How to Build Alexa Companion Skills for Board Games

Enhance your board game experience with a companion Alexa skill

Kay Lerch

Design Technologist

Amazon Alexa

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Introduction

Gaming is one of the most popular and engaging experiences on Alexa. Game concepts such as interactive adventures adapt well to a voice interface and many existing games such as Rock Paper Scissors or Musical Chairs have seen a renaissance in this new medium. This whitepaper will focus on another analog game interface, board games, to showcase how voice can enrich the user experience.

Board games, also known as tabletop games, refer to a wide range of games played with physical components on a flat surface. These physical components include, but are not limited to tokens, cards, dice, paper and pencils. Board games include card games such as Poker or Solitaire as well as traditional games that use a physical game board such as chess or Monopoly.

The selection of physical and digital board games is growing rapidly and players nowadays expect more innovative gameplay. Adding Alexa can enhance the board game experience and make your game stand out from others. Voice interfaces, such as Alexa skills, are an intuitive way to interact with technology and benefit board games in the following ways:

- **Natural, Hands-free Interaction:** Players can use their voice to naturally interact with the game without needing to learn how to use complicated technology or put down their cards or game pieces to control a gamepad, smart phone or tablet.
- **Communal, Social Experience:** Playing board games is a communal experience, and Alexa provides a way to learn about the rules and facilitate other game tasks without disturbing the flow of the game or social interactions.
- **Dynamic Game Content:** Building an Alexa companion skill allows you to offer players new content either for free or using **In-Skill Purchasing**, which deepens the game experience and helps you attract more customers.

This whitepaper will cover the types of actions your Alexa skill can take, stages in the user journey, and how to build a skill around these stages to interact with your physical board game experience.

If you haven't designed or built an Alexa skill before, explore the tutorials and documentation about the **Alexa Skills Kit (ASK)**. Try out the **Cake Walk** course to get started building your first skill or check out the **Alexa Design Guide** for tips and best practices on how to design engaging voice experiences. Additionally, check out the **Voice Gaming Guide** for game design best practices.

Use Cases

There are three main use cases that work well for Alexa integrations into board games. Depending on the content of your board game; your complementary skill experience can teach, host, or play with users. These three roles aren't standalone constructs; they are complementary experiences across the user's journey in the game.

Teach

- Your skill can teach users the rules of the game and guide users with interactive tutorials, which helps them get familiar with the game more quickly.
    - Instead of stopping the flow of the game to look up instructions, users can ask your skill to step in and provide contextually relevant information such as rule related questions. Your skill can support questions like, "Who's next?" Or, "What should I do now?"
    - Handling utterances around game rules and mechanics helps you to improve the game by keeping track of the most frequently asked rule-related questions.
- Your skill can also introduce new content like campaigns, explain new rules, add variations and game mechanics, and increase the level of difficulty for advanced players.

Host

- Your skill can host the game and act as a neutral party between players.
- Your skill can enrich gameplay by using sound effects and music.
- Your skill can take care of tasks such as progress tracking and score count. This helps prevent calculation errors and allows users to focus on the fun parts of the game.
- Your skill can offer new content to enhance the experience and retain users. You can offer content for free or through In-Skill Purchasing. For example, you can sell content that features new gameplay (e.g. unlockable characters or levels), seasonal customizations (e.g. holiday-themed audio or graphics), or consumables (e.g. inventory items, extra lives).

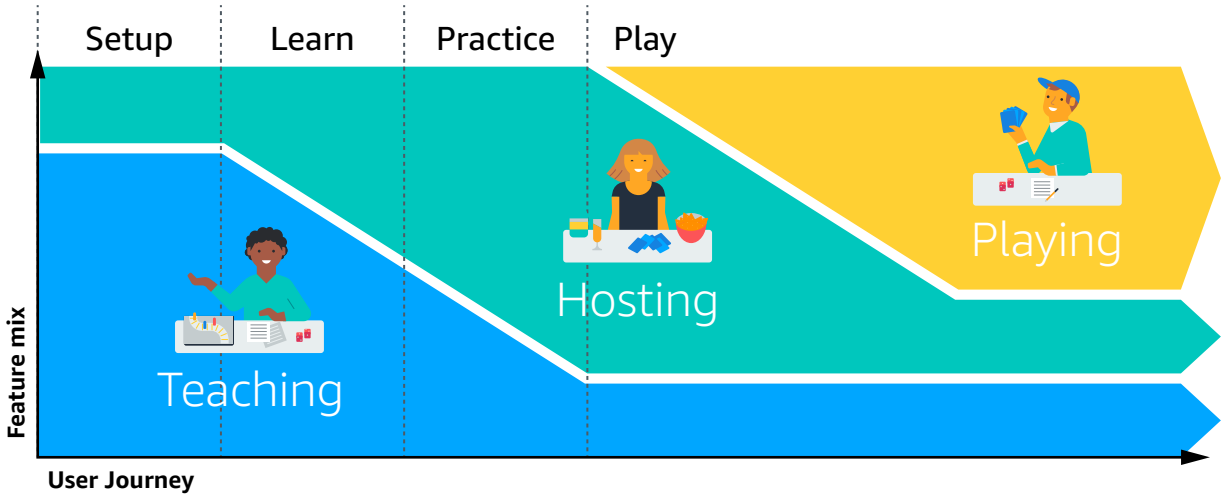
Play

- Your skill can act as one or more players in a game for those who want to play without the minimum number of people required for the game.
- Your skill can use **Polly voices** or voice overs to differentiate between "virtual players" in the game and their human counterparts. Your skill can follow game events through user inputs and announce decisions and actions on behalf of virtual players.
    - Virtual players help users practice their own strategies or play endless games without needing anyone else.

Note: Using Polly voices is a great way to differentiate between the voice of the virtual player and the narration (hosting or otherwise) of your skill's mechanics whether you are using Alexa's default voice or your own branded voiceover.

User Journey

The player's journey in the game can be split into four stages: setup, learn, practice and play.



Based on the needs and experience level of the players, they might go through all the stages of the user journey or skip to playing. Your skill should first ask the user what they want to do and assess their experience before directing them to the appropriate stage.

The stages in the user journey are:

Setup: The user just bought the game and has never played or needs help putting together a new game.

Learn: The user may have played previously but has forgotten the rules or is a new user who should be introduced to the rules.

Practice: The user knows the rules but needs experience playing the game as a way to deepen their understanding of the rules and strategies.

Play: The user can play the game with the skill acting as the host and/or another player. The user is an experienced player and wants to improve their strategy.

Scoping an Alexa Skill for Board Games

Finding the right scope for voice-enabled board gaming experiences is an iterative and creative process. The first step is defining your target audience. You already know they play your board game but what kind of challenges do these users face? How can your skill both solve these challenges and add value to the experience? If you don't have the answers to these questions, conduct gameplay tests and get reviews from your user base. You might find that the challenges your users face aren't always rooted in the game itself. There can be environmental or social blockers as well.

Once you've outlined your target audience, including their challenges and values, you'll need to design the voice experience for your board game. You'll outline the model your board game already uses, such as the rules, actions, and strategies. While a diagram or flowchart works well to explain your system, it doesn't actually showcase how players interact with each other. Instead, you'll need to script out the conversation between players and how your skill will interact with them in a communal setting. These scripts can be used to test whether your conversation sounds natural. Testing your voice design helps you refine your use case and get the voice experience right before you start to build it. You'll get valuable insights into the language your users are familiar with and the kinds of utterances you'll have to map your intents to for the game to function properly.

Target Audience and Use Cases

The four stages of the user journey can be mapped to project milestones for your game. Depending on the complexity and content of your game, mapping all of these stages may not be feasible or necessary. For instance, you might determine that you only need your skill to teach and coach users.

If your skill is only for the teach use case, you can design a skill experience that covers setting up, learning, and practicing the game. Conversely, you can build a skill that focuses on experienced players who want to master the game. In that case, your scope can focus more on gameplay strategy, instead of setting up and learning the game.

Note: It's helpful to start from the beginner player's perspective, which will give you a solid framework for layering complexity. This perspective is useful for determining the help messaging in your skill, which is mandatory for certification and publication to the Alexa skill store.

Exercise: Define the target audience and purpose for your Alexa skill

1. Think about a potential audience for a voice-augmented experience for your board game. Who would use this experience? Why are they using it and what do they hope to achieve from this experience?
2. Are there any particular challenges (e.g. score tracking) that you want to address with Alexa? What would make players want to use the skill while playing the board game (e.g. gives them ambient music in the background)?
3. With those questions in mind, describe how your skill will address these needs by teaching, hosting, and playing the game.
4. Write out the four stages of the user's journey, starting from the perspective of a new player.

Identifying Key Features to Build

Once you've identified the target audience and key use cases, you'll need to determine the most basic and foundational aspects of your skill that will make it both functional and delightful to users. After that, you can work on adding features and other use cases. The basic core functionality can be written out as a "happy path" or ideal set of player actions. You can use the happy path to solve potential problematic use cases.

Tips for finding the right use cases include:

Focus on the experience: Work backwards from board games you are familiar with, and ask yourself what would have made these games better? What was the least fun thing in the game? What was the most fun thing everyone loved? What elements of the game were missing entirely?

Leave the fun things to players: Your skill should not take over parts of the game which are essential to the fun and excitement of the experience.

Strive for low-friction gameplay: Your skill should help fix the things that aren't fun in a board game and avoid introducing new frustrations. Count all the ways your skill might introduce new complications or steps and determine if the newly added feature is worth the tradeoff.

In the end, your skill should be fun to play without making the game more complicated, time-consuming, or frustrating.

Example: Key use cases for playing chess with Alexa

Chess is one of the most popular board games of all time. This example lists the use cases to cover an entire user journey while playing chess. Below is a set of features outlined for an Alexa chess skill with utterances a player might say to Alexa mapped to actions (or intents).

Setup:

- *"Alexa, help me set up the board for a new chess game."* → Starts step by step instructions.
- *"Alexa, start a new chess game"* → Offers to toss a coin to decide who's playing white and gets the first move.
- *"Alexa, start a rapid chess game"* → Offers instruction, coin toss, and keeps time for each player.
- *"Alexa, start a friendly chess game"* → Enables Alexa to suggest the next move.

