Usability Evaluation: Expert Review

An Analysis of Pokémon Go

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1) What interface did you choose to evaluate? Why did you choose to evaluate it? What are specific aspects of the interface that you hope to learn more about?

In today's digital market, thousands of apps compete to offer solutions to our needs. Some apps help us by offering essential services, while others provide endless hours of entertainment. For my usability evaluation, I wanted to explore a popular app that I have previously used and that has been a source of both joy and frustration in the past. Ultimately, I decided to analyze the popular mobile game Pokémon Go.

Launched in 2016, Pokémon Go offers players a hybrid 3D and augmented reality gaming experience that utilizes both haptic and motion-based inputs. The game builds on a long-running franchise about an alternate world inhabited by creatures called Pokémon. Players get to take on the role of a "*trainer*" by exploring the world and capturing these creatures, pitting them against each other in "battles" and ultimately aiming to collect them all (a whopping 1,015 Pokémon exist today).

I have played Pokémon Go on and off for several years. The game provides ample fun, but at times can prove extremely frustrating. The game occasionally promotes events that require a substantial amount of play time or in-game effort to receive a substantial reward. However, the application likes to crash at the end of these grinds without applying the reward, leaving players feeling like they have wasted a large amount of their time. New players to the game will likely notice that Pokémon Go lacks a lot of basic tutorials. In my personal experience, I learned how to play entirely from other players or online blogs.

The Pokémon Go interface uses a wide variety of colors, icons, menus, and animations. It integrates directly with Google, allowing you to view the Pokémon universe and everything in it as an overlay to the Google Maps application. Menus within the game use a mixture of common terminology and words unique to the Pokémon world. I think the relative complexity of Go and diversity of its in-game content make the app well-suited to an evaluation using Nielsen's usability heuristics. Pokémon Go excels at using language that players can understand (*Match Between System and the Real World)*, using consistency in word choice (*Consistency and Standards)*, and using minimalistic, clutter-free screen layouts (*Aesthetic and Minimalist Design*). However, it struggles more with providing tutorials (*Help and Documentation*), using accelerators (*Flexibility and Efficiency of Use*), and providing useful system statuses or error messages (*Visibility of System Status*; *Help Users Recognize, Diagnose, and Recover From Errors*).

I am curious to see how Pokémon Go performs within the context of a heuristics evaluation. Experienced Go players engage in many tacit behaviors as they explore the app's many features, so I wonder how intuitive the interface will feel to a complete newcomer.

2) Who would be the typical users for this type of interface? Please discuss their age, computing experience, computing environment, job responsibility, and education level.

Pokémon Go exists exclusively on the Android and iOS mobile platforms, so interested players must have a smartphone to participate. Although Game Freak and Nintendo have historically marketed the Pokémon franchise and its handheld games predominantly toward children, users of any age, career, educational background, or other demographic can play if they have the necessary hardware for a particular game. However, users do need to have some degree of competency with using smartphone apps, including familiarity with interactive gestures (swipes, taps, etc.). The game also lacks common accessibility features, so players will need good hand-eye coordination and the ability to distinguish between colors. Pokémon Go follows a freemium business model; players can

download the core game and access most game content without investing real currency, and most items can be purchased with in-game currency that players accumulate over time.

Since the premise of Pokémon Go largely follows the same storyline seen in other Pokémon games from the past 20 years, the game may initially appear more accessible to long-time fans of the franchise than to new players. However, Pokémon Go re-envisions many of the core game components in brand new ways, making it a new experience for both seasoned veterans and newcomers to the series. Extant knowledge of some game elements such as Pokémon type relationships may provide experienced players a leg up, but new players won't be missing out if they've not followed the Pokémon story throughout its many previous games/generations.

3) Briefly describe some common tasks a user would perform using the interface including the task goals. Indicate which tasks you will be exploring with the evaluations and which you will not (e.g., not collecting personal health or financial information).

As players explore our world and progress through the virtual world of Pokémon Go, they will encounter a variety of different Pokémon. Whenever a trainer sees a new Pokémon, the game records a silhouette of that Pokémon's image in an in-game encyclopedia called the Pokédex. Once the player catches that species for the first time, the full Pokémon image appears.

