WORDSCAPES

How Design and Analytics Keep a Blockbuster Game Growing
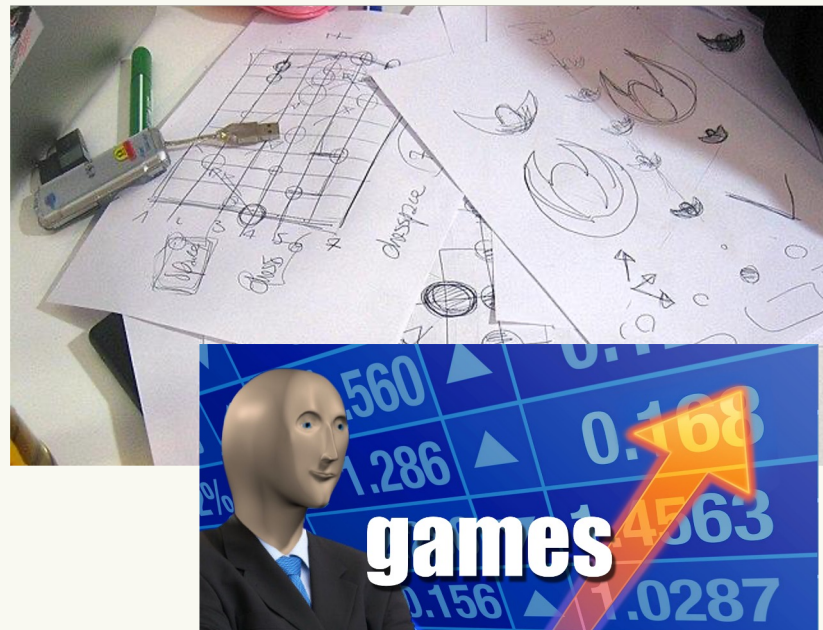
Demmie Apte & Ted McCormick

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Equal Collaboration

Advantages of having Designers and Analysts working closely together:

1. Analysts understand feature designs well enough to independently recommend improvements

2. Designers have the information they need to create targeted designs to solve specific and complex problems

3. Both departments can work together to better understand whether a feature is successful through data, and how to best interpret player feedback

Why is good collaboration valuable?

Examples of what our method has done for us:

- 450% over forecasted LTV impact for a Live-Ops event

- Doubled the IAP of a core metagame and improved the player experience

- Saved one of our most profitable features from being removed from the game

Who Are We?

Demmie Apte

- Sr. Director of Analytics, and Lead Analyst / PM of Wordscapes

- 16 years in games industry in Analytics & Product Management

Ted McCormick

- Lead Game Designer of Wordscapes

- 4 years in games industry in Design

What is Wordscapes in a nutshell?

Wordscapes is a zen-like relaxing word puzzle game
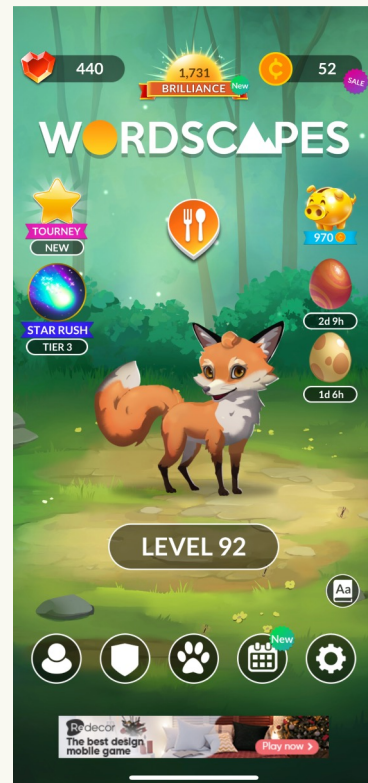
"Think Boggle meets a crossword puzzle"

Mechanics

- Players form words on the word wheel
- The crossword acts as a progressive clue for what words the Player should seek

Players finish puzzles to…

- Earn Brilliance (*high score*)
- Progress Scapes (*backgrounds*)
- Earn Animals / Portraits / Butterflies (*collectibles*)
- Compete in Tournaments / Team Tournaments and Events
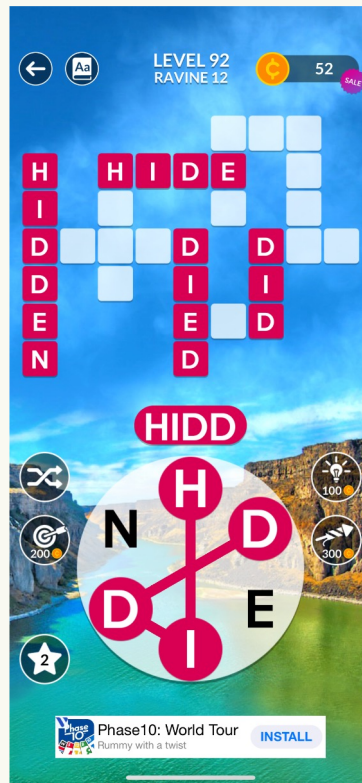
Puzzle   Home screen