Learn:

- *"Alexa, how do I play chess?"* → Starts an interactive tutorial with step by step instructions mapped to comprehensive questions.
- *Alexa, how do I play rapid chess?"* → Adjusts the interactive tutorial to add specific rules for this game mode.

Practice:

- *"Alexa, remind me, what can I do with my bishops?"* → Provides a brief explanation and an example based on the current position of one of the bishops if there is an ongoing chess game.
- *"Alexa, whose turn is it?"* → Alexa keeps track of who took the last turn and who's next.
- *"Alexa, suggest a move"* → Suggests the next possible move that is the least dangerous.

Play:

- *"Alexa, how much time is left for me"* → While in rapid chess mode, Alexa tells the player how much time is left for their move.
- *"Alexa, I'm going from G7 to G5"* → Alexa keeps track of the move, stops time, starts time for the other player, detects if move is legal, or announces check(mate).
- *"Alexa, where are my black pawns"* → In case a pawn gets accidentally kicked off the board, Alexa tells their last known coordinates on the chessboard.
- *"Alexa, play some music"* → Alexa plays concentration music.
- *"Alexa, play Chess with me"* → Alexa acts as an opponent and competes against a single player.

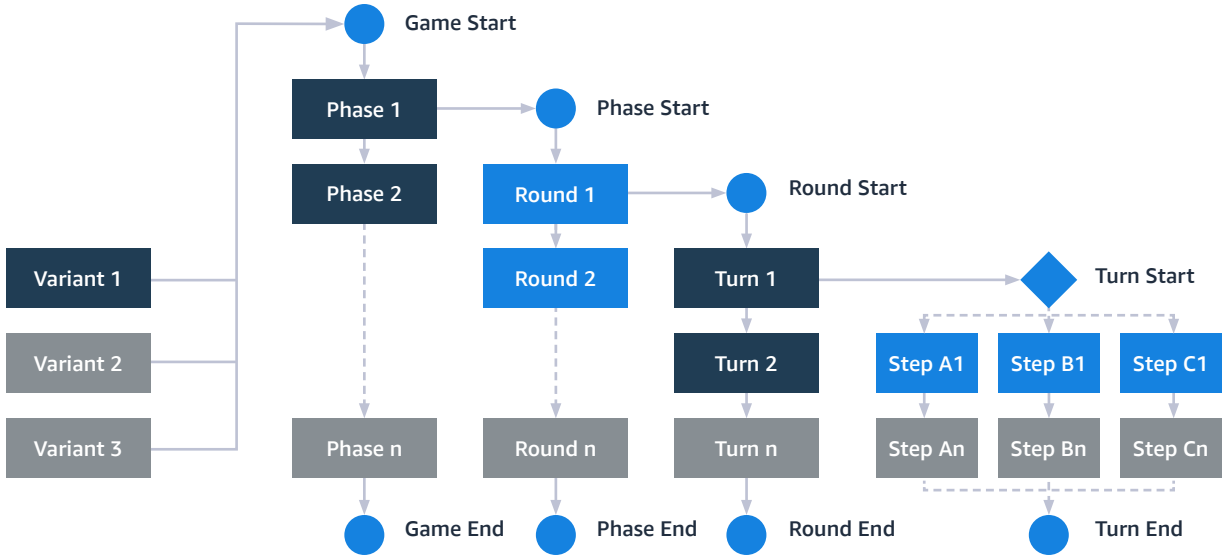
Exercise: List use cases for your companion Alexa skill

1. Take any board game of your choice and list the use cases you envision for an Alexa-augmented experience, similar to how it was done for chess.
2. Outline potential target audiences and main purpose for an Alexa board game experience.
3. Address user requirements with actual use cases.

Gameplay Modeling

You'll need to model your Alexa skill based off of the board game experience. To do this, you can break down the gameplay by variants, phases, rounds, and player turns. Given the variety of mechanics available in board games, it's almost impossible to define a generic approach to modeling the structure of any game. Think of this as a map of the way your game will work systematically and not how the dialog will work.

Here is an example of a generic model of a board game:



Any game variant may consist of its own set of phases in a game which themselves have a number of rounds. A round usually goes through a number of turns where players decide on taking none, one or many steps such as drawing a card or rolling a die.

Have a defined beginning and end: For each stage in a game, the rules define the start and exit criteria. This could be an event like a timer, an action such as rolling dice, or a condition where no more cards are left in the deck. This is what gets the game to the next phase, round, or turn. The above model marks these criteria as starts and ends (game end, phase start, round end). These are key events that your skill needs to keep track of in order to follow the game.

Event order: Rules in a game also define the next event, action, or condition. Stages such as turns in one round can be arranged in sequential order, parallel order, or loop continuously before the exit criteria is met. For example, in a quiz game, players can make unlimited guesses (turns) in parallel until someone gets the right answer.

Sample chess gameplay model:

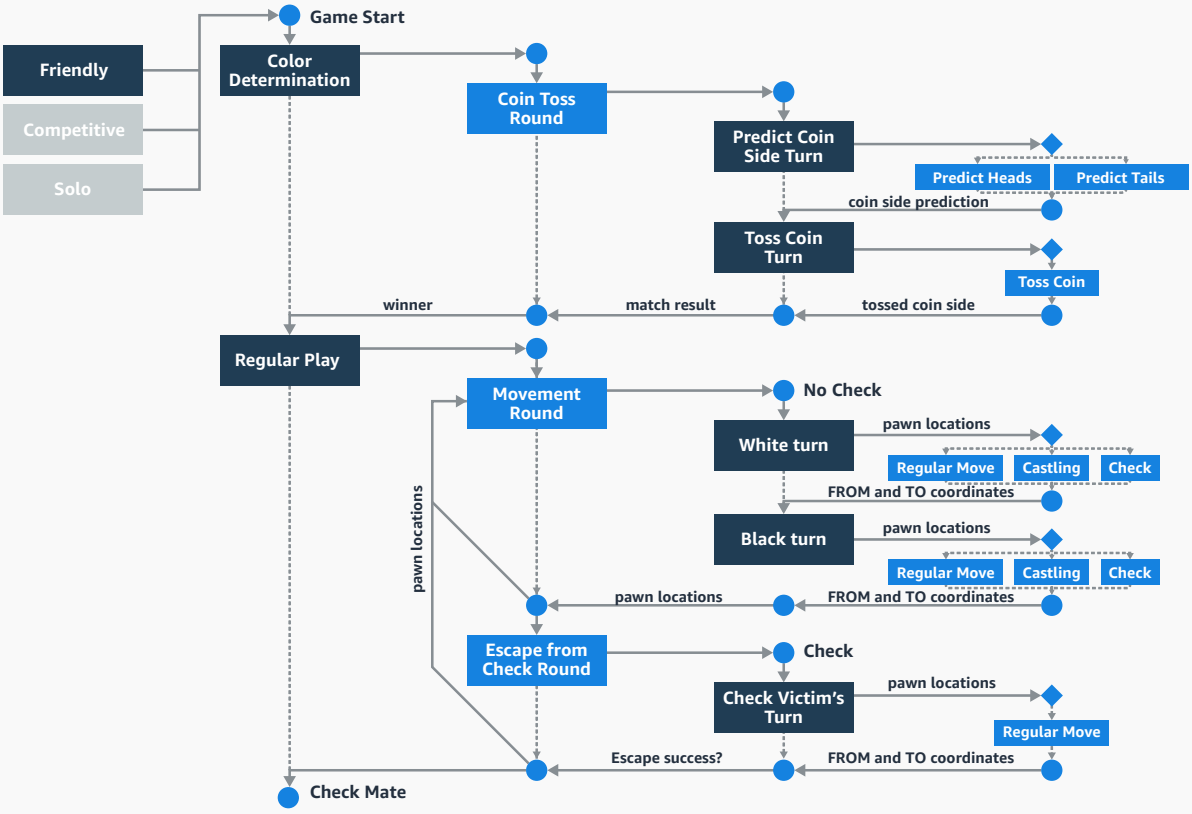
The graph below illustrates the friendly variant of the game which consists of two phases - the color determination phase for assigning the white color by coin toss and the regular play phase where players alternately move their pawns.

- The color determination phase involves the players picking heads or tails and then flipping the coin.
- The regular play phase starts with the coin toss winner who is assigned the white chess pieces, followed by the other player who is assigned the black chess pieces.
- Each turn consists of a movement round; which includes actions such as a regular pawn move, castling (a special move in chess), or checkmate. When no check position exists on the chessboard the regular movement round starts over with the next white and black turn.
- However, if a player is in check, a special round takes over which consists of only one possible turn and player step, which is to escape from the check position. If that isn't successful, the game ends.

Using this traditional model, our skill should handle the following

- Coin tossing should be handled by the skill with Alexa assigning player roles.
- All chess moves require going from one coordinate to another. This chess skill can have players tell Alexa the coordinates they're moving from and which coordinates they're moving to. Users don't have to tell Alexa about the type of move to keep the experience simple. For instance, "move C5 to C6" lets Alexa know that player 1 (white) moves his pawn because the skill already knows a white pawn is at C5.

The graphical representation of gameplay can easily turn into very complex graphs. While a graphical representation is ideal, you can also describe the model verbally or written.



Exercise: Create a model for your companion Alexa skill

Take an existing board game and try to map its gameplay. If the game has multiple variants, start with the most common way to play.

1. Can you turn the game into a narrative form? Are there multiple stages or chapters?
2. Can you see recurring patterns and loops in the game? What needs to happen to break out of such a loop?
3. What conditions must be met to win the game or advance to the next stage of the game (next round)?

