"A lot of indie developers who became 'overnight successes' were working at it for ten years."

Dan Adelman
Professor of Operations Management

XI. PROTOTYPING & PLAYTESTING

Prototyping is undoubtedly one of the most important procedures in game development. Productive prototyping reduces the time and resources necessary. We offer some suggestions for productive prototyping:

11.1 Prototyping

When creating a new game, a prototype is important to ensure there is enough evidence that it will be successful before production begins (Polsinelli, 2018). Experienced game designers understand that prototyping involves more than just mechanics, and should also explore story, characters, and world-building. The purpose of a prototype is to allow developers to test mechanics and pitch the game to others for production. However, some people mistakenly believe that a prototype should only focus on one aspect of the game, such as mechanics, which can lead to a lack of depth and ultimately, an unsuccessful game. It's important to remember that a prototype is not the final product, and should not be treated as such. This is equivalent to asking for a prototype of the Space Shuttle. A prototype to make people fly and return to Earth safely, which needs a complicated system.

1. Answer the Key Questions

Always remember to answer the following critical questions before building your prototype to guide its development:

- How many characters are there in a scene?
- Is the core gameplay enjoyable? even for an extended period of time?
- Do our characters and settings fit well aesthetically?
- How long should a level be?
- How many players are there?

2. Forget Quality and Don't Get Attached

When creating a prototype, it's best to avoid making it too beautiful. This can actually increase both the cost and time of development in the long run. If your team discovers any bugs or flaws, you'll have to redo the entire process, which can be a huge headache. Remember that this is just an early prototype, so don't get too attached to its appearance. You can even use simple, hand-drawn assets or primitive shapes to create it. Keep in mind that the final product will have better visuals, as shown in figures 117 through 120.

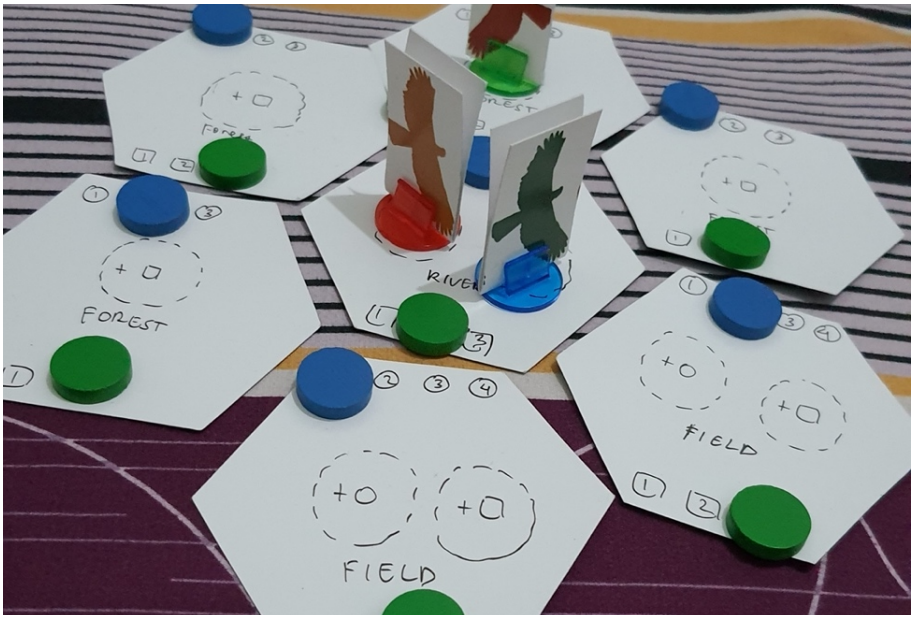


Figure 117. The first prototype of our board game design, Eagle Dance. The players play as Java Hawk-eagle in the wild, trying to survive by doing flight maneuvers. You can see we start with raw visuals.

Figure 118. The middle phase prototype of Eagle Dance. Step by step, the visual art is improved.

Figure 119. The latest prototype version of Eagle Dance. At this stage, all the visuals to be print-ready.

Figure 120. The level design in Uncharted 4 is developed with some basic or primitive shapes (left). The final visual of Uncharted 4 (right).

3. Prioritize and Parallelize Prototype Production

To ensure efficient prototyping, it's important to create a prioritized list of tasks. Determine the most frequently used or significant objects in the game and prioritize accordingly. Communication with all team members, such as artists, programmers, and composers, is crucial to avoid delays. Each member should work in parallel to ensure timely completion of the project. It is also important to note that prototypes for digital games don't necessarily have to be digital themselves. Even when creating a board game, it can be helpful to create a digital prototype before making the physical version.