WORDSCAPES

Ratings and Reviews

4.9 ⭐
out of 5

- **#1 Word Game in Mobile**
- **235M in Annual Revenue**
- **4M+ DAU**
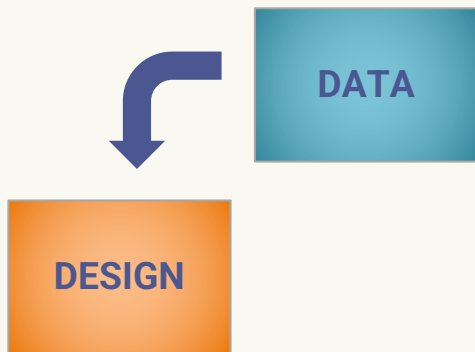- **213M Installs**
- **Celebrating its 6th year!**

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- **Founded 2011**
- **Notable Other Games:**
  - **Word Stacks**
  - **Wordscapes Search**
  - **Bricks and Balls**
  - **Blockscapes**
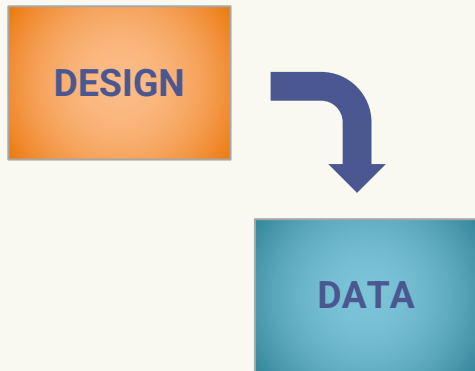 - **… and many more!**

Creative Partnership Examples

Data over Design

- Safer but often less creative choices
- Can hinder innovation
- "Precedent is King"

Design over Data

- Often more creative, but more risky
- Designers making games for themselves
- "Intuition is King"

DATA

DESIGN

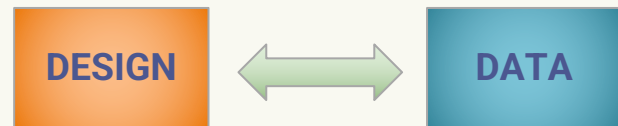DESIGN

DATA

GDC

Our Method

Design and Data as Equal Collaborators

- Mutual value

- Designers and Analysts work together at all points of the development cycle

- Precedent + Intuition = Valuable Innovation

We don't want to focus exclusively on safe incremental changes...

We ALSO don't want to focus on big blind expensive bets...

DESIGN ⟷ DATA

What will they like?

"Are there experiences or opportunities our game doesn't yet provide Players?"

To answer these questions everyone should:
- Play a LOT of games
- Play YOUR game
- Listen to your community

DESIGN PITCH

How can that work for us?

"What KPIs can be improved?"
"What do we need to improve in the product?"

To answer these questions everyone should:
- KNOW what indicates product success for your game
- Study your game's performance DAILY
- Study OTHER game's performance to see what opportunities there are to improve

How Do We Know?

- **Why do we think this feature could work?**
    - Look at similar features in your game
    - Look at similar features in other games
    - Project what success could look like if things go to plan
        - Outcome on KPIs, long-term benefits, etc.

- **How would we know this feature did or didn't work?**
    - Make a plan to AB Test the design to manage elements of uncertainty and risk
    - Use this information to build a plan on how you intend to measure the outcome
    - Post launch monitoring

Equal Collaborators

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3. Both departments can work together to better understand whether a feature is successful through data, and how to best interpret player feedback

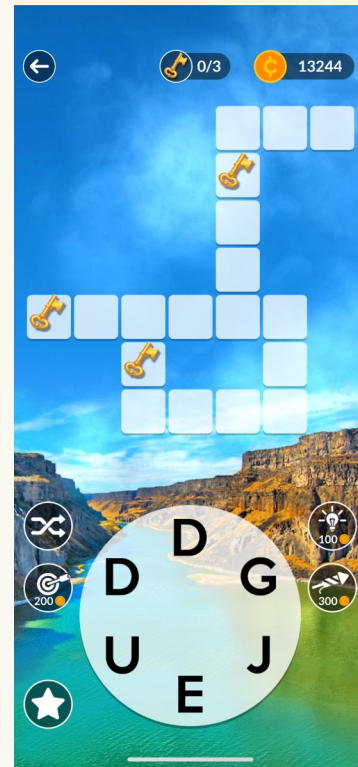# Real Practical Example: Lost Treasure Event

What is it?

