Report

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Executive Summary

This usability test was performed as per EA's recommendations to uncover the hindrances preventing users from enjoying the game and so EA could reform their product to correct these complications. For this purpose we recruited participants who fit our intended criteria and are interested in taking this usability test. We initially felt the screening went smoothly, though it took longer than expected since we encountered a couple participants that didn't meet our expectations. After the study test, we received positive feedback concerning the various options and characteristics offered during the game. Participants felt accomplishment after defeating Zombie Heroes, enjoyed creating custom decks, getting new cards packs, and enjoyed the animation and gameplay as they combined Fighter cards with Trick cards. Conversely, most participants struggled with tutorial content, interaction design issues, and game terminology.

Introduction

The client for the usability study is EA and our point of contact is Jonathan Bergeron, who is the Games User Researcher. Other stakeholders of this usability test include: Creative Director, two Senior UX designers, possibly a new Producer and the rest of the studio.

According to Jonathan, as of right now about 50% of first time users don't return after the game's tutorial. EA is interested in learning about the cause behind this trend, as well as identifying and solving other issues experienced by users. Therefore, the goal for this product is to keep current and new users engaged in the game even after completing the tutorial. Insights of this usability study will help EA to reach this goal as well as to further improve the user experience.

We used a screener to filter through participants who would fit our criteria and recruited them through several Facebook channels for UWT student clubs. We tested 5 participants who matched our criteria. Upon receiving the results of study, our team analyzed and sorted the data using a combination of two data-sorting methodologies known as the top-down method, which saves times and allows for pre-set categories of data, and bottom-up, which allows categories to emerge. We compared data to see if any participants faced similar experiences or issues and counted the number of occurrences, so we could establish a severity rating for the impact on the user's experience.

Information covered in this report consists of the following:

- Test Plan and Procedures - methodology, study tasks, qualitative and quantitative data, summary of participant's testing environment, equipment, and location
- Users - description of our target user group
- Scenarios - description of scenarios along with correlating tasks
- Top findings - top positive and negative findings organized by scenarios
- Analysis - our team's analysis from the post-task and post-test questionnaires (quantitative and qualitative)

- Recommendations - our team's recommendations for short-term and longer term changes/improvements
- Appendices - a list of testing materials and collected data, labeled for easy access including:
  - screening questionnaire completed for each participant
  - facilitator script
  - consent form
  - pre-study questionnaire
  - post-task and post-study questionnaires completed for each participant
  - data logs from sessions, which also include all data from questionnaires
  - references

Test Plan and Procedures

What happened during the usability test:

The usability evaluation of the Plants vs Zombies Heroes was conducted by Team T.A.L.L. in Tacoma, WA on May 22nd - 24th, 2017.

During the usability evaluation, five participants, matching the user profile, were asked to spend one hour with the mobile game. During this hour, participants:

- Answered pre-study questions
- Read and signed a consent form
- Completed game's tasks as assigned while thinking aloud
- Answered post-task questions concerning the finished tasks
- Answered Debriefing Interview questions concerning the game
- Completed Game Experience Questionnaire in which they rated their overall satisfaction in specific categories

Participants, matching the Plants vs Zombies Heroes user profile, were recruited prior to testing and compensated $10 Starbucks gift card for their time and efforts.

What participants did:

During the usability evaluation, participants were asked to complete 5 scenarios or 'real-life' tasks in the game. The following tasks were identified from our research, advice from our EA confidant, and personal evaluation of the game. They were presented to the participants in the order described below.

#	Task
1	Figure out how to play Plants vs. Zombies Heroes
2	Play a battle against your opponent and win
3	Create a group of cards that will provide a better chance of winning and name it 'Winner'

4	Find out how to get new cards apart from winning a battle
5	Open end play - check out what else you can do in this game

What data we collected:

During this study, we collected the following data and metrics:

Quantitative:

- Questionnaire ratings
- Time on task (within or beyond specific time)
  - Task completion
  - Number of attempts
  - Number of assists
  - Number of successes/partial successes/fails as realized by the user
  - Number of successes/partial successes/fails not realized by the user
  - Rating of participant's understanding and enjoyment of certain features

Qualitative:

- Pathways observations
- Answers to Pre Study Questionnaire
- Answers to Debriefing Interview
- Answers to Post-Task Questionnaire
- Answers to a Game Experience Questionnaire
- Participant's comments/recommendations
- Problems experienced
- Observations of nonverbal behavior
  - Body language
  - Sighing or grunting
  - Facial expressions
  - Visual frustrations

Where we tested:

Following is a summary of the participant's testing environment:

URL of tested game:	https://www.ea.com/games/plants-vs-zombies/plants-vs-zombies-heroes
Game tested:	Plants vs Zombies Heroes
Screen resolution:	1440 x 2560 pixels
Operating system:	Android 4.4

Equipment:

The team used following technical equipment and software:

- Laptops - to take notes/prepare reports, etc.
- Mobile phone (Samsung Galaxy Note 4) - to conduct usability study

- Google Sheets - to take notes during usability study
- Google Doc - to take notes and prepare report
- Lookback - to visually record the the participant during the study

Location:

The team conducted our usability studies in SNO 152 in the TLC library which was reserved prior to study for an hour long session per participant.