The following list includes a selection of the core elements of exploring the Pokémon Go universe. Each of these tasks helps the player toward the ultimate goal of catching all 1,015 Pokémon and revealing the full images of every Pokémon in their Pokédex. This study will evaluate player tasks that (a) require no real-world currency, (b) can be accomplished without any substantial game progression (i.e. shortly after creating an account), (c) do not require additional players, and (d) do not require walking more than a few hundred feet.

Catching a Pokémon:

Upon opening Pokémon Go and creating an account, players will see the main interface for the game, which shows their avatar superimposed on what looks like an alternate version of Google Maps. As the user moves around the real world, they will see Pokémon spawning in the virtual world that they can catch to add to their collection. To catch a Pokémon, the user taps it to enter the secondary catch screen. The new interface shows the animated Pokémon, along with its name and a numeric rating. A hopping ball and several other icons and numbers appear on various parts of the screen. New Pokémon Go players can begin their quest of catching Pokémon within the first few minutes of playing, so the analysis will include this task.

Spinning a Stop or Gym:

Select landmarks in the real world appear in the Go UI as Pokéstops or Pokémon Gyms. Tapping one of these elements leads the user into a secondary Pokéstop or Gym screen, where they can flick a spinner to collect rewards. Players do not control which locations function as Stops or Gyms, so depending on the player's real world location, there may or may not be one nearby. Since the presence of gyms nearby will vary between players, and player location will vary between testers, the analysis will not include this task.

Reviewing available quests or redeeming rewards for completed quests:

Players can access three distinct menus to view their available quests and other tasks. These menus list the required tasks and the available rewards for completing them. New players can access these

menus, but they may need to play for a short period of time to populate it with at least one quest. The analysis will include this task if the game provides at least one quest upon creation of a new account.

Participating in a Raid:

Raids allow multiple players to team up at select Gym locations to battle, defeat, and catch the strongest Pokémon in the game. Since most raids require at least a few players, this analysis will not include them.

Trading Pokémon:

Trading allows players to share their Pokémon collections with each other. In order to trade, two players must be in close proximity to each other. Since this task requires two players, this analysis will not include it.

Adjusting game settings:

All Pokémon Go players can adjust their in-game settings at any time by tapping the Pokéball icon and then tapping Settings in the secondary menu. This analysis will include an evaluation of the Settings menu. Popular settings to adjust include toggling music and sounds on or off, and enabling Adventure Sync, a feature that allows Pokémon Go to use mobile data and record the user's steps all day long, turning them into passive rewards while they are not playing.

Sending and receiving Gifts:

Players can add other trainers to their Friends List by entering their friend's unique trainer code. After the accounts are linked, each player can send a gift box (collected from a Gym or Stop) from their inventory to the other player. As with trading, this feature requires a minimum of two players, so it will be excluded from the expert analysis.

Figure 1 (a-d): The Go home screen; the catch screen; the interface for a Pokéstop; one menu of the Research screens (quest log)

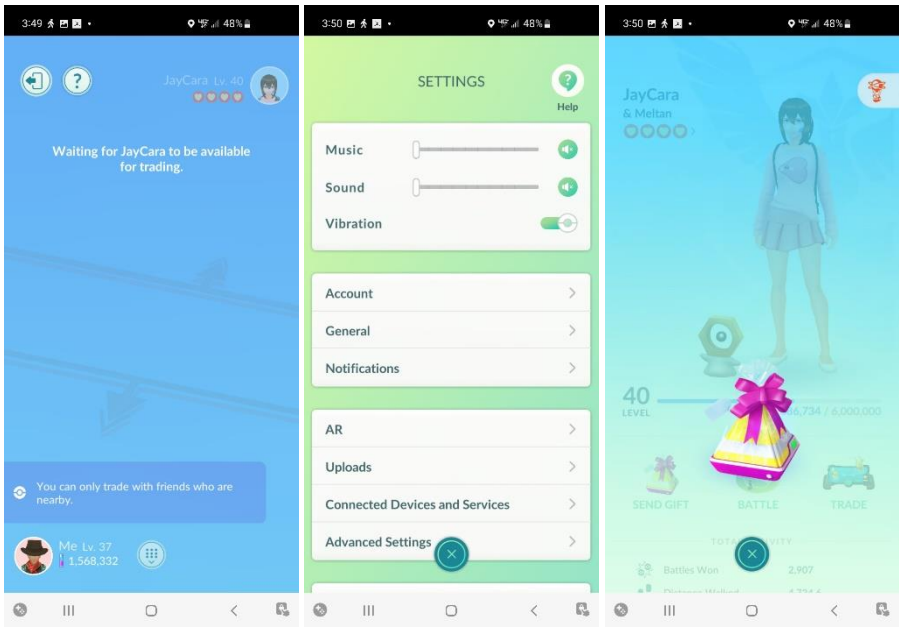

Figure 2 (a-c): Trading in Pokémon Go; the Settings menu; sending Gifts to friends

Figure 3: Uncommon iconography

4) Which set of heuristics did you use for the heuristic evaluation, and why did you choose those?