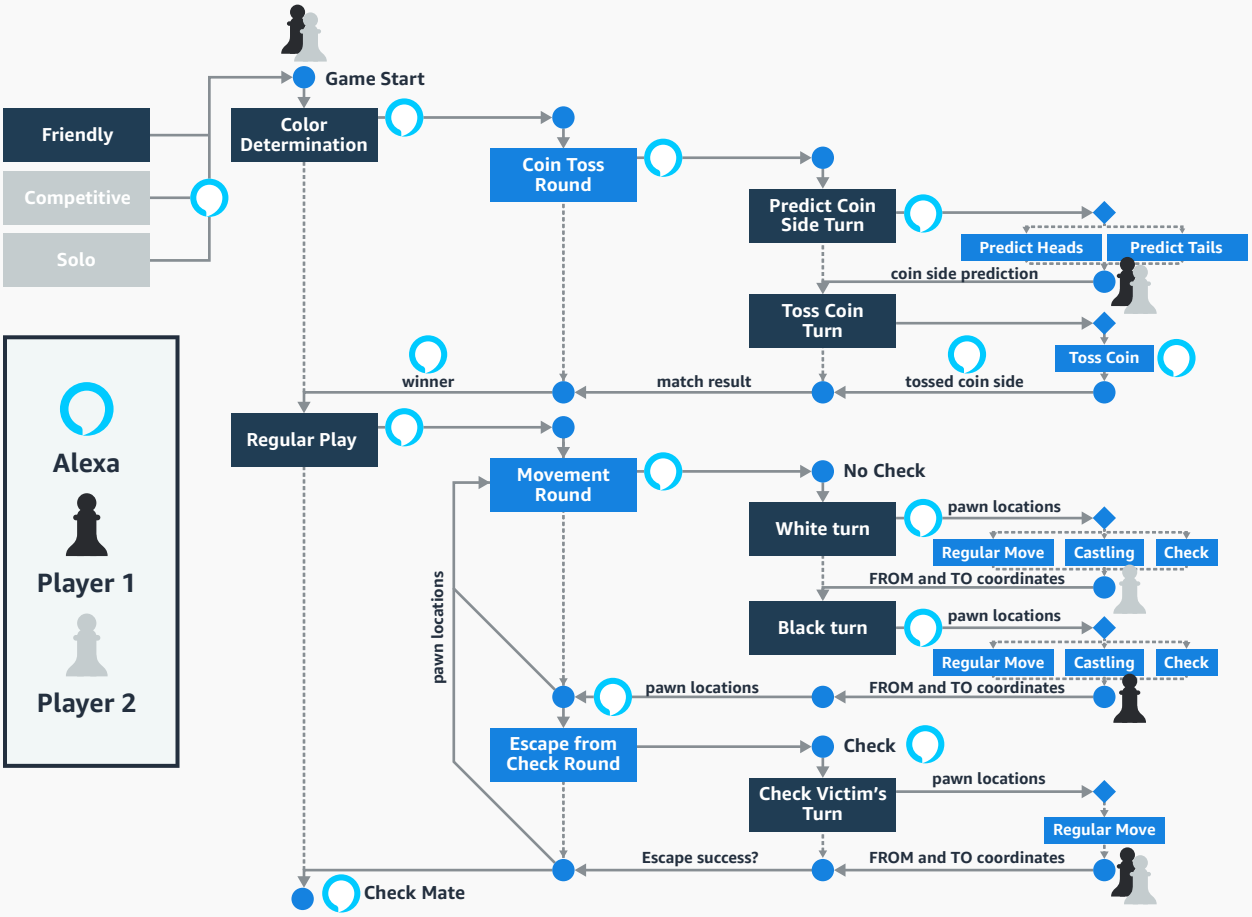
Gameplay Scripting

Alexa skills are voice-first experiences, which means users can say anything at any time. Our flowchart model does not represent accurate conversational modeling. Instead of a flowchart, you can script out the conversation between your skill and the players of the game. Remember, you can offload some features of the board game to Alexa such as tracking scores or giving out questions. You can also have your skill create virtual players to play with their human counterparts in the game.

Identify the vital actions for the game and the minimum amount of information your players can give Alexa to keep the game going. You don't want to distract users with too much information but you also need players' input to know what's going on.

In this chess example, there are two active player roles (white and black). Alexa will referee the match as well as answer questions about the game.

Alexa: *"Do you want to play in friendly, competitive or solo mode?"*
Player: *"Friendly mode"*
Alexa: *"Great. Do you want me to help assigning the white and black player colors by tossing a virtual coin?"*
Player: *"Yes"*
Alexa: *"No problem. Player one, please choose from heads or tails."*
Player: *"Tails"*
Alexa: *(plays coin flip sound) "Tails it is. Player 1, you play with the white chess pieces and start with the first move."*
Alexa: *(sounds bell for start of the game) "Player 1, think about your first move and tell me what you'd like to do by saying something like 'Alexa, I'll go from B2 to B3"*



Exercise: Create a script for your board game voice experience

1. Identify the different roles in your own board game and write down the script of a typical gameplay.
2. Try to write the script with actual dialog to showcase a round in your game.
3. Read the script out loud to someone else to see if it sounds natural and makes sense.
4. If you face any limitations for a role in your script where players can't tell Alexa about a card/event because revealing it would ruin the game, think about potential workarounds and discuss with your peers.

Gameplay Testing

The most efficient way to determine that you've selected the right scope for your board game experience is to invite people to test your ideas and simulate an actual game. During this simulated Alexa-augmented board game, you'll quickly learn what the challenges are with the skill version of your game. You may encounter issues you haven't considered before. It also takes some time to get used to scripting the conversation.

How to test your scripted dialog

1. Assign a participant to read Alexa's dialogs or be "the voice of the UI." This participant should be an expert in the game, familiar with the features, and understand the gameplay model.
2. Your Alexa actor should be turned away from the players so they can't see what they're doing and can't start a conversation or interrupt.
3. Make sure the other players explain what they're doing such as actions like drawing a card or the number of a dice roll. (The actual skill would know this information but the human "Alexa" doesn't!)
4. Make sure to take notes or have an impartial observer take notes for you.
5. All participants have to start with "Alexa..." in their request, otherwise the Alexa actor won't respond.
6. To keep information from the Alexa actor, have participants whisper, give hand signals, or write down information to each other.

Note: If your participants ask for or assume a feature you didn't plan for- great! This is a golden opportunity to add to your design & reassess your feature priorities.

Acting as Alexa

To teach the other players, the Alexa actor should start with how to setup and play the game as a new user.

Some helpful tips:

- Give short instructions on setup and rules. More than 2-3 sentences will be too much information to process.
- Follow up with comprehensive questions like “Got it?” Or “makes sense?” If players negate the question or get it wrong, try to rephrase the previous explanations or give more details.
- Instruct players on actions such as: roll a die, draw a card, or just play along for a minute.
- Allow any rule related question at any time.
- Don’t forget to ask them to wake you up again (“Alexa, we’re done”) because you can’t see what they are doing or hear what they are saying to each other.

To host the game:

- Keep track on paper all calculations, points, and scores for each player.
- Ask for more information to fulfill a task like tracking scores.
- Make sound effects or play music if you think this makes the game more enjoyable for the other players.

To act as a virtual player:

- Keep track of turns and when your turn occurs as the virtual opponent.
- Instruct players to execute any physical actions for you to reflect them on the table such as, “Move my pawn from G7 to G5.“ Or ”Draw a card for me and tell me what I got.” If this is an issue in gameplay strategy, have another participant who is not playing complete the action for you (i.e. drawing a card) and show you the outcome in secret.

Exercise: Play test your Alexa skill script

Find a group of players to play your board game with one of the players pretending to be Alexa. The most experienced player should take on the role of Alexa. Next, introduce everyone to the above-listed rules and start the game. We recommend recording the game or having an observer take notes on how the game progresses and where it gets stuck. In your first game, try to focus on one or two key features of your desired experience (e.g. interactive rule teaching or score tracking and announcing the final winner) rather than trying to cover everything at once.

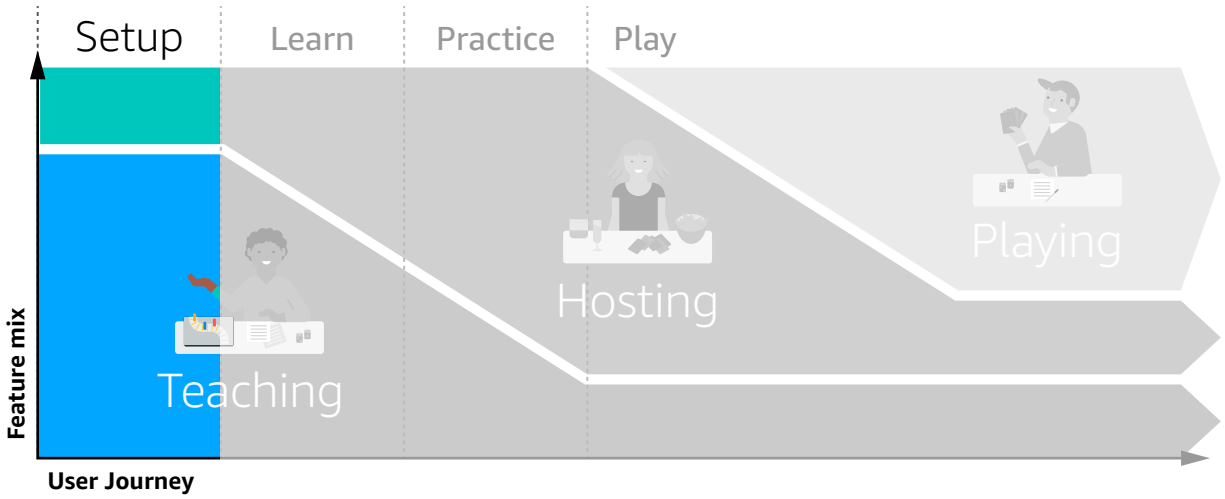
After the game, the group should discuss the experience. You can use some of the following questions to kick off this conversation:

1. Did you enjoy playing with “Alexa?”
2. What went well? What did not go well?
3. Did you see value in having “Alexa” in the game? If not, what could actually be useful?

Creating a gameplay model helps you to understand the structure and components of the game. The gameplay model also informs the scripted dialog. A crucial aspect of scoping your skill is to test the script with real players and have someone act as Alexa. You’ll identify potential points of friction and better understand whether a feature should be added or not.

