it. This type has only one game and it requires rolling the Luck Stone in hands in a certain speed and maintaining that speed. Each game has 5 difficulty levels from easiest to hardest. GM decides which difficulty level will be played depending on the character skills and condition (injured, crimped etc.)



Figure 3: Element and Short Story Cards

Elemental Gauntlet (EG) is the arm-worn device (Figure 1). It is comprised of three modules which are Interface Module, Processor Module, and two Haptic Modules. It accounts for automatization of calculations and character creation. With EG, one can perform the elemental ritual by attaching elemental stones to device to define their character properties. Moreover, it also measures the motion and facilitate the movement-based play. It is also the main interface which leads players during mini-games and shows information such as mana level. GM also can use it by lighting it in different colors or sending haptic feedback.

Luck Stone (LS) is an assistive device for randomization (Figure 1). Previous work in this area puts forth the importance of such auxiliary objects [4,5] and one another work claims that designers of augmented TTRPG should consider how to incorporate valuable items such as dice in relation with the interactive devices [2]. Therefore, we introduce the LS into the game which has a role in some of the mini games and in the randomization. Still, different from a conventional die, LS has a dynamic chance adjustment system. Your success in the movement-based mini games affect the outcome of the LS. For instance, if a player is successful at playing a *power* game, then the Luck Stone will have more green (standing for “success”) sides.



Figure 4: A participant is experiencing WEARPG at CHIPLAY '17 [1]

Demo Setting

Normally, WEARPG is designed to be played by 2-4 people for gameplay sessions that can go up to 5 hours (Figure 2). Yet, during the demo session, we will use element and story cards (Figure 3) to speed up the

process for making the session available to as much participants as possible. Each participant will experience the demo by themselves (Figure 4) and the presenting author will be the game master of this short (~5min) session. After choosing the elemental cards, participants will attach their elemental stones to their gauntlets. Following, they will choose one of the scenario cards and the game master will tell the story by assigning the appropriate movement-based games to the gauntlet.

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