For my evaluation, I have chosen to analyze Pokémon Go through the lens of Nielsen's usability heuristics. As I reviewed the various heuristics frameworks, I wanted to select one that I felt could best analyze how a user learns a new game. Nielsen's heuristics focus strongly on checking that an interface shares information with the user at the correct times and in the correct proportions. For example, Pokémon Go organizes information within at least 10 distinct menus, and users access them through tapping a variety of icons and symbols. While these clearly simplify the UI and provide a cleaner view of the map screen (Aesthetic and Minimalist Design), they often lack accompanying supporting text. Additionally, many of these icons do not correlate to similar representations in other applications, leaving new users with the task of memorizing which items reside in which menus prior to tapping them (Flexibility and Efficiency of Use).

<u>The Heuristics Analysis</u>

#1: Visibility of System Status

Upon launching the app from the Android or iOS home screen, a user can see a load screen with a progress bar. If the app encounters an error while loading, the progress bar stops and an error message appears. Upon successful launch, the app displays the home screen shown in Figure 1 above. Here, the user can see their profile name at the bottom of the screen, confirming that the game has loaded their saved account information. Looking around the display, the player can see various forms of motion: a pulsing circle under the representation of their avatar, a clock counting down over a nearby Gym, and weather elements such as clouds and falling leaves. Nearby catchable Pokémon have moving animations rather than static sprites. These elements all indicate that the Pokémon Go application is actively running.

#2: Match Between System and the Real World

In Figure 1 above, we see the Pokémon Go home screen. The interface features numerous overlayed icons, such as a kite, a compass needle, and an avatar. These representations serve the same

purpose as in many other applications: the kite represents weather, the compass needle indicates direction, and the avatar represents the user. However, other icons, highlighted in Figure 3, are more ambiguous. What might a new user think a circle with orange binoculars means? Noticeably, the main interface lacks any identifying text beyond the player's screen name and level next to their avatar. Tapping the binoculars opens the screen shown in Figure 1d. At first glance, a player may find this screen disorienting. While the layout follows typical design practices of using underlined headers to denote a tabbed page layout, the header names ("Today", "Field", and "Special") lack clarity to their meaning. When the user looks at the remainder of the page and sees tasks, it becomes clearer that this page is a quest log. While the quest log lacks some clarity, other pages in the app better align with established standards. For example, as seen in Figure 2b, the Settings menu, accessed by tapping a gear symbol with a "Settings" label, features traditional information architecture with sliders, toggles, and sub-menus and common naming conventions, such as "General" or "Notifications" sections.

#3: User Control and Freedom

New Pokémon Go players may initially find themselves struggling to find the features they want buried in its many different menus. However, the layout demonstrates consistency of navigation by using two symbols throughout the app to function as back buttons. Nearly all menus outside of the main exploration screen feature an X button in at the bottom center of the screen to close the current window. Although the button varies slightly in color depending on the screen, its location remains constant. On screens that use the game's AR features, a symbol resembling a rectangle with a back arrow in the upper left corner of the screen takes the place of the X.

#4: Consistency and Standards

Figure 4b below shows the Friends menu within Pokémon Go. We can see at the top of the screen that this layout uses terminology consistent with other Friends Lists: an on/off toggle to control whether the user is online, an option to add a friend, a button to send an invite, and a search function. The developers have streamlined many of the other menus in the game such that section headers appear only once to avoid confusion. For example, the word "Items" only appears in two places: the link to the Items page shown in Figure 4a below, and at the top of the Items page. By reducing the number of recurrences of a piece of text within the app, the user is unlikely to question whether they represent different things on different pages.