- Lost Treasure is a one day event that rewards players for collecting certain amounts of "event tokens" (keys) in game capping in a big top prize.

Feature Goals

- Get Players to play more on Monday

- Make an event where Players can earn prizes for playing levels

Event Screen

Keys on the game board

Why do we think this will work?

- We already have weekly Portrait and Butterfly Events that have a similar core mechanic and achieve similar business goals

- The Portrait and Butterfly Events have been stable and profitable for a long time

  - Easy to project impact: +5-10% AD ARPDAU from increased play on Monday

- Players have expressed a desire to earn more hints and coins for a very long time
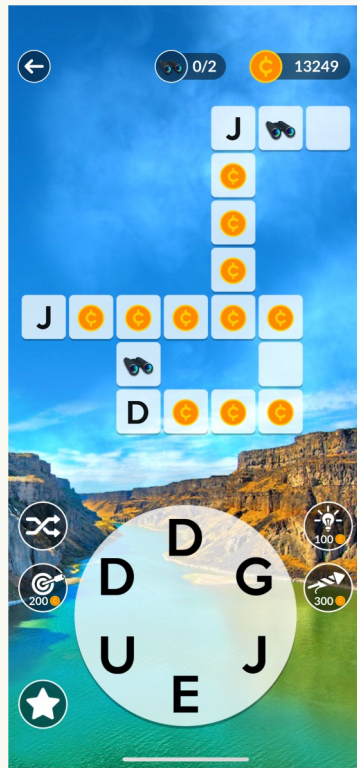
Portrait Events

Butterfly Events

GDC
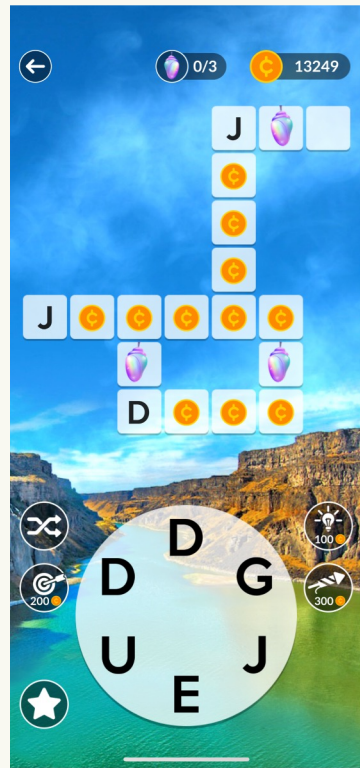
How would we know this feature did or didn't work?

Measure the NEW: How **would** Players engage with the Event, and what do we need to build to capture that?

- How many keys do they have at the end of the event?
- What prize did they get when the event finished?
- Impact on consumable economy

What aren't we sure about, and how can testing help?

- How many levels will Players play?
- What prizes will they work for?
- Could we try a prize we've never given out?
    - Crown Tokens, Bees

Developer theory process visualized
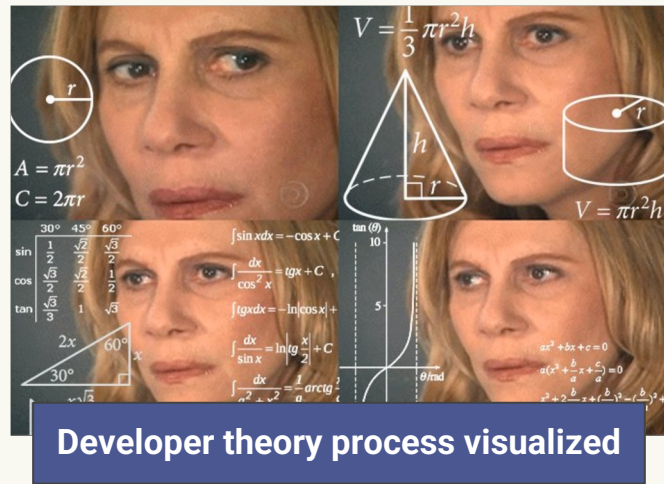
AB Test

This gives us our AB test for the feature…

Test on new and existing players:

- Two different lengths:
  - Long (80 levels) and Short (50 levels)

- Two different prize ramp types:
  - Currency
    - coins and hints
  - Crown Tokens
    - coins and hints with crown tokens

- 4 variants with a control group.