4. Pick A Fast Loop (Engine)

We recommend using simple tools for your game as there may be frequent changes during the prototyping phase. It's also okay to experiment with different game engines in the initial stages. The main goal is to select the fastest tool or engine that will help you create your prototype efficiently. For instance, we use Tabletopia to simulate board games (Figure 121). This has saved us a significant amount of money compared to creating an early board game prototype, and doesn't need to be installed on our computer.

Figure 121. Digital version of our game in Tabletopia, Eagle Dance.

11.2 Playtesting

In order to ensure a successful and effective product, it is crucial to conduct playtesting after each prototype version. This process enables the identification and resolution of any potential issues that may have been overlooked or avoided during the development phase. By carrying out playtesting, developers are reminded to tackle any problems that may have been previously neglected, allowing for a more thorough and comprehensive product.

1. Group Testing

Group testing involves interviewing potential players about their preferences and interests to assess their level of interest in a game idea being considered by a company.

2. Quality Assurance (QA) Testing

Please note that this testing is solely focused on identifying bugs and not on evaluating the game's entertainment value. Please answer the following questions on a ten-page document:

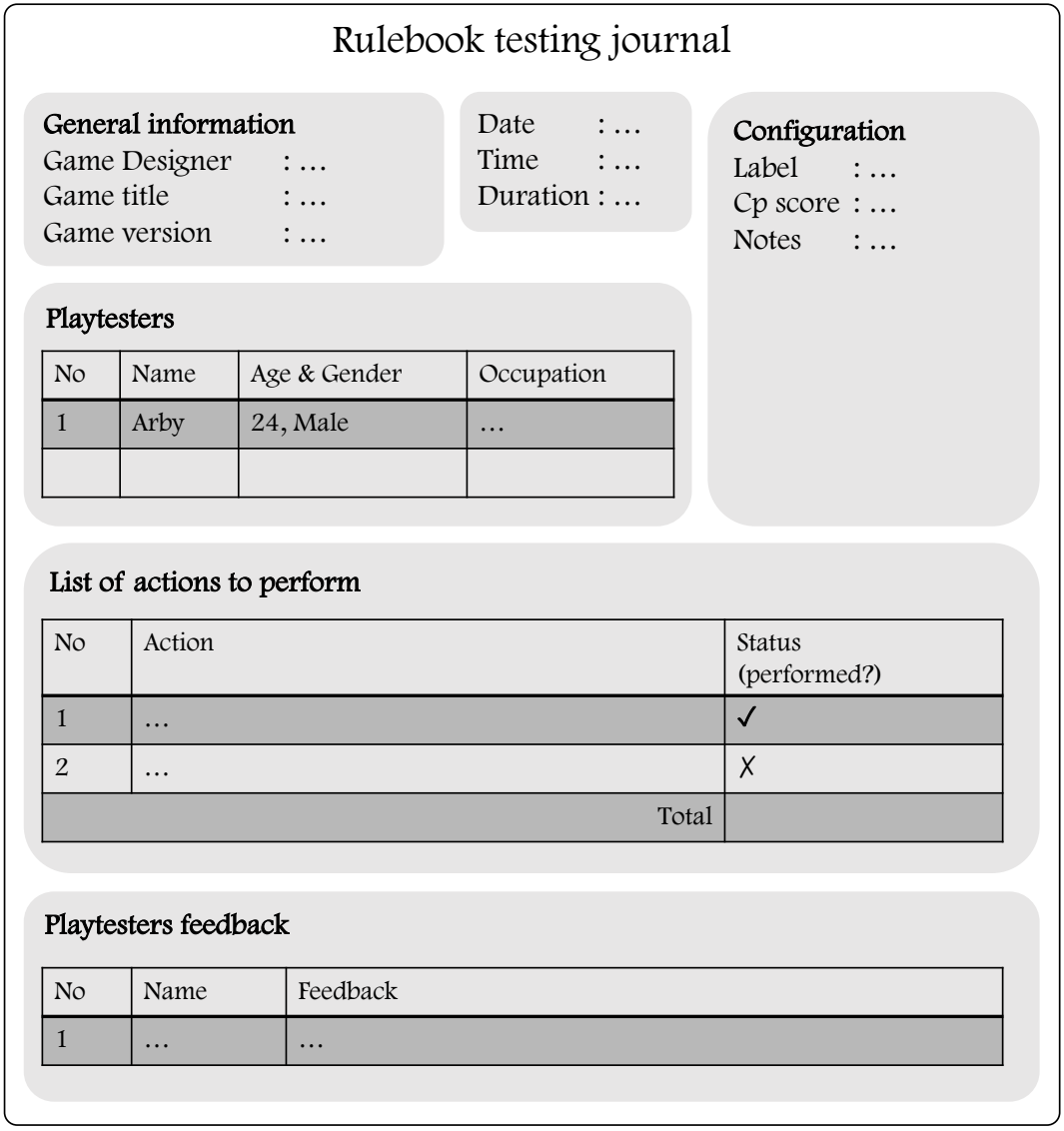
- What is the initial visual presented to the player upon starting the game?
- What emotions or moods does your game aim to evoke?
- How is sound and music employed to convey the game's atmosphere?
- Please provide a basic flow chart diagram demonstrating how the player can navigate through the game's interface.