Users

There are several target audiences for the product including casual, mid-core and advanced gamers, as well as fans of the PvZ franchise. During an interview, our team learned that for PvZ fans the game seemed too slow seeing as they have grown accustomed to the traditional fast call to action in the original games. Casual gamers are also not supported in this game, because it is too strategic and requires timely involvement. Advanced gamers, on the other hand, are too familiar with turn-based, digital card games and possess knowledge required to successfully play the game, while ignoring most usability issues. Therefore, our target players in this usability study were mid-core mobile gamers. They play more often and longer, compared to casual gamers, though not as much as hard-core gamers. They arrange their game time around their busy schedule and spend anywhere from 6 to no more than 12 hours a week playing mobile games.

Our target group of users possessed the following characteristics:
- enjoy and have prior knowledge in playing turn-based strategy games
- possess mobile gaming experience
- first time users of PvZ Heroes
- interested in collecting in-game objects
- desire for richer gaming experiences (such as animations, sound effects, etc)
- are not PvZ enthusiasts (experienced, fans of PvZ franchise)
- 18 years old and above
- play mobile games at a minimum of 6 hours and maximum of 12 hours a week

Who we tested:

We used a screener to filter through participants who would fit our criteria and recruited them through following facebook channels:

- Women in Computer Science (WICS) club
- HuSCII club
- UX club
- personal facebook accounts

We tested five participants, having the following profile characteristics, who evaluated Plants vs Zombies Heroes.

Audience Type	
User Profile 1	5
TOTAL (participants)	**5**

Mobile Gaming	
6 to 12 hrs. wk.	5
12+ hrs. wk.	0
TOTAL (participants)	**5**

Age	
18-25	5
26-39	0
40-59	0
60-74	0
TOTAL (participants)	**5**

Gender	
Women	4
Men	1
TOTAL (participants)	**5**

Scenarios

Scenario 1: Your friend recommended a mobile game called Plants vs. Zombies Heroes. You downloaded and installed it. Now figure out how to play it.

Task 1: Figure out how to play Plants vs. Zombies Heroes.

Scenario 2: You just saw how to play the game and now want to play and win a battle. Play a battle against your opponent.

Task 2: Play a battle against your opponent.

Scenario 3: You have been trying to win a battle, but haven't been able to. You realized you need a stronger group of cards than your opponents to win it. Create a group of cards that will give you a better chance of winning.

Task 3: Create a group of cards that will give you a better chance of winning and name it 'Winner'.

Scenario 4: Your friend told you there are other ways of getting new cards apart from winning battles. Find out how to get new cards.

Task 4: Find out how to get new cards apart from winning a battle.

Scenario 5: Your friend told you there are other options you can do in this game. Check out what else can you do.

Task 5: Open end play - check out what else can you do in this game.

Findings

Top Positive Findings:
All participants enjoyed one or combination of the following aspects of the game:
- animations
- variety of characters
- graphics
- sound effects
- strategy
- feeling of accomplishment after defeating Zombie Hero
- creating custom decks and getting new card packs
- supporting plants on the field using Fighters with special abilities or Tricks

Top Negative Findings:

Scenario 1

Features	Findings		
	Tutorial Part 1	**Tutorial Part 2**	**Tutorial Part 3**
Card Basics	5/5 struggle adding cards 4/5 don't know what each card does - not aware about ability to read info for each card	0/5 struggle adding cards 4/5 don't know what each card does - not aware about ability to read info for each card	0/5 struggle adding cards 3/5 don't know what each card does - not aware about ability to read info for each card
Types of Cards	5/5 are not aware of the difference between Fighters with special Abilities and Tricks cards	5/5 are not aware of the difference between Fighters with special Abilities and Tricks cards	5/5 are not aware of the difference between Fighters with special abilities Abilities and Tricks cards
SuperPower Card		**3/5** struggled with dragging cards	**0/5** struggled with dragging cards

(Introduced in Part 2)		● 5/5 are not aware of the benefits using it immediately or later	● 5/5 are not aware of the benefits using it immediately or later
Team-Up Ability (Introduced in Part 2)	● **3/5** don't use it properly	● **4/5** don't use it properly ● 3/5 don't know what each card does	● 5/5 were successful in using it and used it for their advantage
Roof and Water (Introduced in Part 3)			● 5/5 were successful in using it and used it for their advantage

- Participants didn't understand that the objective is to defeat the Zombie Hero and were focusing too much on the zombies on the field
- Participants weren't shown they could learn card abilities by tapping them, and as a result were didn't make proper use of their cards

Figure 1. Adding new cards

- Some points were gone over too late in the tutorial; one example being a clear explanation of the turn order which was given in the 3rd part of the tutorial

Figure 2. Turns Tutorial

- Most participants learned how to read card information through accidentally clicking on cards during battles against zombies
- In the first part of the tutorial, every participants dragged new cards instead of tapping them in order to add them to their respective decks
- Participants are unaware of the benefits for using SuperPower cards immediately or later
- Participants are unaware of the difference between Fighters with abilities and Tricks card effects

Scenario 2

Features	Findings
Card Basics	4/5 are not aware about ability to read info for each card (doing it by accident)
SuperPower Cards	**2/5** the participants struggled with dragging cards 5/5 are not aware of the benefits using it immediately or later
Types of Cards	5/5 are not aware of the difference between Fighters with special abilities and Tricks cards
Team-Up Ability	**3/5** participants didn't use it properly

