

Implementation gamification concept on task management system based on web

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Abstract. Task management is the process of managing tasks through its life cycle. This involves planning, testing, tracking and reporting. Task management can help achieve individual goals, individual groups collaborate and share knowledge to achieve common goals. [1] Tasks are also distinguished by complexity, from low to high. Task management can form part of project management and process management for efficient workflows within an organization. Project managers who adhere to task-oriented management have a detailed and up-to-date project schedule, and a good team directs members and advances the project. [2] At present, the Task management system is growing along with the rapid advances in technology, so that anyone can access wherever he is. However, the majority of the current Task management system is not able to attract the attention and interest of its users. The concept of gamification will be applied to the task management system so that work management is more organized, interesting and fun. This gamified system design will use the Marczewski's Gamification Framework. Framework that has user types with the needs of learning and self-development. Game mechanics in this user types such as levels, challenges, and rewards can support gamified system users in achieving goals. The tests that have been conducted show the success in applying the Marczewski framework to the functional needs of users.

1. Introduction

Task management is the process of managing tasks through its life cycle. This involves planning, testing, tracking and reporting. Task management can help achieve individual goals, individual groups collaborate and share knowledge to achieve common goals [1]. This is done because the longer the task management system is needed anywhere.

Researchers want to develop the application of task management systems with a gamification concept where each employee who works on the task as if playing a game makes it fun and not boring. on the application in fact task management system is only as a medium of reporting employees to their superiors without seeing the timeliness that they have done

Previous research has been related to the issues discussed, namely the research of Makoto Nakayama and Charlie C. Chen which discussed employees who lacked enthusiasm and quality in work and produced more information to the company. The main reason is the lack of motivation and boredom of employees with their workplace. The gamification induction solution is proposed by the company's task management system, because the game can be used for motivation in a work environment where employees do their work passionately and can improve new innovations from the tasks they are working on because there are additional gifts or incentives because they have done their jobs well and on time [3].

2. Methodology

In the learning research the web tenses apply the Marczewski's Gamification Framework method.

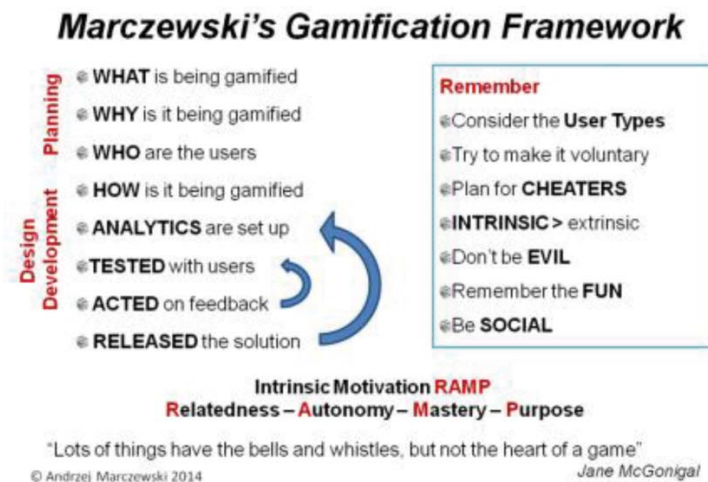


Figure 1. Marczewski's Gamification Framework [4].

At the planning stage, there are 4 things that underlie the design of gamification [4].

1. What is being gamified (What will be the gamified system?)
2. Why is it being gamified (Why will it be a gamified system?)
3. Who is the user (Who is the user of the gamified system?)
4. How is it being gamified (How to make a gamified system?).

In the planning section will determine the boundaries of the framework that is designed and determine the objectives of the framework itself. The next stage is the design stage, at this stage it will determine motivation, feedback and game mechanics, user journey, and engagement / feedback loops. However, this web-based tenses learning only involves 2 components, namely motivation and feedback and game mechanics. The type of player in the gamification website learning tenses is Achiever. The aim of the type of achiever player is to learn to gain knowledge and develop them. Achiever wants to overcome the challenges that exist to improve his abilities.



Figure 2. Game mechanics that is applied to each type of player.