Level Ramp B: Crown Points, Long		
Level Avg.	Keys	Prize
1.4	5	5 coins
4.3	15	3 bees
8.6	30	5 crown points
14.3	50	10 coins
21.4	75	5 bees
31.4	110	20 coins
45.7	160	10 crown points
60.0	210	1 bullseye
80.0	280	15 crown points

Level Ramp C: Currency Prizes, Long		
Level Avg.	Keys	Prize
1.4	5	5 coins
4.3	15	3 bees
8.6	30	10 coins
14.3	50	1 lightbulb
21.4	75	25 coins
31.4	110	1 bullseye
45.7	160	10 bees
60.0	210	75 coins
80.0	280	1 rocket

Level Ramp D: Crown Points, Short		
Level Avg.	Keys	Prize
1.4	5	5 coins
4.3	15	3 bees
8.6	30	5 crown points
14.3	50	5 bees
22.9	80	10 crown points
34.3	120	25 coins
50.0	175	15 crown points

Level Ramp E: Currency Prizes, Short		
Level Avg.	Keys	Prize
1.4	5	5 coins
4.3	15	3 bees
8.6	30	10 coins
14.3	50	1 lightbulb
22.9	80	50 coins
34.3	120	1 bullseye
50.0	175	1 rocket

Then Something Happened...

...Priorities shifted, and we had to shelve Lost Treasure for a year!

In the Meantime:

We continued to measure our other events, and we found something new in the Butterfly Event that impacted Lost Treasure.

- Players were consistently playing a lot more than we expected

- Specifically our top 5% of players were playing between 80 to 120+ levels a day

This meant that our initial ramp design of 50 and 80 levels was far too short and would not capture top player performance

What Design Did About It

- The ramps were ultimately milestones for different levels of player engagement.

- So we modified the tail end of each ramp to stretch to the new final numbers, changing short to 80, and stretch out to 120!

- This allowed the first few milestones to still appeal to more casual players, while saving more extreme changes for population that had a tendency to play far more.
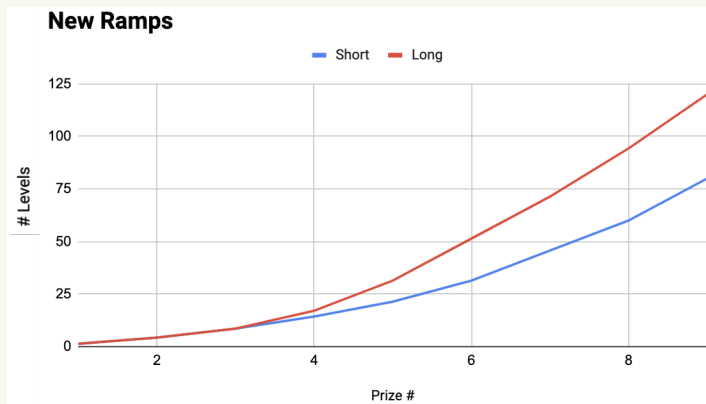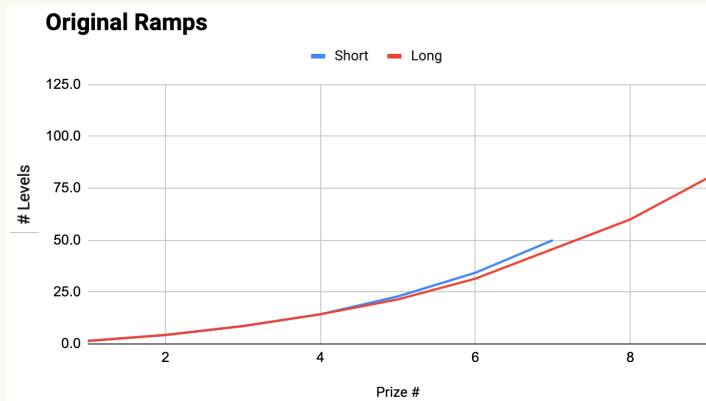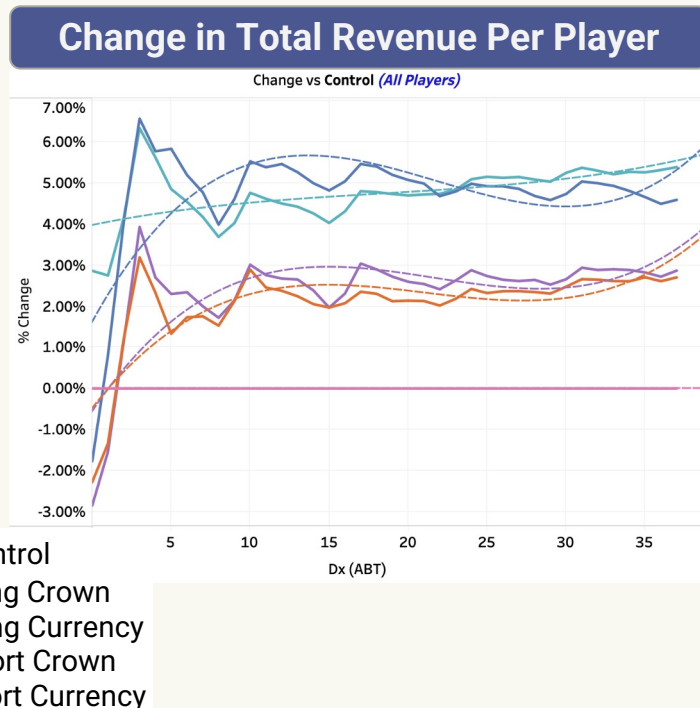
The Outcome