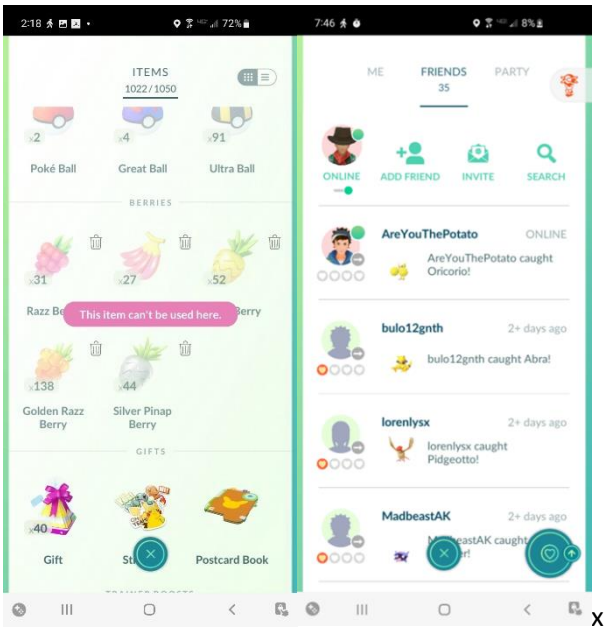

Figure 4 (a-b): The Items and Friends screens

#5: Error Prevention

Another clever example of error handling in the app is the Items inventory menu. Some items in Pokémon Go can be used at any time, while others only function in the context of specific gameplay elements (for example, while catching Pokémon). In Figure 4a, we see that when tapping one of the Berry items, the game generates an error message that the item cannot be used. Upon closer examination of the page design, we can see that some items use full color, while others appear to be greyed out. This indicates to the user that only the brightly colored items can be used, but it does not indicate why the other items cannot be used.

#6: Recognition Rather Than Recall

Pokémon Go uses a variety of designs to aid the user in recalling information stored in separate layouts. For example, when the player wants to search for Pokémon in their collection, the game allows you to apply multiple filters simultaneously. When displaying the results, the filter criteria remain visible in the search box above the results list.

Another popular element of the Go app is player participation in “Pokémon battles.” When taking part in a Pokémon battle, the user fights another player (human or AI) in a sort of duel in which each player may use three Pokémon. Each Pokémon gets a health bar, and the match ends when all three of one player’s Pokémon’s health bars reach zero. As part of the battle, a player may swap between Pokémon if a health bar is getting low. To help players to remember the amount of health remaining on each of their individual fighters, the UI for battles shows a small representation of the trainer’s inactive Pokémon and their remaining health.

As with most apps, however, the game design does not do everything perfectly. During Pokémon battles, each Pokémon has assigned types, and each type performs better or worse against each other type. When the user plays a Pokémon battle, the game displays symbols that indicate each Pokémon’s type. However, it expects players to have memorized the type relationships to know which types will fare best in each battle.

#7: Flexibility and Efficiency of Use

On many modern websites, top-level menus remain visible on toolbars throughout the navigation process, allowing the user to jump from one part of the website to another at any time. Pokémon Go does not feature many accelerators in its app structure. Most menus are separate from each other and organized using hierarchies that branch out from the main exploration interface. In order to jump from one submenu to another, players typically have to repeatedly press the X button to navigate back to this screen before navigating to the second menu. Figure 5 shows a screenshot of Amazon.com, which allows a user to navigate directly from the current “Pet Supplies” page to the “Home Improvement” page without needing to go through the homepage first.