Roof and Water	**3/5** were successful in using it and used it for their advantage

- Most participants didn't the Roof and Water abilities to their benefit properly
- 2 out of the 5 participants didn't use Team-up ability to their benefit properly

Figure 3. Roof and Team Up Abilities

- Most participants were unaware how to read card info or learned about it by accident
- Participants are unaware of the benefits for using SuperPower cards immediately or later
- Participants are unaware of the difference between Fighters with abilities and Tricks card effects

Scenario 3

- One participant did not know if the back arrow would automatic save her deck
- One participant pressed finish for me and when it automatically added cards she was confused what she did to cause it

Figure 4. Custom Deck Screen

Scenario 4

- 1/5 was unsure if pressing the green button with a price of 100 gems on it was the method for purchasing their first new pack of cards, and they also weren't sure if they had 100 gems to begin with
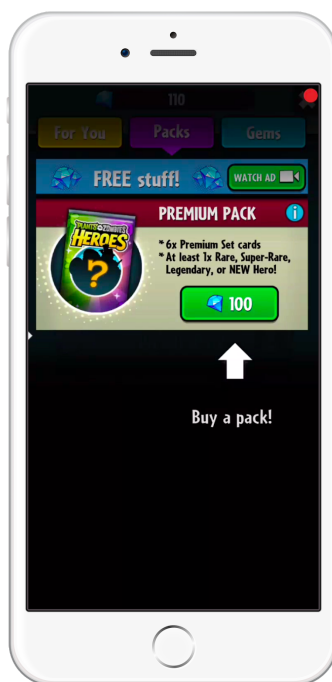

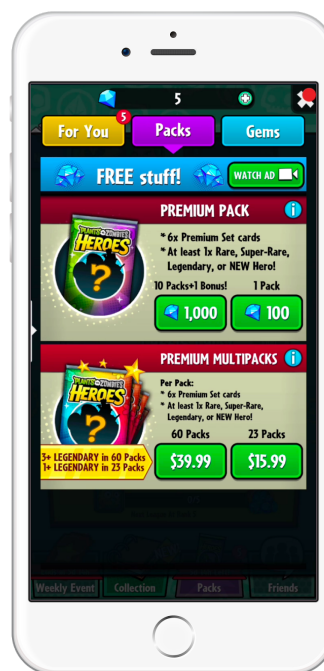Figure 5. Buying card packs tutorial

Figure 6. Buying card packs

Scenario 5

- One participant was unsure of the definition for the word 'Concede'
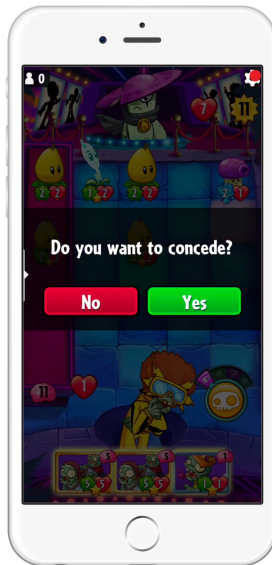

Figure 7. End Game Screen

- Participants were confused with the inconsistency of the back button and the close button; for most of the main menu and game windows the back button (shaped like a back arrow and situated in the lower left corner of the screen) was available for returning to the previous screen, though in some windows it was replaced by the close button (which was a white 'X' situated in the upper right corner of the screen). When using Lookback to record our study, the recording symbol overlapped with the close button which made it even more difficult to notice
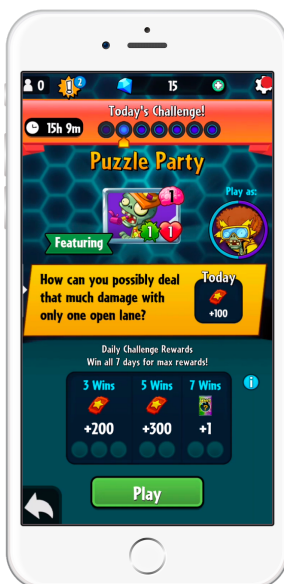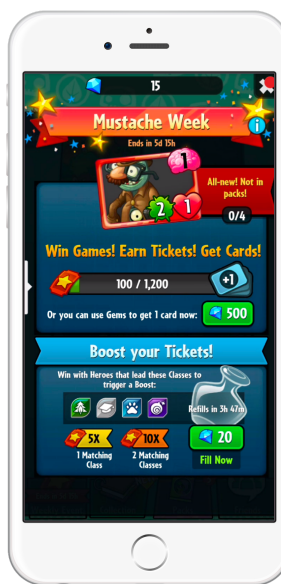