3. Usability Testing

One of the most important aspects of a successful gaming experience is the ease of use and user-friendly systems. However, these factors alone can't guarantee a great gaming experience. It is essential to conduct thorough usability testing to ensure that the interface and systems are intuitive and efficient. By doing so, developers can identify potential issues and make necessary adjustments to optimize the overall gaming experience for users. This approach maximizes the potential for a positive and enjoyable gaming experience for all users. Personally, testing in digital games is quicker than in board games. Because many things can be automated using scripts. For instance, I use a genetic algorithm to produce level, including its game objects and their positions, by simply setting up the intended pacing curve the game designer wants (Harisa & Tai, 2022). Unfortunately, you almost can't automate the testing in board games. However, there are some simulators or tools to help you "try" to play the game even before printing it (see Figure 121).

4. Rulebook/ Manual Book Testing

When developing board games, we conduct extra testing to ensure that the rulebook is easy to understand. This enables us to assess the quality of the information and layout provided to players. Testing the rulebook is a simple process. We provide multiple versions of the rulebook and ask players to follow the instructions. This allows us to compare their actions with the designer's intentions and evaluate the accuracy of the rulebook. Although the rulebook testing journal is created for board game, the concept can also be implemented to validate the digital game tutorial. Figure 122 shows the rulebook testing journal template.



Rulebook testing journal

General information
Game Designer : …
Game title : …
Game version : …

Date : …
Time : …
Duration : …

Configuration
Label : …
Cp score : …
Notes : …

Playtesters

No	Name	Age & Gender	Occupation
1	Arby	24, Male	…

List of actions to perform

No	Action	Status (performed?)
1	…	✓
2	…	✗
	Total	

Playtesters feedback

No	Name	Feedback
1	…	…

Figure 122. An example of a rulebook testing journal to help designers. We use this framework to create our serious game, Eagle Dance (Harisa et al., 2022), as shown in Figure 117 to 119, and 121.

As board game designers, we often conduct self-playtesting where we test our own games, usually alone. However, in Taiwan, the Taiwan Boardgame Design (TBD) hosts monthly playtesting sessions where designers try out each other's games and give feedback. It's important to ask playtesters for their criticisms so that you

can make improvements quickly. Don't be afraid of playtesting - it's a great chance to enhance your game. To help you gather useful feedback, here are some questions you can ask.

- **Why?** When planning a playtest, it's important to prepare specific questions for playtesters to answer. Simply asking if the game is enjoyable is not enough. To determine the who, where, what, and how, you must first establish the "why" behind the playtest. Creating a list of questions to be answered is a great starting point.
- **Who?** Before conducting a playtest, determine its purpose and identify the stakeholders to test. These stakeholders may include developers, friends, expert gamers, and novice gamers.
- **Where?** Choosing the right location for playtesting is crucial to gather valuable feedback from players. You have various options to consider, such as conducting the test in-studio, a playtesting lab, a public venue, the playtester's home, or through the internet (using the demo version).
- **What?** As you plan your test, ensure that you have a means to obtain answers to all the questions on your list. If there are aspects of your game that don't pertain to these inquiries, you might want to develop a special version of the game that omits these segments to save time.
- **How?** To gather feedback, utilize techniques such as surveys, ratings, interviews, web analytics, and so on.