Setting up Board Games With Alexa

When a user first opens your skill, you should assume that they’ve never played before and probably haven’t unboxed the board game yet. This user needs basic instructions on how to set up the game even before diving into the rules. As an Alexa skill, you won’t have any printed information about your game so this is your opportunity to welcome the user and quickly introduce what they can do.



Setting Up for the First Time

When a user opens an Alexa board game skill for the first time, you'll need to welcome the player. Make sure the player has all the prerequisites handled such as a specific physical board game or piece. If you leave this out, they will get frustrated later when they can't play the game.

Note: Make sure to call out any items not included in the board game, such as pen and paper, before starting the game.

> **User:** *"Alexa, open My Chess"*
> **Alexa:** *"Welcome to My Chess, where I'll referee a chess game between you and another player. Before we continue, do you have a physical chessboard?"*
> **User:** *"Yes"*
> **Alexa:** *"Awesome. Just so you know, I'm only the referee and I'm not playing. You're going to need another human player for this game. Did you bring someone to the table to play against you?"*
> **User:** *"Yes, I did"*
> **Alexa:** *"Fantastic, let's get started. I can help you set up the chessboard. Want me to help?"*
> **User:** "*Yes*" → *(Alexa continues with setup experience); OR* **User:** *"No"* → *(Alexa continues with rule learning experience)*

Some tips on a great setup experience:

Use implicit confirmation: Keep the conversation moving when no explicit yes/no response is needed. Rather than explicitly asking the player, your skill can provide information in a response and imply it as a given. Players can comply with what's been said by moving forward in the game or pause the game if they don't agree or need clarification. You'll probably need to prompt the user for multiple pieces of information and you want this to go as quickly as possible without Alexa repeating back the user's response.

Anticipate user preferences: For returning users, store custom information about them so you don't have to ask for it again or lose their progress in a game. Just keep in mind, the skill can be used by other users on the same Alexa-enabled device. However, you can leverage **voice profiles** to distinguish between different users and store settings for individual players separately in your skill's database. Read more about **personalizing Alexa skill experiences**.

Here's an example of a return user:

> **User:** *"Alexa, open My Chess"*
> **Alexa:** *"Welcome back to My Chess. Make sure to have your chessboard ready so we can start. Did you bring an opponent with you?"*
> **User:** *"Yes"*
> **Alexa:** *"Awesome. If you need my help to set up your chessboard, let me know. For now, let's get started."*
> *(Alexa continues with rule learning or playing experience)*

How to Create a Setup Tutorial

The setup experience, as shown in the two chess examples, needs a short and easy to follow set of instructions. Here are some best practices for creating the ideal setup experience for your skill:

Start from unboxing: Since this is a board game, there are two first time experiences. One is the unboxing of the game and the other is starting the skill for the first time. Never assume everything is set up and ready to go. For first-time users, start with an unopened physical game and provide brief instructions on how to unbox such as setting out all the game pieces on the table. The main purpose of the setup tutorial is to put everything in place for playing. At this point, you don't have to explain what the items are unless this information is helpful. For example, when telling the user to keep a deck of cards in the box, briefly explain why in order to avoid confusion.

Make setup optional: Provide users an option to skip, especially on a return visit. The same applies to the unboxing experience, which should be independent from the skill tutorial.

Bite-size instructions: You should keep responses to no more than 2-3 sentences at a time to reduce the cognitive load for users to follow. Give only one instruction at a time. While it's OK to say *"Take all cards out of the box and shuffle them,"* it might be too much to ask for, *"Take all cards out of the box, shuffle them. Divide them into four piles and place them at each corner of the board."*

Check in with your users: Check in with a user after two of your bite-sized instructions. For example, *"Take all cards out of the box and shuffle them. [Pause] Done?"* Address them directly, *"Do you see the red cards in the box? Please take them out now."* Add your own personality or show empathy, *"Wow- that's a ton of game pieces! Looks complicated, huh? Don't worry- I'll explain what they are in a bit."*). All these techniques help to keep the user's attention while making it fun to learn and easy to follow.

Timing is key: Players need enough time to follow your instructions and act on them such as: shuffling cards, placing the board on the table, etc. Consider splitting up instructions if they seem too long or add in a pause between instructions. Your skill should support users who need an instruction repeated or want to skip a step.

Pausing the Game

Pausing a voice experience to give users time to process information or take action is one of the key elements in Alexa board games experiences. There are typically three different ways to let Alexa hold on.

Use punctuation in your output speech: This method allows you to emphasize what's being said and gives players a short moment to process given information, but isn't ideal for taking an action.

Use breaks in your output speech: Use an SSML break tag to give players time to take an action that can last a couple of seconds. You can also use these breaks to let players process information or to think about their next step.

Use audio in your output speech: For actions that require more time, you can use the **SSML audio tag** in the output speech to play an audio file and let time lapse away while players are busy. You can choose background sounds or music to bridge a certain period of time. There are two important things to keep in mind when using this technique:

- Users might finish their task before the audio stops playing. At any time, they should be able to interrupt the playback in order to proceed. Before the audio starts playing, let users know what to say when they're done. Interrupting Alexa requires the wake word to be used.
- SSML audio does not provide an option to loop audio tracks indefinitely. Users might not be finished when audio stops playing. In this event, make sure to follow up properly such as asking users if they need help or more time.

Navigating Instructions by Voice

With printed instructions, a user can easily skip ahead or reread a page. Offer users the same experience by supporting utterances like next, go back, and repeat. These three utterances have dedicated **built-in Alexa skill intents** which cover the most common utterance variations for each request. Before starting the tutorial, make sure to explain these functions.

Alexa: *"During setup of the game, you can ask me to repeat, go back, or skip to the next item at any time. Please say 'next' to get started now."*
User: *"Next."*

Continue where users left off: At any time, a user might have to close the skill session. Your skill will need to keep track of their progress in the tutorial to start where they left off. In this case, let the user know that there's an ongoing tutorial with their progress saved for them. If players return to the skill, repeat the last instruction step that was heard before leaving the previous skill session.

Alexa: *"Place the chessboard with a light square at the right-hand corner nearest to each player. Say 'Alexa, next', when you're done."*
User: *"Alexa, stop" (skill closes)*
User: *"Alexa, open My Chess"*
Alexa: *"Welcome back. There are still a few things you'll need to set up before you start the game. Do you want to continue where you left off?*
User: "Sure"
Alexa: *"No problem. Place the chessboard with a light square at the right-hand corner nearest to each player. Say 'Alexa, next', when you're done."*

Note: Your skill should consider the time between an interrupted tutorial session and the next skill visit. If players return on another day it might be fine to discard the saved state and start from scratch.

Repeating and Rephrasing

Ideally, each of your spoken instructions will have four versions:

- **Original:** This is the first time an instruction is provided. Choose a level of detail that most players can easily follow by listening carefully, without overthinking it.

> **Alexa:** *"Let's get started with setting up chess. Are you ready?"*
> **User:** *"Sure"*
> **Alexa:** *"Great. First, place the chessboard with a light square at the right-hand corner nearest to each player. Please say 'Alexa, next', when you're done."*

- **Shortened version:** This summarizes the original instruction with less detail. Consider this a reminder for those who didn't listen carefully, got distracted while listening, or just want to make sure they understood correctly.

> **Alexa:** *"Let's get started with setting up chess. Are you ready?"*
> **User:** *"Sure"*
> **Alexa:** *"Great. First, place the chessboard with a light square at the right-hand corner nearest to each player. Please say 'Alexa, next', when you're done."*
> **User:** *"Alexa, repeat."*
> **Alexa:** *"No problem. The right-hand corner nearest to each player should be a light colored square"*

- **Rephrased:** This has the same level of detail as the original instruction but explains it in a different way.

> **Alexa:** *"Let's get started with setting up chess. If something's not clear for you, feel free to ask me to rephrase it. OK?"*
> **User:** *"Sure"*

> **Alexa:** *"Great. First, place the chessboard with a light square at the right-hand corner nearest to each player. Thus, each queen starts on a square of its own color. Please say 'Alexa, next', when you're done."*
> **User:** *"Alexa, rephrase."*
> **Alexa:** *"No problem. Place the chessboard in front of you. If the right bottom square isn't light colored, turn the board by 90 degrees. [Pause] Got it? "*

- **Extended:** This provides more detail than the original by providing an example. Use this message for users who ask for help or have asked to repeat instructions multiple times. For example:

> **Alexa:** *"First, place the chessboard with a light square at the right-hand corner nearest to each player. Thus, each queen starts on a square of its own color. Please say 'Alexa, next', when you're done."*
> **User:** *"Alexa, repeat"*
> **Alexa:** *"No problem. Place the chessboard in front of you. If the rightmost square at the bottom row is not a light square, please turn the board by 90 degrees. [Pause] Got it?"*
> **User:** *"No"*
> **Alexa:** *"No worries. Most chessboards have letters and numbers displayed on the X and Y axis. Make sure, that on the right bottom corner you have either H1 or A8 in front of you. [Pause] Got it?"*

Note: If an extended explanation does not help the player understand the instruction, have your skill refer to the written rulebook and come back to the game.

Acknowledge, then repeat: Implicitly confirm the user's request to repeat information by adding a short interjection before repeating the phrase. Make sure you have a variety of expressions that are played randomly so it doesn't sound robotic. For instance, use interjections such as "no worries," "no problem," "sure" etc. in response to "repeat" or "go back." Check out **Alexa speechcons** which provide useful interjections such as "great" or "awesome" that you can use as a response.

Alexa: *"Let's get started with setting up chess. Are you ready?"*

User: *"Sure"*

Alexa: *"Great. First, place the chessboard with a light square at the right-hand corner nearest to each player. Please say 'Alexa, next', when you're done."*

User: *"Alexa, repeat."*

Alexa: *"No problem ..."*

Wrapping Up

After the last instruction for setup is complete, let users know they're done and ready to learn the rules of the game.