The Lost Treasure Event tested VERY well as all variants produced more levels played and Ad Revenue per player than Control
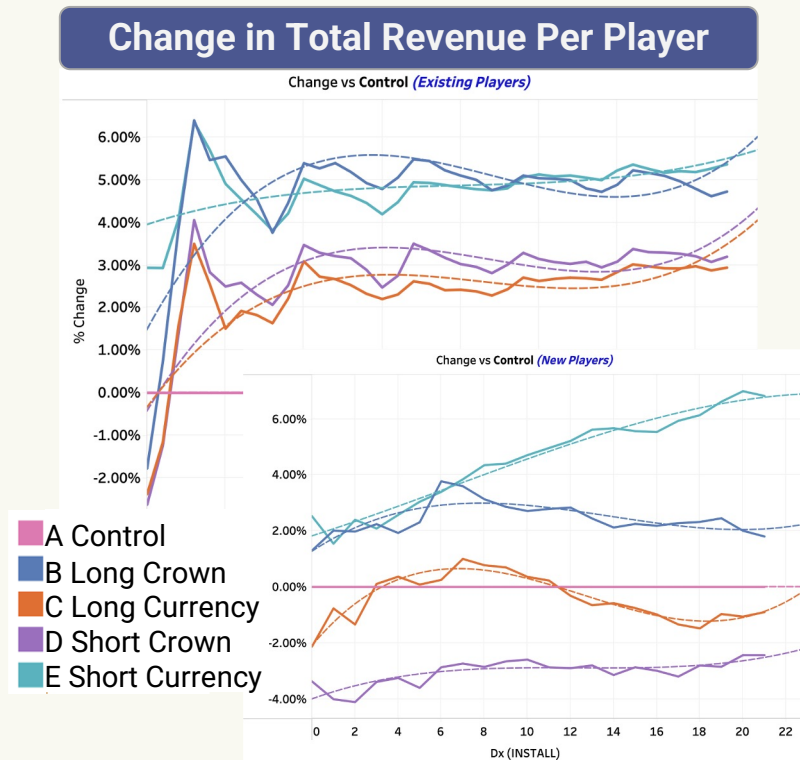
- The Long Crown and Short Currency variants outperformed the other two in AD Revenue per Player

- The IAP Revenue per Player increase really set them apart

So which variant is really the winner?

Change in Total Revenue Per Player

Change vs **Control** *(All Players)*

Legend:
- A Control
- B Long Crown
- C Long Currency
- D Short Crown
- E Short Currency

New and Existing Players Value Different Things

- Existing Players engaged most with the Long Crown

- New Players had lower engagement with both Crown variants

- New and Existing Players had high engagement with Short Currency and lower engagement with Long Currency

Change in Total Revenue Per Player

Change vs Control *(Existing Players)*

Change vs Control *(New Players)*

A Control
B Long Crown
C Long Currency
D Short Crown
E Short Currency

IAP Increases as an Aside

- *Players ended up buying bundles and coins during and after the event!*

- Why do we think they did so?
    - First Time Exposure
    - Providing access to earn consumables in a otherwise tight economy created goodwill

- End result:
    - 9% IAP increase for existing, 16% for new Players, with many purchases being first time conversions.

This drink, I like it.

Another!
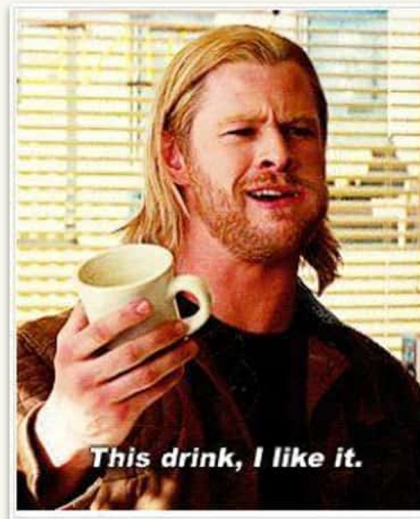
Recommendations for Your Studio

Designers and Analysts should work together on designs from the outset!