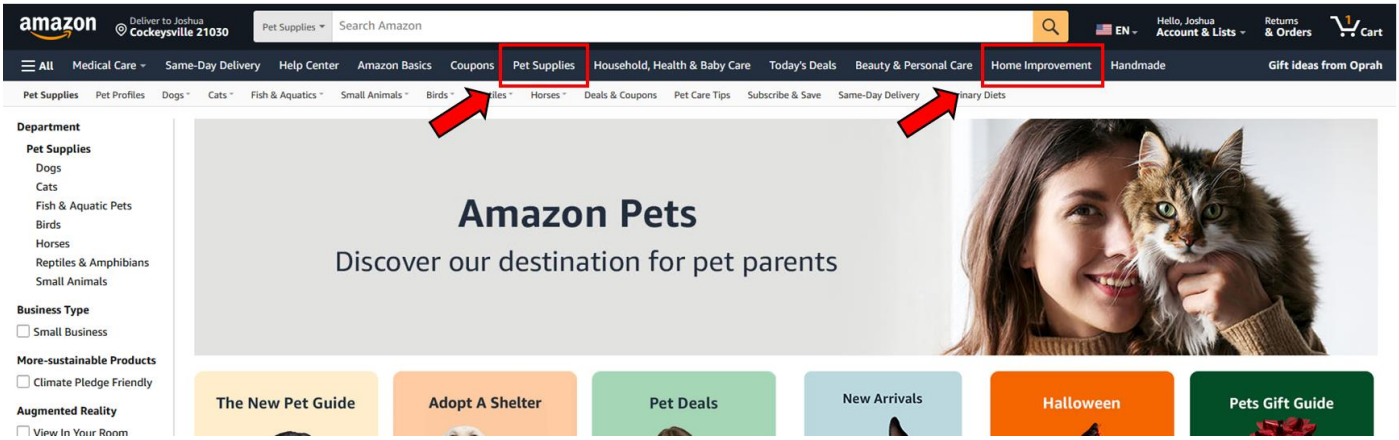

Figure 5: Amazon makes links to their top-level pages visible from most other pages on the site.

#8: Aesthetic and Minimalist Design

The main exploration screen in Go consists primarily of open space. This gives the user a better view of the surrounding environment as they use it to explore, complete tasks, and identify Pokémon as they appear. Interactive buttons are small relative to the overall screen size and kept to the edge of the screen to avoid overlap with the map.

As a counterexample, the user profile page contains a huge variety of symbols, text, colors, and interactive elements within a single large scrolling list. This increases the amount of time required for the user to locate information if they have not previously explored and familiarized themself with the page.

#9: Help Users Recognize, Diagnose, and Recover from Errors

Unfortunately, Pokémon Go error messages tend to be hit or miss on communicating information in a clear way. In the example below (Figure 6), a user sent an invite to player JayCara to begin a Pokémon battle. After navigating through several selections and indicating readiness, the user can see a screen with a status message correctly indicating that JayCara has not yet indicated her readiness. However, it turns out that JayCara cannot see this invite unless she currently has the Pokémon Go application open. If the user selects the option to cancel the battle invite, they receive an error message indicating that JayCara cancelled the process, when in fact she may have never seen the invite at all.

Many errors generated by Pokémon Go will indicate that a problem exists without suggesting a root cause or suggesting a solution. For example, in Figure 6b below, the user has attempted to log in to the application while airplane mode is enabled on the smartphone. The error code indicates that the game failed to load, gives no indication that the root cause is related to the network connection, and provides extra unrelated information about the user’s account.

#10: Help and Documentation

Pokémon Go's individual screens are inconsistent in their use of tutorials. For example, a new player opening the home screen for the first time would need to start tapping and exploring the application to learn what the different buttons do and what the different interactive elements represent. Some menus do feature a short Help topics window, denoted by a circle with a question mark as shown in the "Machop raid" in Figure 7.

However, the app makes some Help symbols easier to find than others. Figure 11 shows three examples of embedded support menus on different screens for the Buddy, Route, and Eggs features. Notice how they vary significantly in size and thus noticeability.

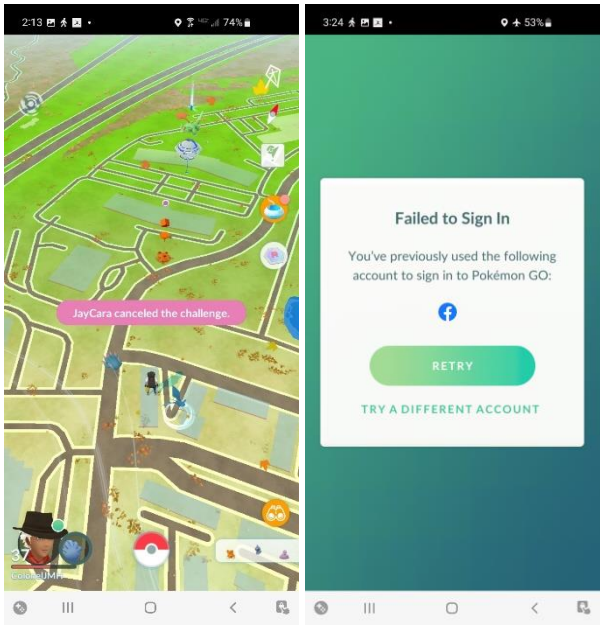

Figure 6 (a-b): Error messages in Pokémon Go.