The type of player achiever is also driven by status as a representation of achievement. They need a system that can enrich and lead to mastery. An award can be given for those who have achievements and have completed challenges. Here are the mechanics games for Achiever players:

1. Levels / Progression is a means to show the progress of a player. Levels can be shown in the form of a progress bar, icon, or metaphor (bronze, silver, gold, and platinum) [5].
2. Quests / Challenges are used by the system to provide challenges and provide guidance to players about what can be done to be able to continue to a higher level [5].
3. Achievements / Rewards is a gift, tangible or intangible, presented after the occurrence of an action (i.e. behavior) with the intention of causing the behavior to occur again [6].
4. Leaderboards aim to make simple comparisons. Most people don't need any explanation when they face the leaderboard. By default, an ordered list appears with a score next to each name, and we understand that we see a ranking system [5].
5. Competition allows users to challenge each other to get high scores on several activities. After everyone has done the activity, the user with the highest score wins the prize. Usually used for multi-players [7]. In Figure 3 describes the flow of research conducted in designing the gamified system in learning English tenses.

In the Marczewski framework, after the design is carried out a trial will be carried out for the success of the gamified system design, user testing, and gamified system evaluation in order to get feedback. In accordance with the research flow designed, the application of the gamification framework in web-based tenses learning will be carried out at the stage of the trial of the success of gamified systems only.

3. Discussion

3.1 Framework Gamification Analysis

The framework gamification in learning web tenses uses the Marczewski's Gamification Framework. Based on Figure 1, the analysis of the planning and design of a web-based gamified system is summarized in a table 1.

3.2 Game Rules

A game has a system where players are involved in an artificial conflict defined by rules that produce something that can be measured. Rules in the game are important because rules define the mechanism of the game, but not the game itself. The point is that rules determine the boundaries between winning and losing. The rules in the game are also called game rules. Student and teacher have different game rules. Game rules for leveling and badges and trophies for students.

3.3 Game Play

After designing the game rules, the next is to do game play design. Game play is a system of running the game. Student and teacher are players in the web gamelan learning tenses. Both have different play games because the access rights are different. Student and teacher game play is summarized in the form of a flow chart.

3.4 Testing and Analysis of Gamified System Results

After testing the plan, then build a test case (test case), which is a set of data or situations that will be used in testing. The method taken is the Black Box testing method. This method is used to find out whether the software is functioning correctly. In this method the test data is generated, executed on the software and then the output of the software is checked whether it is in accordance with the desired. Testing is done to test the extent to which student user needs can be met.

Table 1. Marczewski's Gamification Framework.

No	Stage	Description
1	Planning	
	1.1 What is being gamified ?	In this study, researchers will try to implement a task management system that will be designed in the form of a web.
	1.2 Why is it being gamified ?	many tasks are often confusing and confusing to most employees. The researcher will apply the concept of gamification to learning web-based English tenses. It aims to make the task not boring and fun.
	1.3 Who is the users ?	This website user is an IT employee at the Fedex company
2.	Planning	
	2.1 How is it being gamified ?	The design of this web will use only 2 elements from the 4 design elements in the Marczewski's Gamification Framework, namely Motivation and Feedback & Game Mechanics. Motivation is used to

		determine User Types on the gamified system. Whereas Feedback & Game Mechanics are used to analyze game mechanics and its components.
	2.1.1 User Types	Achiever is a User Types for users of this web gamification. The purpose of this type of player is to learn to complete the task on time and the innovation that is given. Achiever wants to overcome the challenges that exist to improve his abilities.
	2.1.2 Game Mechanics	in this gamification the task management system is programmed to provide rewards for employees who complete their tasks in a timely and correct manner, besides that there will be additional points if employees provide innovations in the task, points are given each employee completes their assignments and has been valued by each the manager
	a. Point	each employee will get points 1 - 5, the time limit for working on a task depends on the complexity and level of needs produced, along with its level 1. low 2. medium 3. High 4. urgent
	b. Badge	awarding a badge is given to employees who earn 25 points in one week
	c. Trophy	trophy is given to employees who earn 4 points in one week

4. Conclusion

Based on the results of the research and discussion that have been conducted, it can be concluded as follows: (1) the application of this web-based task management system is designed with an analysis process of the data needed, namely each employee's task data, system functional requirements analysis of employees, managers and admin, hardware requirements, and software requirements. The process of analysis on the application of the gamification concept, researchers used the Marczewski's Gamification Framework. In the process of designing the gamified system, researchers designed the game rules and game play. At this design stage there is also a test plan that will be carried out by the researcher; (2) by using this framework, researchers are easier to determine user types because Marczewski describes user types according to user needs in using the gamified system. If the user types are in accordance with the requirements of the gamified system, the game mechanics that will be applied are also suitable to support the achievement of user objectives. The researcher tested the application of the Marczewski's Gamification Framework on the application of a web-based task management system using the Black Box Testing method. Testing is done by building a test case against the gamified system on the system requirements of employees in accordance with the testing plan. Based on the results of testing and analysis of results, the application of the Marczewski's Gamification framework to the learning of web-based English tenses was successfully carried out.

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