Figure 8. Back Button

Figure 9. White 'X' Button

Analysis

Gaming Experience Questionnaire
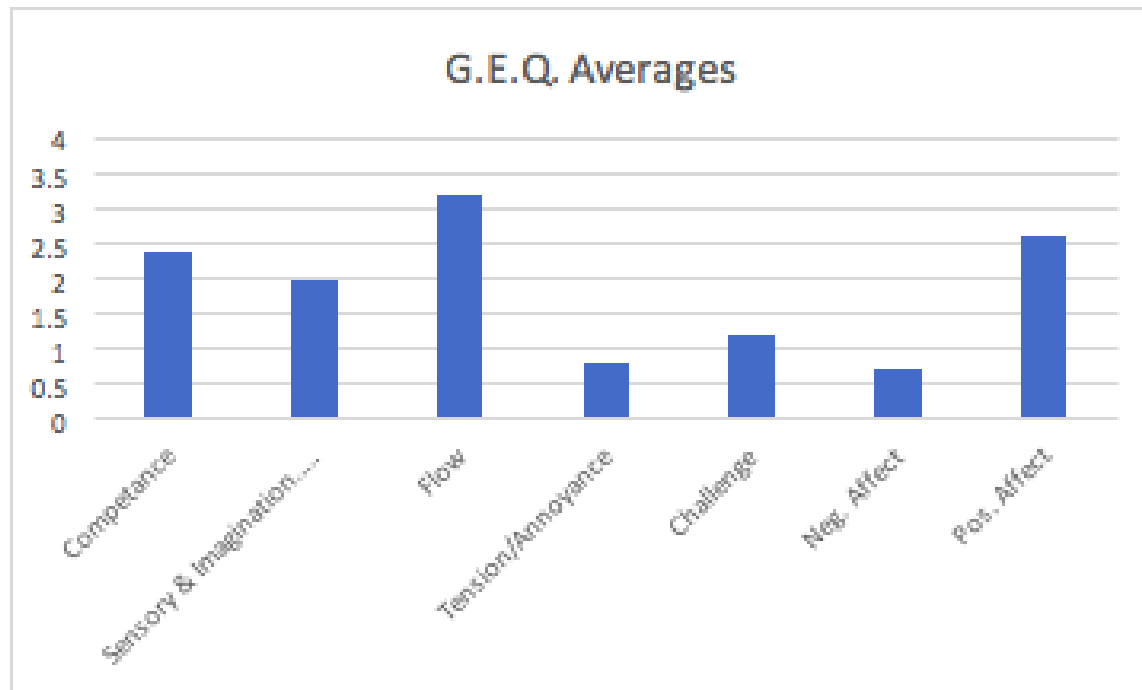
The questionnaire consisted of the following 20 questions:

1.) I enjoyed it
2.) I felt competent
3.) I was interested in the game's story
4.) I thought it was fun
5.) I was fully occupied with the game
6.) I felt happy
7.) It gave me a bad mood
8.) I thought about other things
9.) It was visually pleasing
10.) I felt good
11.) I felt bored
12.) I felt my imagination run wild
13.) I felt that I could explore things
14.) I was quick at accomplishing the game tasks
15.) I felt challenged
16.) I found it impressive
17.) I felt frustrated
18.) It felt like a rich experience
19.) I felt pressed for time
20.) I had to put a lot of effort into it

These 20 questions were divided into the following categories:

a.) Competence: 2,14

b.) Sensory and Imaginative Immersion: 3,9,12,13,16,18

c.) Flow: 5

d.) Tension/Annoyance: 17

e.) Challenge: 15,19,20

f.) Neg. Effect: 7,8,11

g.) Pos. Effect: 1,4,6,10

The purpose of the Gaming Experience Questionnaire was to visually express the averages of the pre-mentioned categories from the entire group of participants in a simplified form. This was out of a total of 4 as shown on the graph. It can be considered a job well done for some categories if the bar for said category is higher, though the opposite can be said for others if they are lower. If competence, sensory and imaginative immersion, flow, and positive effect are represented by taller bar graphs the reviews seem to be more positive, and the same can be said if tension/annoyance, challenge, and negative effect are represented by shorter bar graphs. The opposite can be true if the roles are reversed.

Post Task Questionnaire

Scenario 1

Part 1:

How confident are you with the game play? What do you find confusing?
- 4 out of 5 are confused on what each zombie does and the strategy behind it.

What do you find enjoyable?
- 4 out of 5 participants enjoyed the animations.

Part 2:

How confident are you with the game play? What do you find confusing?
- 5/5 enjoyed strategy, animations and variety of cards.

What do you find enjoyable?
- Some didn't understand that the purpose was to kill the Zombie boss in the back; not the zombies in the front.

Part 3:

How confident are you with the game play? What do you find confusing?
- 4/5 did not feel confident
- 1/5 felt pretty confident
- 1/5 is still confused when do you receive ability to use green shadows super power.

What do you find enjoyable?
- 3/5 participants enjoyed strategy
- 1/5 enjoyed animations

- 1/5 enjoyed getting new packs of cards

Scenario 2

What did you find confusing?
- 2/5 participants didn't understand the terminology during in game battles against zombie heroes opponents. For example the meaning of the suns and zombie tricks was unclear to two participants we observed.
- 2/5 participants didn't understand general game play strategy at first. For example one participant was unclear by the play meter on the bottom right of the screen when it was suppose to be his turn or when he can attack with his plant hero. The second participant didn't understand why you couldn't place more than one plant in a single lane only with special plants could you do this action.
- 1/5 participant thought nothing was confusing after playing against zombie opponent.

Would it be helpful to go back into the tutorial?
- 3/5 participants said that the tutorial was too fast or it would have been easier for them to just learn as they play the game themselves.
- 2/5 participants said that perhaps the tutorial would have been helpful and one of the 2 participants said that it would be helpful if she was willing to read it which she isn't usually.

Scenario 3

How would you describe the steps you took in finishing this task?
- Most of the participants found this is the easiest part because it is just about taking time to add all the cards by keeping click the add button.