Figure 7: Error messages in Pokémon Go.

5) From the results of the expert review, what interface problems did you discover? What suggestions do you have to improve each of these problems? Be specific as to which heuristic helped you discover the needed improvement.

The below examples highlight several interface problems discovered during the analysis of Pokémon Go.

During the examination of the app's error handling methodology (heuristic #5), it was noted that the items menu uses different types of color shading to indicate which items can be used from that page of the app. However, if the user attempts to use a greyed-out item, they are not given any additional information about where they can use it. One possible solution would be to use a "More Information" submenu linked to the dialogue box that shows the error. As shown in the proposed alternate structure below, this button would open a secondary menu that gives additional information about the item.

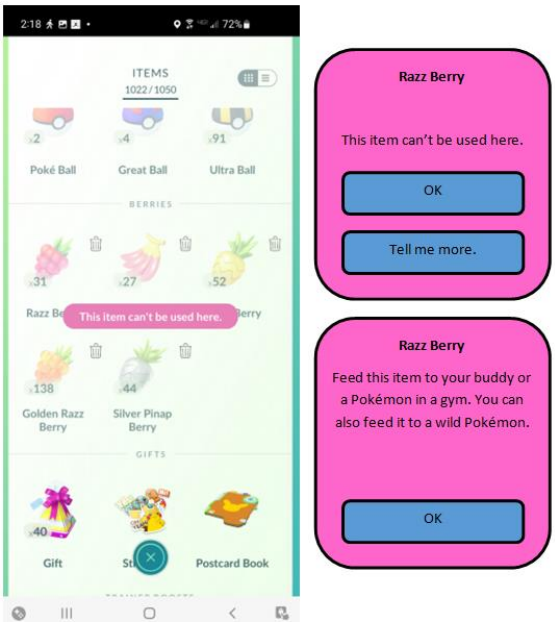

Figure 8: At left: current error message for items that can't be used from the inventory screen. At right: Proposed alternative error message structure, which offers a secondary "Tell me more" option to explain where the item can be used.

While reviewing the game's interface screen for Pokémon battles, I noticed that the game forces players to memorize the Pokémon types and counters (heuristic #6). In the below screenshot, we see that the game indicates both the player's and the opponent's Pokémon type, but there are no symbols to indicate what type the player should use to gain an edge. One option would be to add a tutorial screen in the game that shows a table of the counters by type. Alternatively, the info box about the opponent's Pokémon could be modified with symbols to suggest counters.