Because I knew the design, I was able to make recommendations even after the pivot based on relevant data

Studio Best Practices

AB Testing tools with a Data warehouse that supports big data

- Ability to test features on smaller audience to tune for wide release

- Having comprehensive event-driven gameplay data allows for more actionable insights

AT LEAST: Build your games and features to have analytics that allow you to:

- Track key data rather than comprehensive data if storage is a problem (daily players and some progression measure)

- Remember: Some data for a short period of time is better than no data!
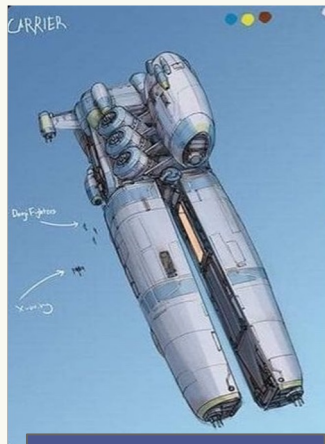
Desire

Budget

Equal Collaborators

*Advantages of having Designers and Analysts working closely together:*

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    ● *450% increase over projected LTV impact for the Lost Treasure Event*

2. **Designers have the information they need to create targeted designs to solve specific and complex problems**

3. Both departments can work together to better understand whether a feature is successful through data, and how to best interpret player feedback

Practical Example: Wordscapes Wildlife

- Our Wordscapes Wildlife feature is a new meta to collect animals by buying eggs

- Timed activities with Animals reward players with prizes including LiveOps event tokens

- The primary control is an energy / sleep system, where animal activities are finite, triggering a sleep period to recover their energy

  - Limiting activities limits daily rewards

  - There was no idle energy regeneration

  - There was no way to spend to bypass sleep
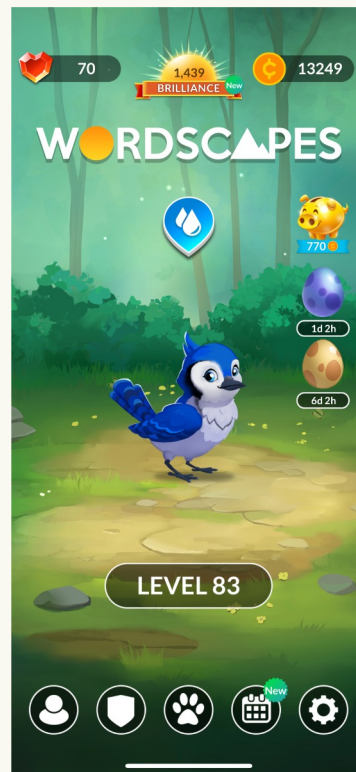
What is the goal?

What did we want Wordscapes Wildlife to do?

Create something that Players can invest in that is:

- Fun to collect

- Provides Players with benefits for spending coins

- Becomes better the more you invest

What did we expect?

- **More AD revenue** from players collecting resources by playing levels

- **More IAP revenue** from players sinking coins into their animals and buying more

- **Higher long-term retention** from a new more engaging game metagame
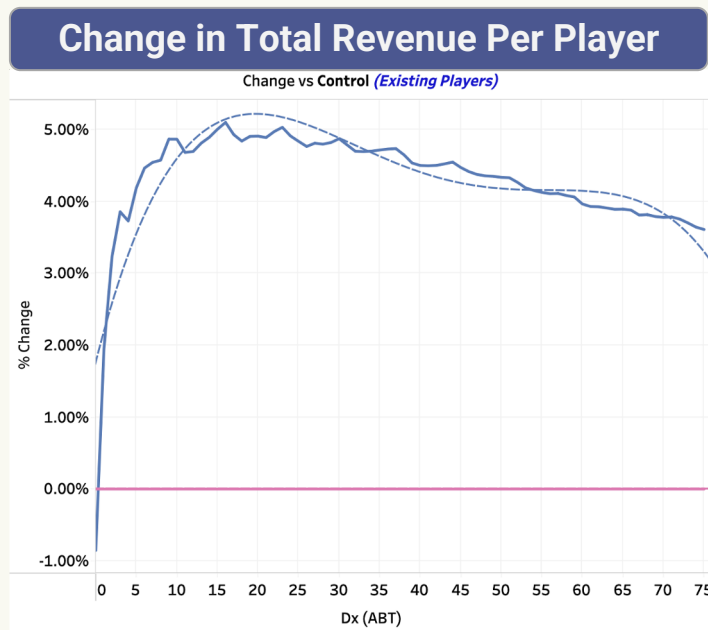

COLLECT ALL THE THINGS

The Outcome

We did a simple A/B test

At a glance, everything we set out to achieve worked.

- AD Revenue per Player was up 4%

- IAP Revenue per Player was up 7%

- Not a huge impact on new Player retention due to how late the feature was unlocked (level 37).

Seemed positive, but something was off…

Change in Total Revenue Per Player

Change vs **Control** *(Existing Players)*

The Sleep Plateau

Due to the finite number of animals available initially, spenders often ended up in a bottleneck where all or most of their animals were asleep very early in their collection experience

Players who did this were less likely to spend coins to speedup again, and some stopped engaging with the feature

Lesson learned: ***Protect the payer experience***

Depicted: A Player and their Wildlife Collection

Was this Unexpected?