Alexa: *"Finally, make sure all your chess pawns are placed on the board as instructed previously. [Pause] Ready?"*

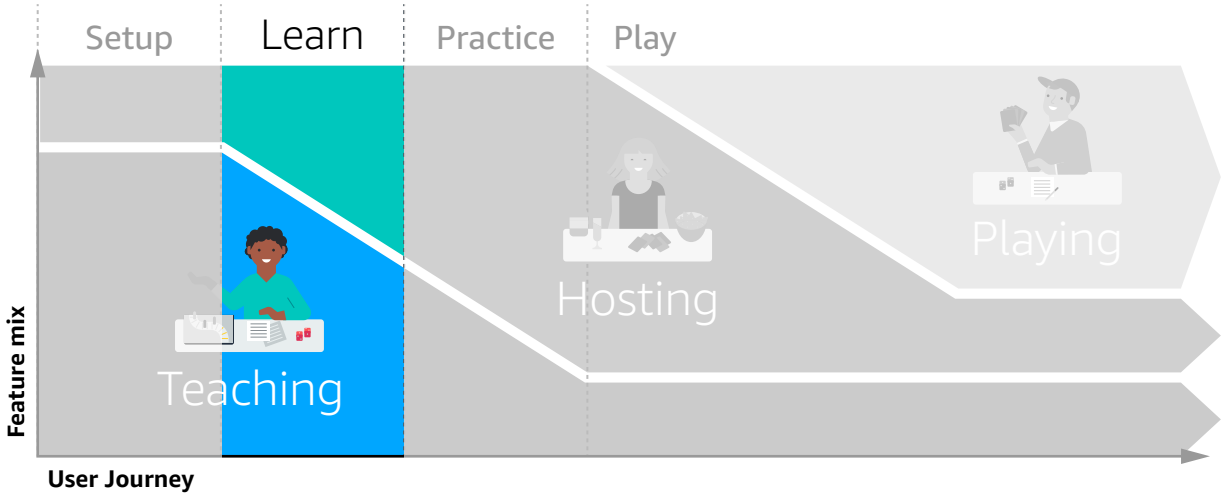
User: *"Yes"*

Alexa: *"Congrats! You're ready to play chess. Do you want me to go over the rules of the game?"*

User: *"Yes"*

Learning the Rules with Alexa

After setup, the skill should continue with teaching the rules of a board game. Similar to setup, this can be skipped if the user already knows the rules. At this point, the skill assumes that the players have set up the table. This is a transition between your skill acting as teacher and hosting the game. A hosted experience has the skill doing a "practice run" or walkthrough of the actual gameplay while receiving rule explanations from Alexa. The ultimate goal at this stage is to enable users to start playing the board game independently after learning the rules. If your game is complex or changes rules based on level of experience, you'll still need to be ready to answer any player's questions during gameplay about the rules.



How to Explain the Rules

Your skill should briefly explain the purpose of the rules and how to interact with Alexa when the rules are being explained, such as what players can ask and how they can ask questions.

Make rule learning an optional experience: Similar to game setup, let users skip the tutorial if they're already familiar with playing the game. Remind players that the rules also cover any differences regarding playing the board game with Alexa. Encourage users to take the time to walk through this tutorial at least once. For example, Alexa skill can initiate a check-in for a walk-through tutorial:

Alexa: *"Now that you set up the game, it's time to learn how to play. Do you want me to walk you through your first game?"*
User: *"No." (in case of "Yes" → Alexa starts the tutorial.)*
Alexa: *"No worries. Just keep in mind that I've got some tricks up my sleeve when you play the game with me. You can ask me to teach how to play at any time. Now, let's get started with the game."*
User: *"Alexa, teach me how to play." → Alexa starts rule tutorial*

Experienced players who are revisiting the skill can go through the setup tutorial quickly:

User: *"Alexa, open My Chess."*
Alexa: *"Welcome back to My Chess. Make sure to have your chessboard ready so we can start. I am still only hosting games, not playing them. Do you have your opponent with you?"*
User: *"Yes"*
Alexa: *"Awesome. If you need my help to set up your chessboard, ask me to assist with setup at any time. Let's get started."*
(Alexa continues with playing experience)

How to Create a Rule Tutorial

Creating a tutorial for rules and setup are pretty similar in Alexa skills. Keep it short, timely, and relevant to the context (such as deciding to explain the rules in or out of order).

Keep it relevant: Carefully think about the structure of your tutorial and the timing of explaining a specific rule. When your players are doing a practice run with Alexa, remember that they're receiving explanations as they go. If a rule doesn't apply in an early stage of the game, it might not be the right time to explain it. If you have a complex set of rules and a specific game state you want to talk about, you can skip the full explanation for now and let players know they'll learn more at a later stage.

Alexa: *"Keep in mind when moving any of your pawns that a player can't make a move that would put their own king in check. I'll explain what this means once you run into this scenario later in the game"*

Simulate the game: The first game played is a way to practice the game and get help from Alexa at the same time. This simulation of gameplay should cover the most common game scenarios that utilize most of the rules. Exclude advanced rules at this point so you don't overwhelm the players on their first try. For example, in chess knowing what to do when the king is in check is an advanced move.

> **Alexa:** *"Let's start with an opening move. White always goes first: White, please move your pawn at B-2 one square forward to B-3. [Pause] Done?"*
> **Player 1:** *"Yes"*
> **Alexa:** *"Great job. Pawns can generally move only one step forward at a time with one exception on their very first move. Black, you go next. Move your black pawn at B-7 to B-5. [Pause] Made it?"*

Bite-size rule explanations: Explanations shouldn't take longer than 30 seconds per turn. If your rule is complex, try to split it up by setting pauses or interact with the players by checking in on their understanding as demonstrated below.

> **Alexa:** *"Don't forget, pawns can only go one square forward at a time, and two on their very first move. [Pause] The white pawn at B-3 can't advance two squares anymore, but they can do so with any of the other white pawns at the starting position. White, let's move your pawn at C2 to C4. [Pause] Ready?"*
> **Player 1:** *"Yes"*
> **Alexa:** *"Awesome. Pawns can also capture an opponent's piece that is diagonally in front of it. The white pawn at C4 can capture the black pawn this way. [Pause] See it?"*

Follow up with instructions: After a rule is explained, give the player an activity to act upon that uses the rule. This could be within the skill or on the physical game board. Providing a hands-on experience makes learning rules more engaging and effective. Make sure the given explanation is relevant at this point in the game, otherwise there might not be an action the player can take at this point.

Following up is one technique you can use to see if players understand the lesson. For example, have them spot something on the board or ask comprehension questions about a rule.

Alexa: *"... Black, look at the white pawn that was moved to C4. [Pause] See it?"*

Player 2: *"Yes"*

Alexa: *"Based on the position of your pawns, what should you do next to capture the white pawn at C4? Tell me the board coordinates, such as: "Going from D7 to D6" which by the way isn't the correct answer."*

Player 2: *"Going from B5 to C4"*

Alexa: *"Woohoo! That's correct..."*

Teach players how to interact with Alexa: Encourage players to tell Alexa about their turn as they play it and decisions during the game. At the end of a rule tutorial, each player should know the key set of utterances and actions to use when playing with Alexa. To break the ice, have your tutorial interact with many if not all of the players so each person understands how to play with Alexa.

Alexa: *"[...] Tell me the coordinates of your next move, for instance "Going from D7 to D6" which, by the way, I don't suggest"*

Player 2: *"Going from B5 to C4"*

Alexa: *"That's correct. Take the white pawn at C4 off the board and keep it. [Pause] Next, take your black pawn at B5 and place it at C4. [Pause] Let me know when you're done by saying 'Alexa, next'. [Pause]"*

Player 2: *"Alexa, next"*

Alexa: *"White, it's time for revenge. One of your white pawns is in an ideal position to capture the black pawn at C4. Tell me the coordinates of the pawn you want to move to C4."*

Player 1: *"Going from B3 to C4"*

Alexa: *"Well done. Take the black pawn at C4 off the board and keep it. [Pause] Next up, take your pawn and put it at C4. [...]"*

Allow step by step navigation: Just like setting up the game, players should be able to skip between rule explanations by saying "repeat," "go back," "next" or "rephrase." Unless your game has a specific phrase, you need to test and include all variations of utterances so users can speak in their own words. Don't repeat the question to get the right answer, give a hint and rephrase the question to aid in comprehension.

Alexa: *"[...]You'll need to tell me the coordinates of the piece when you move it. For example, "D2 to D4."*

Player 1: *"Moving the white pawn from the third square to the fifth square away."*

Alexa: *"Hold up, I need the coordinates which are printed on the board. Don't forget to capture the black pawn at C4."*

Player 1: *"Going from B3 to C4"*

Alexa: *"Well done. [...]"*

Ask specific players to respond: Board games, like skills, are communal experiences. If you don't specify the individual you're talking to, you might get voice input from several people talking over each other. Make sure to clearly address the person who's expected to respond to Alexa's prompt. That could be the name of a player, game piece, role, or position on the table. Here are some examples on addressing players:

- "White, what's your next move?"
- "Leader of team red, please draw a card and tell me what you see."
- "First player, please tell me your player color."

Real-world testing: Similar to designing the setup experience, rules should also be tested with a wide variety of users. Find beginners who've never played and advanced players to test the efficacy of your rule tutorial. You can act as Alexa and read through the script to guide the test player through the starting phase of a regular game. It might also help to sit with your back turned so you can't see what your participant is doing. Remember, as Alexa, you can't use your hands to point and you can't provide information that isn't in your script. For the latter, ask non-leading questions afterward such as, "What did you expect to happen?" Or "How did you interpret the instructions?" However, if you find that your testers need more information, you should consider changing the dialog and testing a new script with the next participant.

Watch and learn: Once you've explained the most essential rules and players get the hang of it, let them play on their own for a while. You should find the right moment to let players try it out on their own for a couple of turns before checking in on them. In our chess example, Alexa will give a synopsis and let them know how she'll check in.

Alexa: "[...] Now, why don't you try a couple of rounds on your own. Don't forget – tell me the coordinates when you make your move. I'll jump in if one of your moves is invalid. White, are you ready?"