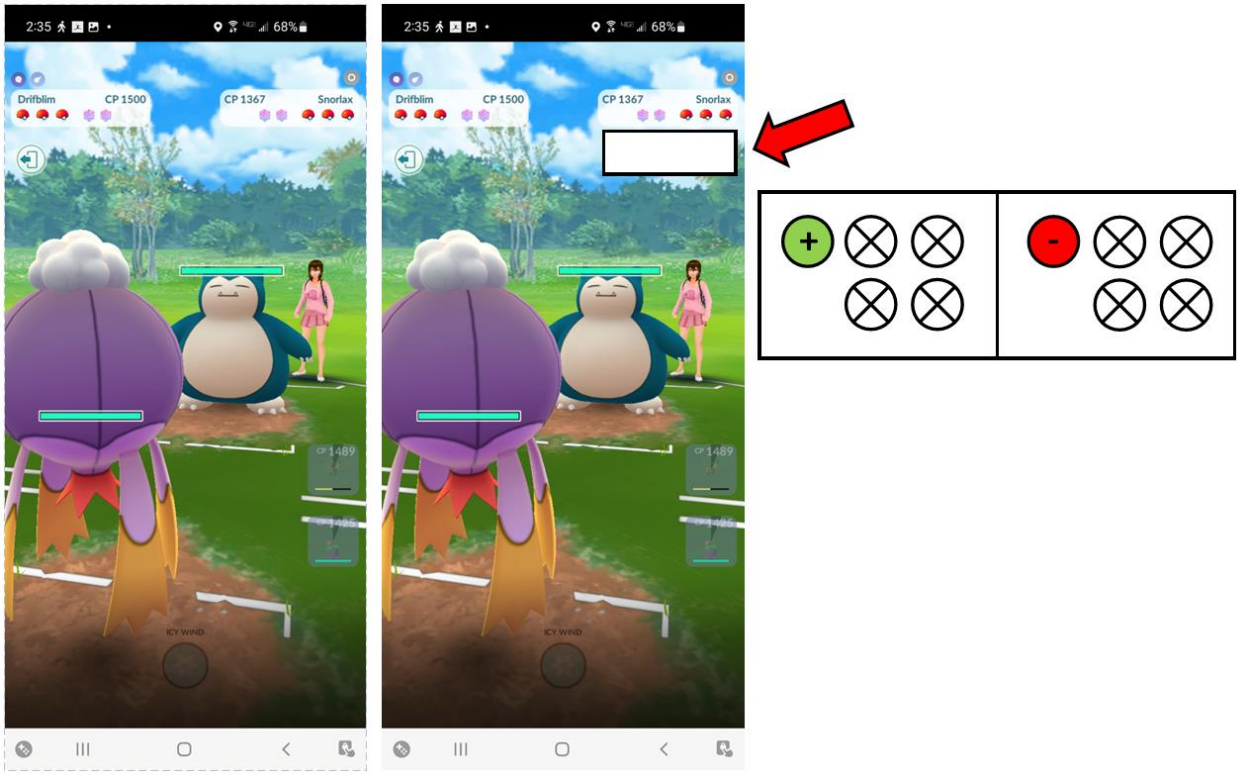

Figure 9: Battle UI in Pokémon Go. At left is the current design. At right is a proposed modified design using an extra information box under the opposing Pokémon to indicate how to beat it.

Another issue that arose during the expert review was the lack of accelerators (heuristic #7). A simple solution to this problem would be to add a favorites menu that works like the Favorites bar in a web browser. Users could favorite up to 3 pages in the app, and then each screen could have an extra Favorites button that the user could use to quickly navigate to their favorite screens.

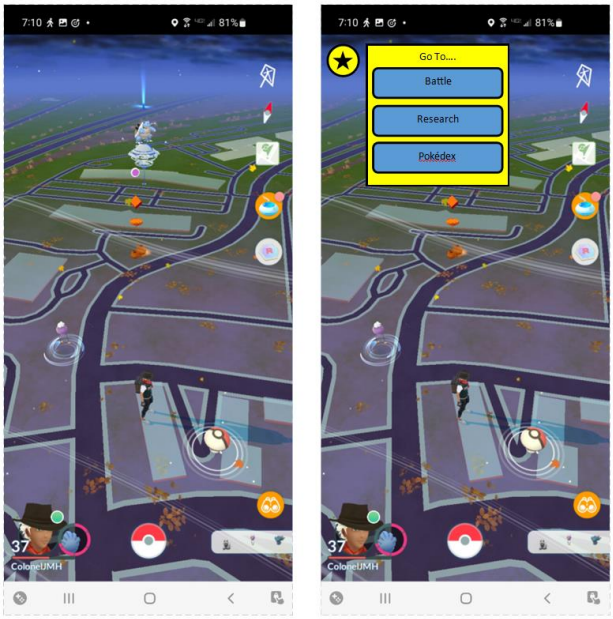

Figure 10: A proposed improvement to navigation in the current app layout (shown at left). An additional button would be added to the UI that opens a shortcut menu for quick navigation to favorited pages.

To resolve inconsistencies in the help buttons (heuristics #4 and #10), the app developers could simply reduce the number of variations in the button's position and appearance. In the below diagram, we see three different variations in the current app, and a proposed common design for all Help buttons on the right.