We projected that the sleep / energy system might be a risk as it could stifle spend and engagement.

- Long term spend might be stifled if all animals were asleep for a player

- There was a higher risk of this early in the collection when players had fewer animals

- We anticipated that players would be able to attain new animals faster than they would fall asleep

Players were playing with their animals way more than we thought.

All or most animals were asleep in the first 24 hours!

So what did Design do about it?

Solutions were multi-faceted:

- Waking up the first animals to sleep if all animals were asleep
  - *All animals can not be asleep at the same time*

- Increased energy and shorter sleep timers for all animals
  - *Animals go to sleep less often, and sleep less overall*

- Giving players several high energy animals early
  - *Making it expensive and difficult to have all animals sleeping at once*

before coffee

after coffee

Second Test

Increased overall engagement with the Wildlife feature, and a full breakthrough of the Sleep Plateau!

This doubled our IAP Revenue per Player from 7% to 14%!

But it was 7%? Weren't you happy?

The data suggested there were still issues to resolve, and therefore potential opportunity cost for doing nothing.

We wanted to see not only a revenue increase, but continued investment in the feature over time

- This intended behavior is what raised a yellow flag from analysts to suggest we keep optimizing the feature before full rollout

- If we rolled out with this issue, too many opportunities for bad impressions may kneecap the feature for existing users

Recommendations for Your Studio

Because of our collaboration we knew in advance what to look for, we were able to see problems early and make quick targeted improvements.

Tracking the sleep impact

Studio Best Practices

- Collect events based with an open-ended framework centered around the specific functionality

    - "Dynamic Warehouse" with ETL vs a "Rigid Warehouse Model"

    - This allows for player behavior to answer known questions **but also unknown questions** you wouldn't have until after the test is run

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   - *450% increase over projected LTV impact for the Lost Treasure Event*

2. Designers have the information they need to create targeted designs to solve specific and complex problems

   - *Doubled the IAP of our Wordscapes Wildlife feature*

3. **Both departments can work together to better understand whether a feature is successful through data, and how to best interpret player feedback**

Practical Example: Star Rush

What is it?

- Star Rush an event that runs alongside our Crown Tournaments, giving Players more Stars if they beat levels within 3 minutes.

- Every subsequent level completed in 3 minutes increases the Player streak, giving more and more stars.

- Upon losing their streak, Players need to pay coins to keep it.

Feature Goal

- Provide a challenge for competitive users

- Increase IAP Revenue on Tournament Days by introducing a coin sink.
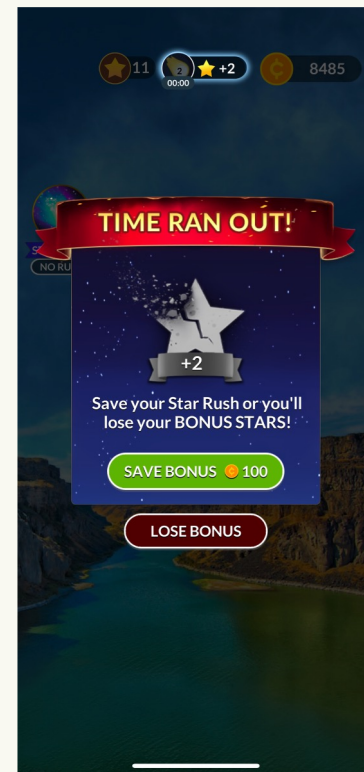
Outcome of Testing

- **What we expected**

  - There could be some backlash from introducing a soft loss state in Wordscapes

  - Competitive Players will overall enjoy the challenge and respond positively

- **What happened**

  - There was *A LOT* of backlash from this feature in community posts

Vibe we hoped for...


Vibe we got
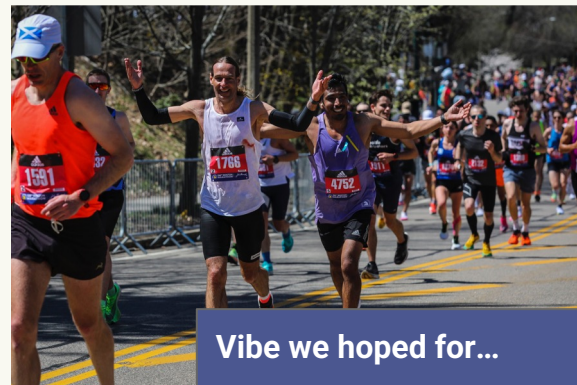
Player Feedback and Player Data

In initial testing, Star Rush was very profitable, however…

- The volume of negative Player feedback was far above average.