Player 1: "Yes... Alexa, going from G1 to F3."

Alexa: "Ok. white knight from G1 to F3. Black, it's your turn."

Player 2: [No response]

Alexa: "Still thinking? Need more time?"

Player 2: "Alexa, going from F7 to F5"

Alexa: "Awesome. Move your pawn on the board. White, your turn."

Player 1: "Alexa, going from H2 to H3"

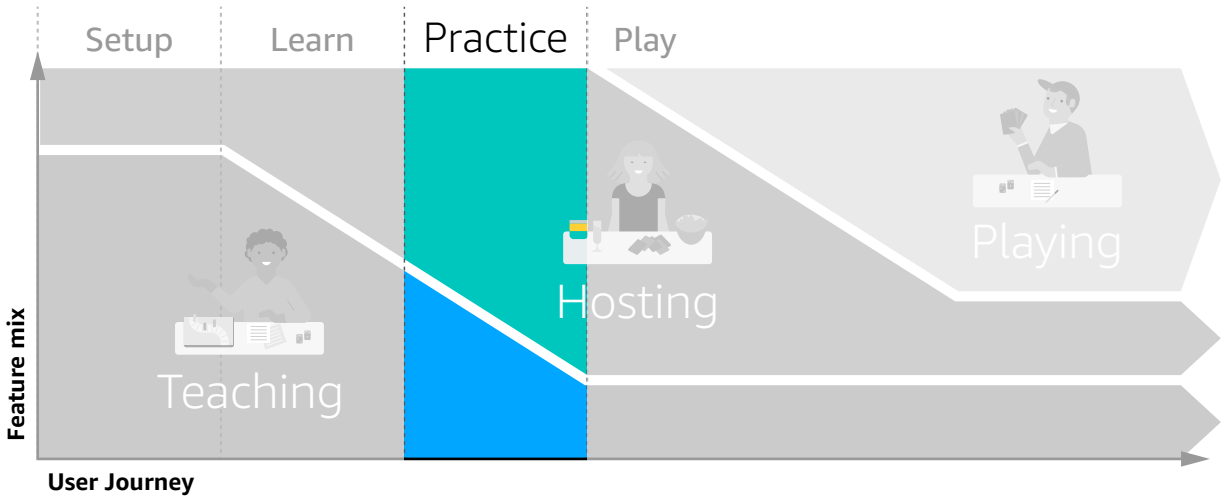
Alexa: "Great. Seems like you got the hang of it. When there's a new rule or strategy, feel free to ask me about it during your game."

Transitioning from Teaching to Hosting Games

You don't have to cover all the rules to let players start having fun with the game on their own. This creates a smooth transition from learning rules into practicing the game. Teaching features, such as the tutorial, move to the background while hosting elements such as movement tracking or gaming music become more prevalent.

Practicing with Alexa

The practice stage in your skill can help players discover strategy on their own, with help from Alexa when there's a new game element or rule to explain. Practice helps players get more confident by seeing the rules in action and deepening their understanding of how the game works.



Designing Practice Games

Seamless transitions: There should be a seamless transition from the teaching tutorial to the practice game given that this part is perceived as a regular game play session with Alexa interjecting during teachable moments. Players might enter this stage from the rule tutorial or after skipping the tutorial after setup.

Your skill should go from an active teaching role to a passive role that only steps in when a new advanced game state or rule violation is detected. Only teach new rules when they become relevant in the context of the game. Make sure the rule is timely and short enough so that it doesn't interrupt the flow of an ongoing game. For example, in chess:

> **Player 1:** *"Going from E5 to C6"*
> **Alexa:** *"Well done. That was an incredible move since it puts the other player's king in check. Black, do you want me to explain what this means and what you're supposed to do now?"*
> **Player 2:** *"Yes"*
> **Alexa:** *"Ok. I can see there's a way to escape. Check state in chess means that your king is now in a position that would let the other player capture it on his next turn. If you take this move, you have to tell the other player 'check' right after your turn. Let's practice. White, may I get the magic word from you now? "*
> **Player 1:** *"Check"*
> **Alexa:** *"That was easy. Now you can just let the other player know they're in check and since I'm tracking your moves you don't have to tell me going forward. Got it?"*
> **Player 1:** *"Yes"*
> **Alexa:** *"Great. Back to you, Black. Whenever your king is in check you are required to dedicate your next turn to save your king from being captured by White. Try find a way to escape, either by moving the king to another square, or by capturing the knight that's currently checking your king. Take your time, then announce your next move. [Pause] Need more time?"*
> **Player 1:** *"Going from D8 to D7"*
> **Alexa:** *"Great job! [...]*

If there's additional, less important information to the game; skip the practice and just pass the information along to players without interrupting the game. For example:

Player 1: *"Going from B1 to A3"*
Alexa: *"Nice. I've noticed you moved your knight for the first time. Just to let you know, this piece is allowed to move forward and backwards. Black, it's your turn. [...]"*

Remind players of the rules: For practice games, remind players about the most essential rules. This reinforces the teaching tutorials by seeing a rule in action.

Player 1: *"Going from G2 to G4"*
Alexa: *"Got it. Keep in mind, pawns can only take two steps on their very first move. Black, it's your turn [...]"*

Provide alternative moves: A more interesting way to remind players about specific rules is to provide an assessment on their last move and give them a better or equally good alternative move. This helps players learn and improve their game strategy by giving them more information.

Note: It might be helpful to have your skill ask players if they want strategy advice from Alexa because it could affect competition between players.

Player 1: *"Going from G2 to G4"*
Alexa: *"OK. So there's an even better choice for your next move. Black, can I share my strategy with White?"*
Player 2: *"Yes"*
Alexa: *"White, have a look at your bishop at C1, and pay attention to black pawn at G5. Anyway, let's keep going. Black, it's your turn [...]"*

Be the referee: Your skill is the neutral party between players, acting as the referee in the game keeping an eye on players to make sure they follow the previously explained rules. If it seems like a player is breaking the rules, step in and advise.

> **Player 1:** *"Going from G2 to G5"*
> **Alexa:** *"Hold up- you're trying to move a pawn three steps forward. Remember, pawns can only be moved one step after the very first move. Take a moment to decide on another move. [...]"*

If you're using **voice profiles** to personalize the experience in your skill, you can also have your skill call out players stealing turns. For example:

> **Player 1:** *"Going from G2 to G5"*
> **Alexa:** *"Hmm, it looks like you made the last move so it's not your turn yet. Black, did you forget to tell me your last move? [...]"*

Verifying player turns: There might be player actions and decisions Alexa can't keep track of in your game. In this case, the skill can't act as referee without getting additional information from players. This would be the case for a board game that uses cards where you draw a card but don't show it to the other players (and Alexa). A good example is the Ticket to Ride board game. Alexa needs to make sure a player's turn is valid.

> **Player:** *"Going from Chicago to Omaha"*
> **Alexa:** *"Do you have four blue train cards to make that move? [...]"*
> **Player:** *"Um, no"*
> **Alexa:** *"As a reminder, to claim a route between two cities, you need the same number and color of train cards as indicated on the board. [...]"*

Responding to Questions About the Rules

Players should be able to ask your skill any specific rule-related questions and instantly receive an answer without looking at the physical rule book. This is a shortcut for players who want to skip the interactive setup and rule tutorials. Instead, they can proactively ask questions at any given time while playing the game.

Building the rules

Creating an exhaustive list of questions you think players might ask is not a scalable approach for building your skill. There are many ways to say the same thing and players might ask random questions when they're confused. You can get anything from "When do I draw a card?" to "What's this stupid red thingy?" You will need a more systematic approach to respond to a wide set of rule-related questions.

Start with your game mechanics: As the game builder, you know how the game works and how you want players to behave. Start with writing out the rules you know, then read it out loud to someone else. We don't write the way we speak and you'll get an easy edited version to start with. This is your base or foundation of questions that you'll elaborate on with multiple versions and use cases. At this stage you should also create a list of all the game entities (including unique names and titles). This can include physical objects such as a card or die, participant roles, game concepts, and events. Each game is different and will have different entities and components that should be audited.

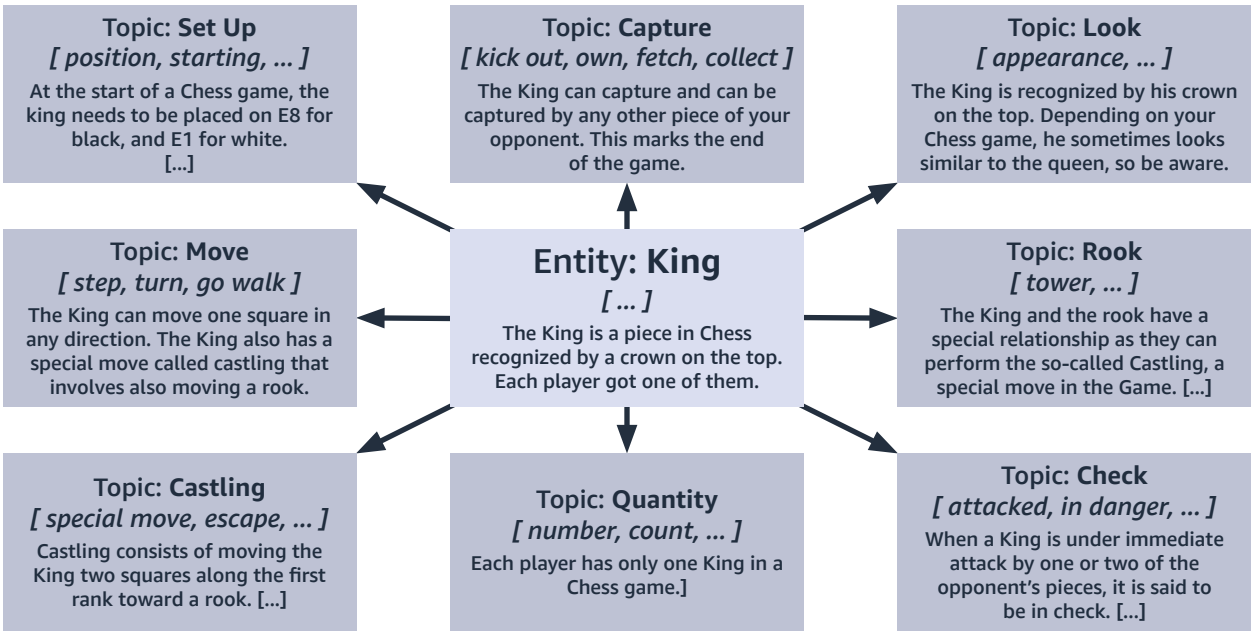
Create your synonym list: Once you have your list of your game entities and basic rules, you'll need to come up with a group of synonyms (related terms, common or otherwise). For example, in chess we could use the terms black and white or dark and light.