What would you find confusing?
- 1/5 thought it would be helpful to include a SAVE button when finishing with a deck since otherwise they are unsure if it is saved and they don't want to have to go back and re-create the deck over again.
- 1/5 did not seem know what she did to add the card to where it is needed to be that she added the random cards and named it then.
- 1/5 did not know what any of the card mean until she clicked on the info which is showing what each the card does and what it provides.
- 3/5 participants found it easily to complete this task, and they wished they could select all the cards if they were able to.
- 2/5 participants found they did not know immediately to name the cards, and it must be confusing if they did not pay attention.

Scenario 4

How would you describe the steps you took in finishing this task?
- 4/5 of the participants found the process simple, though one of them mentioned they found it to be difficult.
- 1/5 listened to Carnie Dave though didn't find any other methods for completing the task.

- 2/5 listened to Carnie Dave and also found that watching ads was another option to finishing task.
- 1/5 watched an ad to acquire more gems to be able to buy more card packs and found that real money or completing puzzles could help with buying card packs. This lead to getting sidetracked playing puzzles since they thought acquiring tickets may be another way to buy packs, though they were unsure. This dragged on for a while as they searched through the menu to make sure all options were exhausted. This participant mentioned 'there was no obvious means for finding alternatives'.
- 1/5 quickly achieved the objective without going any further than listening to Carnie Dave for 1 method to finish the task.
- 1/5 listened to Carnie Dave on acquiring card pack, then proceeded to watch an ad to obtain gems to purchase more packs, looked over using real money as an alternative, and looked over Puzzle Party section, though was unsure if there was a difference between getting new cards and getting new packs.

What do you find confusing?
- 1 participant mentioned the task not being very obvious to complete.

Scenario 5
Explain what you found?
- Weekly events, puzzle party, missions, announcements, etc.
- 1/5 participants kept on track for entire task though wondered why there was no explanation given for doing Zombie Missions.
- 1/5 participants was unsure if the Battle menu led to battles against real players or battles against the CPU and almost got a bit sidetracked into battling players online before finishing this task.
- 1/5 participants fulfilled all the basics and also noticed Zombie Missions were locked, found out how to unlock those missions, checked the specifics of the Quests, tried making another custom deck, almost went off track playing missions and doing battles, and read the specifics of today's challenge.
- 1/5 participants mentioned ads getting the player gems, mentioned Puzzle Party featuring daily challenges, briefly checked weekly events, and checked over Announcements. Got through it pretty quick.
- 1/5 participants looked over Weekly Events, connecting with friends through the game, checked over Collections, browsed through Quests, and read through Announcements.

What do you find confusing?
- 4/5 participants didn't mention anything being confusing, though 1/5 mentioned they found it confusing that zombie missions couldn't be accessed and didn't understand how to make use of the close button.

Debriefing Interview
At the end of the study, we asked participants following 3 questions in order to learn more about their overall experience with this game:
1.) How would you describe your experience playing PvZ Heroes? What did you like? What did you not like? What did you enjoy the most?

2.) If you could give a personality to the app game you just played, what type of personality would it be?

3.) Is there anything you would like to share with us? Is there something you would like more/less of in this game? Any recommendations or concerns?

Our participants gave us helpful feedback such as recommendations, concerns, and what they enjoyed. The purpose of the Debriefing Interview was to learn about their overall gaming experience. We feel like these questions can serve as evidence to further support our proposed recommendations. The participant's responses to these questions also supplement our understanding of common problems and enjoyable aspects of the game. We received two very insightful comments concerning question 2, which we are eager to share with you:

- "Reminds me of grandpa, who loves to tell stories, but takes forever to tell them." - P5
- "Somebody who is introverted because they are trying to hide how to win the games." - P1

We hope that you will find these comments as insightful as we did.

Recommendations

Scenario 1/Scenario 2

- Participants commented on the speed and pace of the tutorial. Separation of the tutorial from missions causes participants to view it as an extensive task that was required to complete. Upon finishing the tutorial, participants seemed exhausted and confused about rules.
- A majority of our participants didn't comprehend the game's objective. The tutorial begins with zombies being introduced, then adding heroes, therefore following along with the story. A zombie is then transformed into a Hero, which acts as an introduction of the Heroes. Since this occurs at a later phase it might cause players confusion as to what the true objective is. Without altering the story our suggestion is to provide clear explanation of the objective.
- After conducting our usability study, we discovered our participants didn't know that cards were separated into two types: Fighter and Trick. Our recommendation is to address these differences.
- Most participants ran into an issue concerning card misuse which could be rectified by understanding how to display card info. Knowing the card capabilities can be vital in deck building and to be successful during gameplay. We recommend highlighting this for players early in the tutorial.
- Structure of the tutorial - some participants were unclear when their turn began during the tutorial. This wasn't explained until Part 3 of the tutorial. Our recommendation is to address it early in the tutorial.
- Team-up Ability- we recommend further testing
- Superpower Card - we recommend including clear explanation of the benefits and further testing for the 'drag and drop' issue.

Scenario 3

- A participant questioned whether her deck got saved once she finished building it. No 'Save Button' was provided and in its place was a back arrow.

Scenario 4

- We recommend further testing.

Scenario 5

- Users showed difficulty understanding what the word 'Concede' means. When trying to exit from a plant mission battle the option 'Concede?' appeared and one of our participants didn't understand the word's meaning. We recommend finding an alternative terminology.

