Timmy's Turbines

Testing Report

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1. Introduction

This document is a user testing report for the MOOC wind turbine game. These tests are used to get the feedback from the target audience and test whether it meets the requirements, then helps to improve the game.

It contains the following items:

- Give the information of the target audience of this game.
- List the requirements required by the commissioner.
- The time of the installation of the game to the target users' platforms.
- The arrangement of instructing the participant to understand how to play this game.
- The schedule of letting target users participate in the testing.
- The test result and analysis.

2. Target Audience

2.1 Features

The target audience is defined by the commissioner, which has the following features:

- Educated (With at least a Bachelor's degree).
- Doesn't necessarily have background knowledge of wind turbines.
- Has less than thirty minutes of absent minded time.
- Age range from late teens to retirees.
- Has no trouble with English reading.

2.2 Specific Information of Test Participants

A large majority of the test participants have university grade education, which makes them very suitable for testing this game.

3. Requirements Need to be Tested

3.1 Learning Objectives

Since this game is built to help the players learn the knowledge of wind turbines better, it is necessary to achieve all these learning objectives:

- Students are able to analyze locations for the best placement of wind turbines.
- The student reflects on what factors are important in the cost of wind energy.
- The student can understand the energy conversion process
- The student can integrate different components of a drive train in one system.

3.2 Other requirements

Besides the learning objectives, these features also need to be tested:

- Game should give an intuition of real life physics

- Game should be entertaining/fun/addictive.
- Game should be open-ended (after the end of the learning curve, the player still has the possibility to play in “full” mode or other modes).
- The game should be bug free.

4. Testing Methods and Responses

4.1 The First Test

Participants: We got 45 responses in total. And 43 of them meet the requirements as target players.
Date: 5th November - 1st December
Test Method: Online survey
Test Target: Game design.
Instruction: Description of the game is implemented in the online questionnaire with pictures of our proposed user interface.

Typical Results:

① Tower defense games are popular among our target users.
② Most players think they can accept the game mechanisms we proposed.
③ Most players can accept the user interface we proposed.
④ More than 80% responses think this game sounds interesting.

Based on these results, we made these decisions and plan:

- To some extent, most of our target users are familiar with tower defense games. So we insist on our original idea about the type of this game.
- We decided to make the game into several chapters. And in each chapter, a new game mechanism will be introduced. The difficulty will increase chapter by chapter.
- Tutorials for players will be implemented to the game.
- The user interface will be similar to the picture showed in the survey.
- The difficulty of the game will increases by chapters.

4.2 The Second Test

Participants: we got 18responses in total. And 18of them meet the requirements as target players.
Date: 15th December- 2nd January
Test Method: Online survey. This time, the questionnaire is divided by game chapters and game mechanisms.
Test Target: Current game.
Description of the game is implemented in the online questionnaire with pictures of our current user interface.

Typical Results:

Target Requirement	Result
Game should be entertaining/ fun/ addictive.(player engagement)	Since this version of game contains only the elevation and the power distribution mechanisms with a few levels. So most participants felt boring when they are playing and finished the game quickly.
Students are able to analyze locations for the best placement of wind turbines.	Since the game lacks a good user interface and the in-game tutorial, some participants couldn't find the terrain information and the power distribution lines. But for those who noticed these information, most of them get the concept that the location of turbines plays an important role in the game.
The student can understand the energy conversion process	We mentioned the game components in the survey. People who noticed this could understand the whole energy conversion process.
Game should give an intuition of real life physics	The commissioners are involved in this test and they think our work is real-life based .
Game should be open-ended	The game is posted online and any one can play it at any time.
Game functionality	● In the questionnaire, there is a place that players can report bugs if they found. We get several responses which need to be fixed next time. ● The in-game tutorial is essential for the whole game. Even though we explained the game in detail in the questionnaire, players still feel hard to start the game. ● The game mechanisms work well expect some small bugs. ● Most players think the user interface is clear.

Depends on these conclusions, we made a plan for our later work:

- Since we have a limited time, we'd better put too much time on the improvement of UI.
- First of all, we need to fix bugs reported by these users.
- Make the useful information more visible, e.g. change the text format.
- Finish the wind turbine design mechanism.
- Try to implement tutorials in the game to ensure they understand the damage of the pumps will get larger as more power can be conveyed to pumps.
- Try to make it possible to add more pumps, turbines and waves of water drops, in order to make players not lose their patience quickly.

4.3 The Third Test

Participants: We want at least 10 target users to participate in this test.
Date: 10th January – 15th January.
Test Method: Online survey. This time, we will ask players questions of the learning objectives

before they play. And after they played the game, at the end of the questionnaire, they need to answer these questions again.

Test Target: Final game.

Instruction: The link of this online game is in the questionnaire and the game tutorial is implemented in game.

Target Requirement	Result
Game should be entertaining/ fun/ addictive.	More than 70% participants rank the game interesting (1-5) as more than 3 in the questionnaire.
All learning objectives.	The participants can answer 70% of these questions easily after playing. Their performance on the questions about wind turbines will get better compared their previous answers to the same question.
Game should be open-ended.	This online game is always accessible online to everyone.
Game functionality	● The whole game is bug free. ● Our improved UI looks nice for players. ● Background sounds are good. ● Players think the tutorial is helpful. ● The in-game functions, such as pause, start and mute, is easy to find.