Group synonyms around relevant topics: Take each entity and find relevant topics that players might ask about. A topic can be an action or capability associated with an entity. For example, a pawn can take actions such as: move, capture, set up, promote. Synonyms could also identify an attribute such as the quantity, shape, color, etc. List topics for each entity and find their most common synonyms. Once you've covered your basic rulebook with the most common terms then add in slang terms depending on your locale. In chess, instead of "king" and "castling" a player might say instead "king's special move" or "king's escape move."

Topics can be shared by more than one entity. "Castling" in chess relates to the rook and the king, but any piece on the board can "move." Additionally, it helps to write about how the shared topic changes between entities. For instance, "castling" from the king's point of view might be explained differently than from the rook's point of view.

Rephrasing information: From your list of synonyms, you can derive more than one way to explain a rule or strategy. This is very useful when a player doesn't understand the initial phrasing or asks for a rephrase. You'll have a library of different descriptions in response to rule-related player questions.

Below is an example for the King entity in chess with related topics of interest in the game. The king has a basic description and eight related topics, all of which have their own synonyms (i.e. move → step, turn, go, walk) and a description which provides general knowledge about the topic from the king's point of view.



Use entities and topics to form generic questions: After you've made a list of synonyms and a list of topics (with their own synonyms) you have the ingredients to make generic questions with all entities and topics referenced as placeholders. Note that a topic can be an action, a state, or a descriptor.

- "what about {entity}"
- "what about {topic}"
- "tell me about {entity}"
- "when do/can I {take action on /topic for} {entity}"
- "how do/can I {take action on /topic for} {entity}"
- "how many {entity} do I have"
- "how do I {take action on/topic for } {entity}"

These generic phrases are used to build the **interaction model** of an Alexa board game skill so it can capture rule-related questions from a player. These phrases and their synonyms ("what," "how many," etc.) will map to **intents** and **slots**. However, you need to test these generic phrases to make sure they still grammatically make sense and sound natural.

Even these generic questions will map to different intents. Asking for "what" might indicate the player needs a simple definition of an entity while a "how to ..." question implies that the player needs more detailed instructions. Your skill should have all the relationships of entities and their topics mapped out to determine the relevant answer:

> **Player:** *"Alexa, how do I move the king?" (resolved to "how to" intent, with entity = "king" and topic = "move")*
> **Alexa:** *"The king can move one square in any direction. The king also has a special move called castling that involves also moving a rook."*
> **Player:** *"Alexa, what is castling?" (resolves to "what" intent, with entity = "castling," and topic = none)*
> **Alexa:** *"Castling consists of moving the king two squares along the first rank toward a rook."*

Resolve ambiguous questions by asking follow up questions: If a question is too vague to map to an answer intent, Alexa can follow up with the user to get more information. For instance, a user might ask about a topic without a specific entity:

> **Player:** *"Alexa, how do I make a move?" (resolved to "how to" intent, with topic = "move," and entity = none)*
> **Alexa:** *"Tell me which chess piece you want to move. You can ask about the king, queen, rook, knight, pawn or bishop."*
> **Player:** *"King" (entity = "king," "how to" is the intent, and topic = "move")*
> **Alexa:** *"The king can move one square in any direction [...]"*

Capture unknown utterances: Your skill might receive input that can't be mapped to an intent. You will need to provide help messaging in the form of suggestions, such as actions the player can take at this stage. For instance; asking for unknown entity, topic, or synonym might result in the following:

> **Player:** *"Alexa, how do I promote the king?" (resolved to "how to" intent, with topic = "promote," and entity = "king")*
> **Alexa:** *"Hmm, I don't know that one. Please try to rephrase your question or ask something else. For instance, you can ask, "How do I promote the pawn" or "Tell me more about the king."*

The skill did not find an explanation for the topic "promote" and the "king" entity. However, it found them in the database. Rather than just refusing to answer, Alexa suggests to ask for both individually, knowing it will succeed to resolve these questions. In this case it found "promote" being relevant for the "pawn." This is a good opportunity to add in new variations to map to your intents. You can find a record of user utterances that may or may not have mapped to an intent in the **Developer Console > Analytics tab.**

Offer advice or practice to answer questions: Your skill can prompt the user to make sure their question was answered or if they need more detail. Give the user the opportunity to ask further questions no matter what stage they're in.

> **Player 1:** *"Alexa, how do I move the king?"*
> **Alexa:** *"The king can move one square in any direction. Did that answer your question?"*
> **Player 1:** *"No."*
> **Alexa:** *"Ok, no problem. Would you like to hear more?"*
> **Player 1:** *"Yes."*
> **Alexa:** *"The king also has a special move called castling that involves also moving a rook. Did that answer your question?"*
> **Player 1:** *"Yes."*

Note: This example shows multiple answers mapping to the same intent around the topic of "move" and the entity "king."

Use the current situation (context) in your answers: Consider the stage the player is in and what has transpired in the game to accurately map the correct intent to answer a player's questions. This is a pretty powerful technique that not even the physical game's rulebook can do. Instead of scanning through pages of text, Alexa can tell you the exact answer right away. For instance, if the player asks about a topic without specifying an entity, you might guess it refers to an entity which was part of the last move.

> **Player 1:** *"Going from G2 to G3" (assuming this moved the king)*
> **Alexa:** *"Got it. Black, it's your turn. [...]"*
> **Player 1:** *"Alexa, tell me more about that."*
> **Alexa:** *"The king is a piece in chess recognized by a crown on the top. Each player has one of them. Did that answer your question?"*
> **Player 1:** *"Yes, thanks."*

Answer the most popular questions: Always have answers for specific questions that pop up again and again with players in your skill. These might not be covered by your questions around entities and topics. Think about whether a popular question already maps to an intent in the same category and add it as a variation. If not, you'll need to explicitly map the utterance to an intent with a corresponding answer.

> **Player 1:** *"Alexa, who's next?"*
> **Alexa:** *"The last move I got was made by Black. I believe White is next. [...]"*

In this case, the answer might be vague because the players might have forgotten to tell Alexa about a previous move. Generally, contextual information derived from the current game state based on user input should always be classified as "likely true."

Return to where players left off: Rule-related questions can be asked at any time, in an ongoing game or during a rule tutorial. Make sure your skill returns to the previous state (pre-question) after answering the question.

Player 1: *"Going from G2 to G4"*

Alexa: *"OK. Black, it's your turn. [...]"*

Player 1: *"Alexa, how do I move the king?"*

Alexa: *"The king can move one square in any direction. [...] Did that answer your question?"*

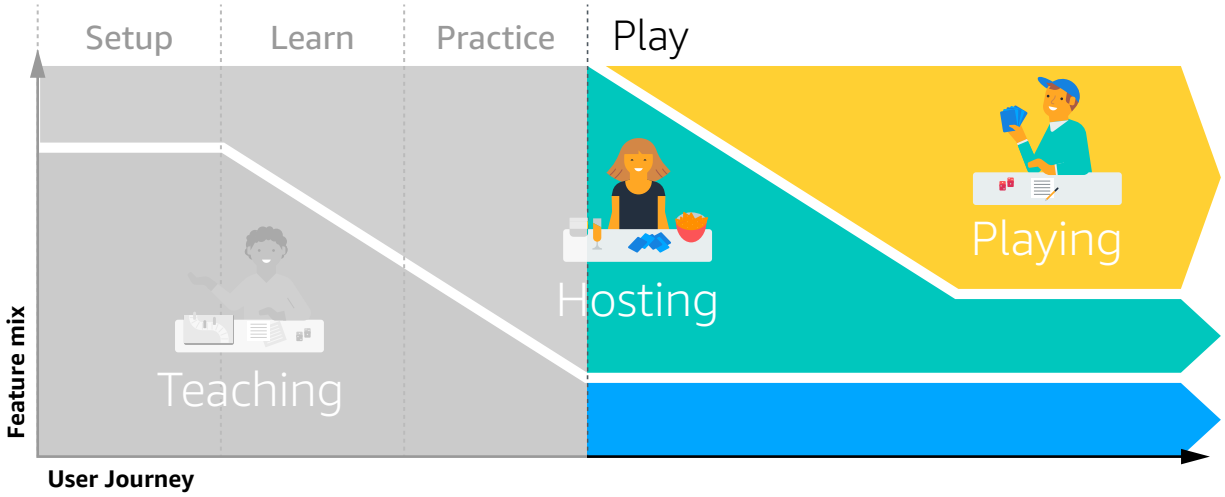
Player 1: *"Yes"*

Alexa: *"Great. Black, go ahead and make your move. [...]"*

A systematic approach to creating a foundation of entity/topic questions, testing them, and then refining after user feedback will help your skill quickly build up an accurate set of questions and answers. Once your players have gone through some practice runs with coaching from your skill, it's time to start playing the game for real.

Playing Board Games with Alexa

Once your users have passed through the setup, rule tutorials, and practice rounds, it's time to start playing the game! Actual gameplay in your skill should have Alexa narrating or hosting the game and being a neutral party as referee. At this stage, we can assume our users understand the rules and have a little more confidence after playing practice rounds. That being said, your skill should still be ready answer any strategy or rule related questions.



In the graph above, during the main gameplay stage of the user journey, your skill can host or play the game while maintaining the ability to answer questions if players ask. This depends on the characteristics of the board game and how you want your skill to interact or overlap with the physical experience.