- Our stakeholders were worried and this reduced their confidence in the feature

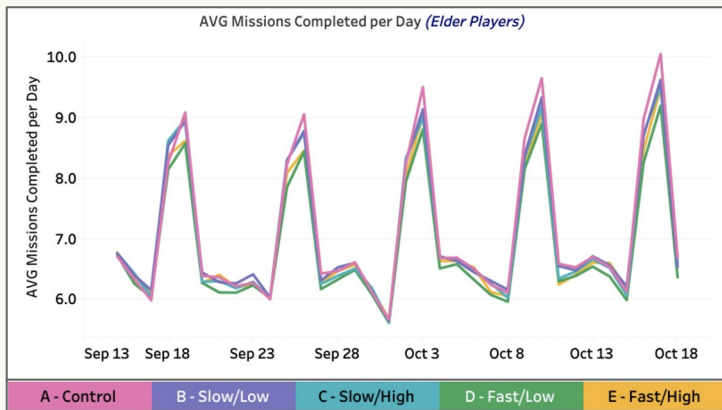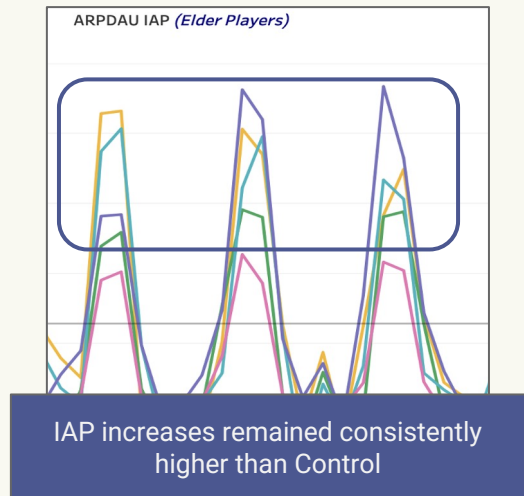## *So how did we handle this issue?*

We dug deeply into the available data to get some answers:

1. Do Players not enjoy this?

2. Are Players playing any less?

3. Is the feature too confusing?

Down the rabbit hole
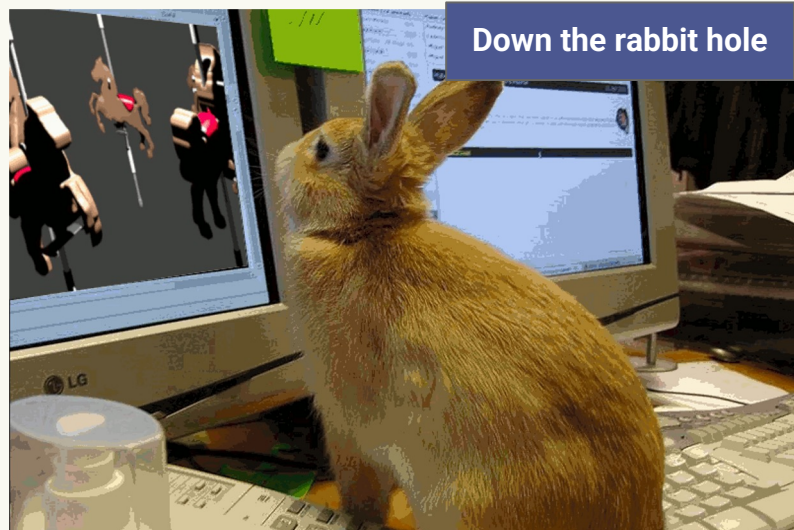
The Outcome

- *Do Players not enjoy this?*

  - Participation rates in Tournaments week over week remained steady and IAP spend increased

- *Are Players playing any less?*

  - Levels played during Tournaments week over week remained steady and increased for the most casual

- *Is the feature too confusing?*

  - Players were only paying to save their streak at the top tier with the best value proposition

ARPDAU IAP *(Elder Players)*

IAP increases remained consistently higher than Control

AVG Missions Completed per Day *(Elder Players)*

| A - Control | B - Slow/Low | C - Slow/High | D - Fast/Low | E - Fast/High |

Recommendations for Your Studio

By modeling player behavior through data, we were able to save one of our most profitable features for Wordscapes

Studio Best Practices

- Data can paint a very different picture than Player feedback. You really need both to understand the truth behind how your product is performing

- This does NOT mean disregard Player feedback. Just acknowledge that Player feedback is another data point among many

- Keep checking in on your features!

    - We just did a full analysis of the feature 6 months later, and it's still performing strong

The Comments

The Data

Collaboration is Key

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2. Designers have the information they need to create targeted designs to solve specific and complex problems

   - *Doubled the IAP of our Wordscapes Wildlife feature*

3. Both departments can work together to better understand whether a feature is successful through data, and how to best interpret player feedback

   - *Saved Star Rush from unnecessary annihilation*

We hope you found these examples helpful, and enough to convince you to have your design team work closely with your analytics team throughout production!

Good Bye!