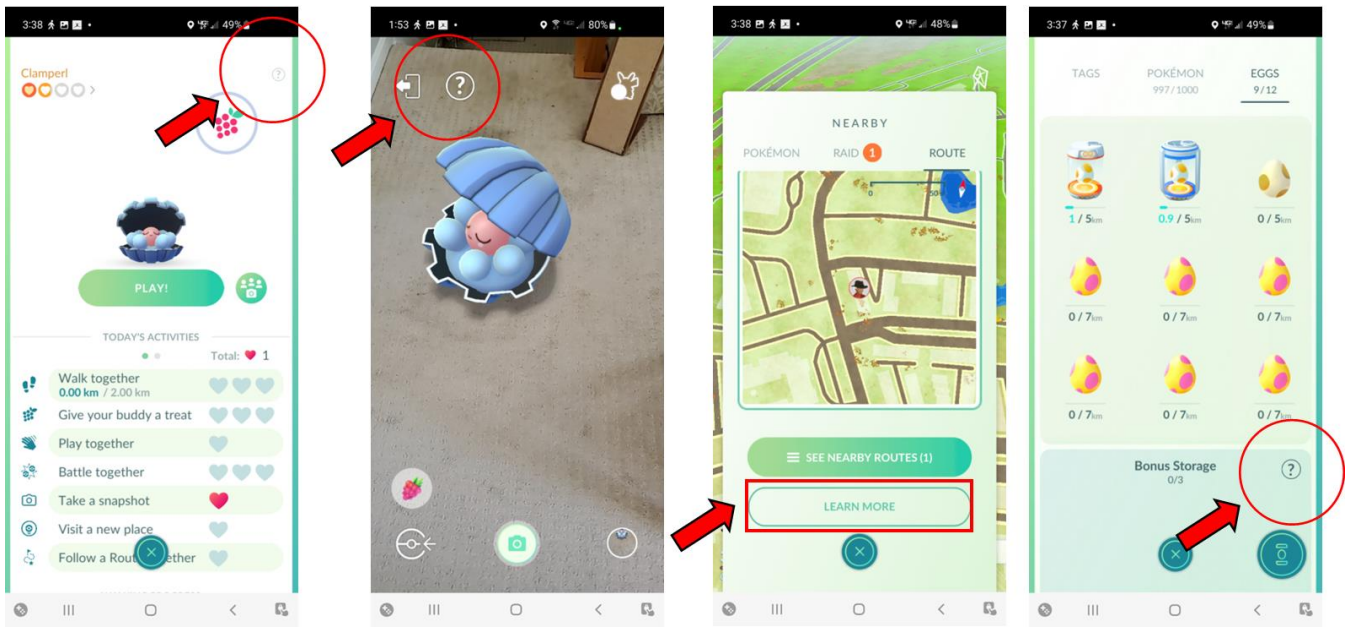

Figure 11: Help buttons are inconsistent in size, location, and appearance throughout the app.

Finally, it was noted that several error messages within the application did not provide sufficient information to the user to help them resolve the problems. To improve the design, the app developer could modify their error messages to distinguish between different root causes. For example, the app

might fail to launch because the user is not connected to a network or because airplane mode is turned on; these should be represented by distinct error codes. It would also help if the error boxes suggested possible resolutions for the problem.

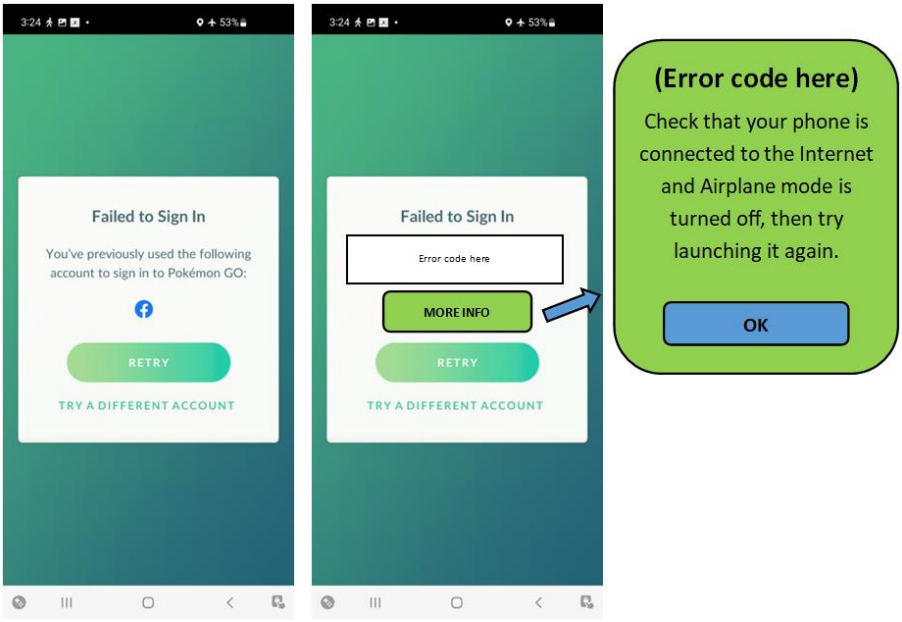

Figure 12: A common error code for a failed login. The proposed alternate design at right would display an error code, along with possible root causes and proposed fixes.

Sources

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