Appendices

Screening Questionnaire

Introduction

Hello, my name is Leah Martin. I am a member of a usability study team at University of Washington Tacoma. Our team is gathering information about a mobile game and looking for people who play games on their mobile devices to participate in the study. The purpose of the study is to see how well the game is working and how it can be improved. The study will be an hour long. It would involve meeting with our team where we will provide you with a mobile phone which you will use to play a game while being observed and answering questions about it.

Would you be interested in participating?

If not interested:

Thank you for taking the time to speak with me. If you know of anyone else who might be interested in participating please have them email me, Leah Martin, at leahm8@uw.edu.

If interested:

I need to ask you a couple of questions to determine whether you meet the eligibility criteria. Do you have a couple of minutes?

Screening:

Occupation/Education

1.) Are you currently working/studying in the field of UX/UI Design, Usability Research, Web Design?

a.) Yes

b.) No

Age

1.) Are you 18 years old?

a.) Yes

b.) No

Cell Phone Use and Plants vs Zombies: Heroes

1.) Do you own a cellphone?

a.) Yes

b.) No

2.) Do you play mobile games?

a.) Yes

b.) No

3.) Do you enjoy playing mobile games?

a.) Yes

b.) No

4.) Have you played Plants vs Zombies: Heroes?

a.) Yes

b.) No

5.) How many hours per week do you play mobile games?

a.) 6 or less

b.) 7-12

c.) 13+

Plants vs Zombies Franchise

1.) Have you ever played any Plants vs Zombies franchise games?

a.) Yes

b.) No

2.) How often do you play any of the Plants vs Zombies franchise games?

a.) More than 3 days per week

b.) 3 or less days per week

c.) A few times per month

d.) Once a month or less

e.) Used to play it often, but not anymore

Types of Games

1.) Have you ever played mobile card games?

        a.) Yes
        b.) No
2.) How often do you play mobile card games?
        a.) At least 5 days per week
        b.) 1-3 days per week
        c.) A few times per month
        d.) Once a month or less
        e.) Used to play it often, but not anymore
3.) Do you play strategy turn-based games?
        a.) Yes
        b.) No
4.) Do you enjoy playing strategy turn-based strategy games?

        a.) Yes

        b.) No

Those are all the questions I have for you.

Scheduling

If participant meets criteria

Your background fits the criteria for this particular evaluation. As a compensation for your time at the end of the usability study you'll receive a $10 Starbucks gift card.

We would like to be able to record the session. The recording will be of your voice and interactions with the game. These recordings will only be used to make improvements of the product and will be shared only with our research team, product team at Electronic Arts(EA) and class.

1.) Do you agree to be recorded during the study?
        a.) Yes
        b.) No

Can you please provide us with your contact information, name, email address and a phone number, as well as preferred times/ways for contacting you. We have a range of sessions to choose from, please take a look and pick one that best fits your schedule:

- Mondays from 4:00 PM to 7:00 PM
- Tuesdays from 10:30 AM to 2:30 PM
- Wednesdays from 4:00 PM to 7:00 PM

This study will take place in the UWT Snoqualmie Building which is located inside the Snoqualmie Library. The campus address is: 1900 Commerce Street Tacoma, WA 98402. Once we reserve the room, we will reach out to you to confirm the appointment and give you room number.

If participant does not meet criteria

Unfortunately, your background doesn't fit the criteria for this particular evaluation. Thank you for taking the time to speak with me.

Facilitator Script

Hello, good afternoon. My name is Adam, and I will be facilitating this usability study today. Before we begin, I have some information for you, and I'm going to read it to make sure that I cover everything. You probably already have a good idea of why we asked you here, but let me go over it again briefly. We're asking people to try using a mobile phone app game that Electronic Arts (EA) is working and the purpose for the study is to see how well the game is working and what can be done to improve it. The session should take no more than an hour.

The first thing I want to make clear right away is that we're testing the game, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes. As you play the game, I'm going to ask you as much as possible to try to think out loud: to say what you're looking at, what you're trying to do, and what you're thinking. This will be a big help to us. Also, please don't worry that you're going to hurt our feelings. We're doing this to improve the game, so we need to hear your honest reactions.

If you have any questions as we go along, I will assist you to the best of my ability. However, keep in mind that we're interested in how well players do without outside assistance. Otherwise, if you have any questions once we finish, I'll try to answer them then. Also, if you need to take a break at any point, just let me know.

I will like to ask you a few questions before we begin the study. These should only take a few minutes.

Give participant the pre-study questions.

Do you have any questions so far? Please take a look at the consent form. With your permission we would like to record today's session via audio capture, which allows us to go back later. And it helps me, because I don't have to take as many notes.

Give them the consent form.

Do you have any questions or concerns?

Begin recording.

Let's begin.

Hand the participant the first scenario, and read it aloud. Watch and take notes of task 1.

Scenario 1: Your friend recommended a mobile game called Plants vs. Zombies Heroes. You downloaded and installed it. Now figure out how to play it.

Task 1: Figure out how to play Plants vs. Zombies Heroes.

Alright. Do you have any questions at this point? Let's begin task 2.

Hand the participant the second scenario, and read it aloud. Watch and take notes of task 2.

Scenario 2: You just saw how to play the game and now want to play and win a battle. Play a battle against your opponent.

Task 2: Play a battle against your opponent and win.

Alright. Do you have any questions at this point? Let's begin task 3.

Hand the participant the third scenario, and read it aloud. Watch and take notes of task 3.

Scenario 3: You have been trying to win a battle, but haven't been able to. You realized you need a stronger group of cards than your opponents to win it. Create a group of cards that will give you a better chance of winning.

Task 3: Create a group of cards that will give you a better chance of winning and name it 'Winner'.

Before going further do you have any questions or need a quick break? Let's begin task 4.

Hand the participant the fourth scenario, and read it aloud. Watch and take notes of task 4.

Scenario 4: Your friend told you there are other ways of getting new cards apart from winning battles. Find out how to get new cards.

Task 4: Find out how to get new cards apart from winning a battle.

Any questions come to mind at this point? Let's begin task 5.

Hand the participant the fifth scenario, and read it aloud. Watch and take notes of task 5.

Scenario 5: Your friend told you there are other options you can do in this game. Check out what else can you do.

Task 5: Open end play - check out what else can you do in this game.

Do you have any questions for me, now that we're done?

Answer any questions or concerns.

There are some post-study questions that note takers and I would like to ask you. I will start first.

Give participant post-study questionnaire

Give participant debriefing interview questions

Open to questions for note takers

Thank you for your time. Your input was greatly appreciated. Here is a thank you gift for participating in this study.

Hand the participant a Starbuck gift card

Have a wonderful day!

Stop the recording.

(Script adapted from Krug)

Consent Form

UNIVERSITY OF WASHINGTON TACOMA

CONSENT FORM FOR PARTICIPATION IN A USABILITY STUDY

FOR PLANTS VS. ZOMBIES:HEROES

Contact: Emma Rose, Assistant Professor, UWT
                Instructor of TWRT 355: Usability Testing and Research
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Student Team: Lola Howell

                Adam Alrashedy

                Thinh Huynh

                Leah Martin

You are being asked to participate in a research study examining Plants vs Zombies Heroes. This consent form provides information concerning the study to help you decide whether or not you wish to participate.

Please read this form carefully. Feel free to ask questions about the purpose of the research or any of the activities. When all your questions have been answered, you can decide if you want to be in the study or not. Taking part in this study is voluntary and you can stop at any time. All information about your participation in this study is confidential.

PURPOSE AND BENEFITS

As part of a class, student researchers are conducting several usability studies to investigate how to improve the design of their product. The results of this study will be used as a learning experience for the students and the data collected today may also lead to design recommendations.

PROCEDURES

As a participant in this study, you will be asked to do one or more of the following:
- do a set of tasks using a product
- think out loud while doing these tasks
- complete a questionnaire
- answer interview questions

The student research team will also be observing your use of the product and taking notes. In addition, you may be videotaped.

RECORDING

We would like to record today's session. The recording will be of your voice and interactions with the game. We will share the recordings with anyone without your permission. Portions of these videotapes may be presented in educational settings or shared with product designers. While your name will not be included in these presentations, someone who knows you may recognize your voice or face.

We request your permission for the research team to use the videotape in the following way:

☐ For the research team to review the results of study
☐ Internal presentations to the product designers or study sponsors
☐ None of the above

Signature of Student Research Team Lead _____   Date _____

The study described above has been explained to me, and I voluntarily consent to participate in it.

Signature of Participant _____   Date _____

(please print name) _____

Pre-study Questionnaire

1.) What kind of phone do you play mobile games on?
2.) Do you enjoy mobile games that contain animation clips?
3.) If you play or played mobile card games, which one is your favorite and what do you enjoy the most in that game?
4.) Which strategic, turn-based game is your favorite?
5.) If you play or played any of the PvZ franchise games, which one is your favorite and why?
6.) If you enjoy collecting objects in mobile games, what kind of objects do you collect?

Scenarios and Post-Task Questionnaire

Scenario 1

Your friend recommended a mobile game called Plants vs. Zombies Heroes. You downloaded and installed it. Now figure out how to play it.

Task 1: Figure out how to play Plants vs. Zombies Heroes.

Metrics:

Success:
- Participant didn't receive any assistance.

Partial Success:
- Participant receives assistance 1 time.

Fail:
- Participant receives assistance 2+ times.

Post-Task Questionnaire

    1.) How confident are you with the game play? What do you find confusing?

    2.) What do you find enjoyable?

Scenario 2

You just saw how to play the game and now want to play and win a battle. Play a battle against your opponent.

Task 2: Play a battle against your opponent.

<u>Metrics:</u>

    <u>Success:</u>

- Participant defeats 1 Zombie Hero
- Participant completes the task on the first attempt.
- Spends 5 minutes or less on the task.
- Participant didn't receive any assistance.

    <u>Partial Success:</u>

- Participant defeats 1 Zombie Hero.
- Participant completes the task on the second attempt.
- Participant spends more than 5 minutes to accomplish the task.
- Participant receives assistance 1 time.

    <u>Fail:</u>

- Participant fails to defeat 1 Zombie Hero.
- Participant completes the task on the third attempt.
- Participant receives assistance 2+ times.

Pathways

- Start on the main dashboard of the game.
- Tap on "Plant Missions" on the top right of the screen.
- Tap green button "Play" on the bottom of the screen.

Post-Task Questionnaire

    1.) What do you find confusing?

    2.) Would it be helpful if you could go back to the tutorial?

Scenario 3

You have been trying to win a battle, but haven't been able to. You realized you need a stronger group of cards than your opponents to win it. Create a group of cards that will give you a better chance of winning.

Task 3: Create a group of cards that will give you a better chance of winning and name it 'Winner'.

Metrics:

Success:

- Participant was able to find the menu location to customize their deck and properly swap new cards with cards that were available originally.
- Participant is able to change the name of the deck of cards to 'Winner'.
- Participant spends no more than 1 minute to accomplish the task.
- Participant accomplishes the task on the first attempt.
- Participant didn't receive any assistance.

Partial Success:

- Participant spends more than 1 minute to accomplish the task.
- Participant accomplishes the task on the second attempt.
- Participant receives assistance 1 time.
- Participant creates custom deck, but can't change it's name to 'Winner'.

Fail:

- Participant unable to create a custom deck.
- Participant unable to change the name of custom deck to 'Winner'.
- Participant receives assistance 2+ times.
- Participant completes the task on the third attempt.

Pathway 1

- Start on the main dashboard of the game.
- Tap 'Collection' on the bottom of the screen.
- Tap 'Decks' on the top right side of the screen.
- Tap a large plus sign titled 'Create Custom Deck'.

    Next

    - Tap 'Finish For Me'.

    Or

    - Tap on any available card.
    - Tap add.
    - Repeat previous until deck is full.

    Continue

- Tap 'Green Shadow #1'.
- Type 'Winner'.
- Tap 'Ok'.

Pathway 2

- Start on the main dashboard of the game.
- Tap on 'Plant Missions' on the top right of the screen.
- Tap on the deck of cards on the bottom of the screen above 'Play' button.
- Tap a large plus sign titled 'Create Custom Deck'.

  Next

  - Tap 'Finish For Me'.

  Or

  - Tap on any available card.
  - Tap add.
  - Repeat previous until deck is full.

  Continue

  - Tap 'Green Shadow #1'.
  - Type 'Winner'.
  - Tap 'Ok'.

Post-Task Questionnaire

1.) How would you describe the steps you took in finishing this task?
2.) What do you find confusing?

Scenario 4

Your friend told you there are other ways of getting new cards apart from winning battles. Find out how to get new cards.

Task 4: Find out how to get new cards apart from winning a battle.

Metrics:

Success:

- Participant got new pack of cards.

- Participant spends no more than 1 minute to accomplish the task.
- Participant accomplishes the task on the first attempt.
- Participant didn't receive any assistance.

Partial Success:

- Participant spends more than 1 minute to accomplish the task.
- Participant accomplishes the task on the second attempt.

- Participant receives assistance 1 time.

<u>Fail:</u>

- Participant didn't get a new pack of cards.
- Participant completes the task on the third attempt.
- Participant receives assistance 2+ times.

Pathway

- Start on the main dashboard of the game.
- Tap "Packs" on the bottom of the screen.
- Tap green button that indicates number of gems needed to purchase the pack.

Post-Task Questionnaire

1.) How would you describe the steps you took in finishing this task?
2.) What do you find confusing?

Scenario 5

Your friend told you there are other things you can do in this game, apart from playing battles against opponents. Check out what else can you do.

Task 5: Open end play - check out what else can you do in this game.

<u>Metrics:</u>

<u>Success:</u>

- Participant is able to find other game features such as news, weekly challenge, daily challenge.
- Participant didn't receive any assistance.

<u>Partial Success:</u>

- Participant is able to find all other features of the game.
- Participant is unable to understand 1 to 2 features of the game.

<u>Fail:</u>

- Participant is unable to find all other features of the game.
- Participant is unable to understand all other features of the game.

Post-Task Questionnaire

1.) Explain what you found?
2.) What do you find confusing?

Post-study Questionnaire

GEQ (Game Experience Questionnaire)

Please indicate how you felt while playing the game for each item, using the following scale:

Questions	Not at all 0	Slightly 1	Moderately 2	Fairly 3	Extremely 4
1. I enjoyed it					
2. I felt competent					
3. I was interested in the game's story					
4. I thought it was fun					
5. I was fully occupied with the game					
6. I felt happy					
7. It gave me a bad mood					
8. I thought about other things					
9. It was visually pleasing					
10. I felt good					
11. I felt bored					
12. I felt my imagination run wild					
13. I felt that I could explore things					
14. I was quick at accomplishing the game tasks					
15. I felt challenged					
16. I found it impressive					

17. I felt frustrated					
18. It felt like a rich experience					
19. I felt pressed for time					
20. I had to put a lot of effort into it					

Debriefing Interview Questions

1.) How would you describe your experience playing PvZ Heroes? What did you like? What did you not like? What did you enjoy the most?
2.) If you could give a personality to the app game you just played, what type of personality would it be?
3.) Is there anything you would like to share with us? Is there something you would like more/less of in this game? Any recommendations or concerns?

Sessions Data Logs

Sessions Data Logs Google Sheet

References

1.) IJsselsteijn, W. A., de Kort, Y. A. W., & Poels, K. (2013). The Game Experience Questionnaire. Eindhoven: Technische Universiteit Eindhoven. https://pure.tue.nl/ws/files/21666907/Game_Experience_Questionnaire_English.pdf
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