When using virtual players, it's better to have a different voice than Alexa's. This could be a Polly voice or a recording of a voice actor. You don't want someone to referee and play the game at the same time – this would ruin their impartiality. Having different voices as players differentiates Alexa as the voice of the interface that controls the narration of the experience. Any virtual player in your skill should respond like a human player would, creating its own competitive strategy that will challenge the other players at the table. However, your skill's virtual players will need help from their human counterparts when taking an action with the physical game pieces.

Note: If Alexa isn't hosting or acting as a game master, using her voice as one of the virtual players is amenable.

Tracking the Game

Your skill should strive to follow the gameplay with as little interruption as possible to the experience. Enabling your skill to track the game's progress comes at the cost of having players continually interact with the skill. Your skill must add value to the board game experience to compensate for the interruption.

Game tracking best practices

1. **What information does your skill need about the game to deliver a feature?**
   For chess, the skill needs to know all players' moves (start and destination coordinates) to act as a virtual opponent or lead the game as a moderator.

2. **How will your skill obtain this information in an elegant and efficient way?**
   Your skill should be able to glean the most information from the fewest amount of turns between the user and Alexa.
   For chess, the Alexa skill can derive a lot of information from the history of moves each player has made. From that information, the skill knows exactly where each chess piece is located on the board, including the type and the number of valid moves, at any time. All of this is efficiently calculated from the player coordinates without further input from the players

3. **When does your skill need this information in order to deliver a feature?**
   For chess, the skill needs the player's move immediately since there's a direct impact on the game. The skill will use this information to assess if a move is valid and provide contextual help if asked.

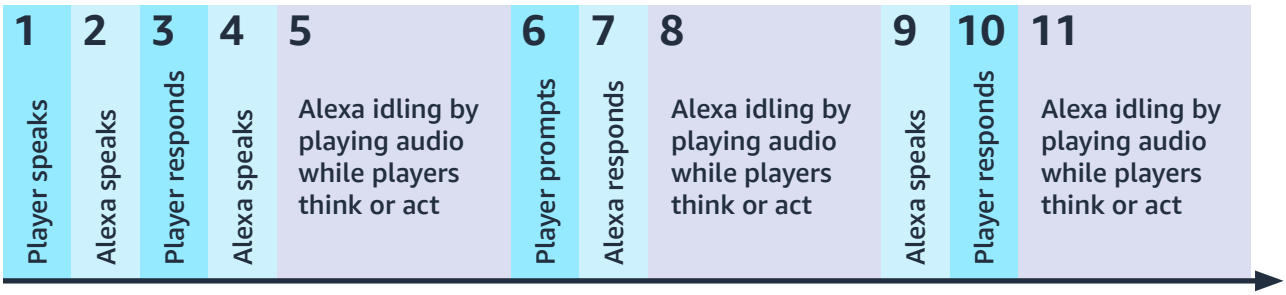
To answer these questions, you'll need to outline the objective of the game and how players will move through the game to get there. Map out the different stages of the game or the types of turns a player can take. From there, you can answer these questions to make sure your voice design script works with the board game, not as a distraction.

Skill session

When a user invokes (opens) your skill by saying something like "Alexa, launch My chess" the session should stay open until the game ends or user ends it with "Alexa, stop." Or, "Alexa, cancel." A skill for board games is not going to have a continuous conversation with the players because they may need time to think and interact with the game and other players. For board games, Alexa skill sessions need to remain open for a longer period of time since it can take hours to play through an entire game. During this time, the game session may be open, but the skill is not streaming to the cloud until the user uses the wake word, "Alexa." Learn more about skill sessions **here**.

Idle state

After giving a prompt, your skill should remain idle waiting for a response that could take a while. To keep your skill idle in the background, play an audio track via **SSML audio tags** in the output speech. During this time, the microphone will be off and users will be required to use the wake word to continue the experience with your skill. Learn more about **SSML and audio tags**.



Board game in progress

The graph illustrates a typical user flow in an Alexa board game skill session. This example uses an Alexa chess skill.

(See chart on next page)

Step	Actor	Action	Chess Example
1	Player	The player invokes the skill and starts the session.	“Alexa, open My Chess.”
2	Alexa	Alexa welcomes the players and offers a different message for first time users vs. returning users. This can be an instruction for players, a narrative opening for the next chapter in a game, or greetings from a virtual player.	"Welcome back to My Chess. White, your king is under attack. Do you want to know what this means for your next move?“
3	Player	Players respond to an Alexa prompt.	"No, thanks"
4	Alexa	Alexa opens up the next turn and asks the players to act. Alexa also lets players know when and how to interact with the skill with the type of information needed.	"Ok, take your time. As a reminder, once you know what you want to do, call out my name and the coordinates you’re moving to so I can track it.“
5	Alexa	Alexa plays some audio, waiting for voice input.	Plays concentration music
6	Players	The player thinks about their next move, possibly interacting with the other players. Player wakes up Alexa by saying "Alexa, ..." and provides the requested information.	"Alexa, going from D1 to D2“
7	Alexa	Alexa takes over, responding to the user’s action. Alexa prompts the next player on their turn.	"Well done. That was close. Black, it’s your turn.
8	Alexa	Alexa plays some audio	Plays concentration music
9	Alexa	The player doesn’t respond and is still thinking about strategy.	"Do you need more time?”
10	Player	Player confirms they need more time. Alexa then restarts audio. Or, players provide the requested information. In this case Alexa would continue with opening up the next turn.	"Yes, please."
11	Alexa	Alexa plays some music	Plays concentration music

Saving the Game

Alexa skill state management makes it easy to persist game states over multiple skill sessions by using a database. Saving games and returning to an interrupted game is a must-have feature for board game skills. If a game has not been completed previously, your skill can ask return users to continue where they left off right after the launch of the skill. When a game is continued, reinitiate the game by reminding the players of their last turn, and let them know what's next.

Undoing Turns

Another important feature to incorporate is undoing the last action of a player. The main purpose is to recover from invalid voice inputs that lead Alexa to capture incorrect information. To help discover mistaken input, Alexa can repeat it for the players. However, constantly repeating user input isn't a great experience. You might choose to repeat or even ask to reconfirm information when you suspect it is wrong. For instance, if a player puts himself at a disadvantage, the skill should consider repeating the voice input to see if the player reacts and reverses the move.

Bookkeeping

Board games typically have some form of bookkeeping activity that is repetitive such as tallying scores or starting a timer. Some players love to manage bookkeeping, others find it tedious. This is a great way for your skill to step in and take over bookkeeping duty so your users can focus on playing the game.

Set timers: Alexa can keep accurate timers and have them play background music or use sound effects that are thematically appropriate. For instance, the My Chess skill might have a rapid play mode in which players need to decide on their next move within one minute.

> **Alexa:** *White, it's your turn. You have one minute to make your move.*
> *[Plays a clock ticking for 60 seconds that ends in a chime.]*
> *"Time's up. What's your move?"*
> **Player 1**: *"Moving from D8 to C2"*
> **Alexa:** *Uh oh, that's not a valid move. Second chance, I'll give you another 30 seconds to think about it. Let's go!" [Plays a clock ticking for 30 seconds that ends in a chime.]*
> *"Time's up. What's your move?"*
> **Player1:** *"Going from A1 to A4."*
> **Alexa:** *"Alright, that means you forfeit your turn. Black, you're up!"*

Use timestamps to track time: Even if your skill doesn't use timers, tracking the amount of time played among other stats can be an interesting metric to give players. Timestamps are also important for time-based scoring systems like running a race.

Keep track of the score: Your skill can keep score by doing all of the math for you. To track scores, your skill will need to keep a tally of all relevant player actions that result in gaining or losing points. Tracking scores can also be used for calculating leaderboards and encouraging competition. Alexa can save personal all-time records to encourage users to improve and beat their own high-score, or maintain global leaderboards which anonymously rank all players who used the skill. Learn how to create leaderboards with **GameOn SDK (beta)**.

Note: Depending on the type of game, determine what information is important to users playing the game and how statistics can help improve their gameplay. This could be time, number of moves, specific actions taken, etc.

Games of chance: Most board games rely on random input which is generated from players rolling dice, drawing cards, spinning wheels, etc. Your skill can generate any sort of random event such as a simulated die roll. You can make this an optional experience by asking if the players have their own dice or if you want Alexa to roll for them.

Soundscapes and Audio

Board games offer great tactile experiences with beautiful visual materials, but they usually don't offer an audio experience. Alexa, on the other hand, is all about the audio experience as a voice-first interface. You can add in background music, synchronize sounds to an action, complement the narration, or add sounds to navigation and commands.

Use thematic music to set the mood: Using SSML audio is a useful feature that not only keeps the session open, it can also be used to add an authentic soundscape to the playing experience. If the player interactions take longer than just a couple of seconds, it's a good idea to play music that matches the theme of the game and the current state (context). For instance, you could add futuristic sounding music if the board game is a space adventure, or choose medieval music if a board game is set in a castle. The music should be aligned to the context of the current gameplay. For example, if your player is trying to focus, a calming melody should be played instead of dramatic music. This is great way to brand your experience with original compositions; however, you can license music from online catalogs as well.

Use sound effects to set the ambiance: Find sound effects that add to the rich audio background of your game's story. This could be the rustling of trees, the crash of waves, a tea kettle whistling, etc. These sounds can be just as effective as music in conveying tone and place. Look for opportunities to pace your game by timing a sound effect at an opportune moment. This could signal to players that it's time to be excited or contemplative. For example, if your game has medieval knights; you can add sounds of striking swords, jangling armor, and galloping horses when a player takes an action or to add ambiance to the narration of the story.

SSML audio tags allow for playing sounds in Alexa skill output speech which can highlight elements in the game such as playing an applause track when a player wins. Sounds aren't just for wins or losses - you can create a sound landscape for alerting players to get their attention or indicating that it's the next player's turn. You can also add in environmental sounds such as playing the sound of rolling dice on a board game. If your board game has a topic or characters, add sounds to make the experience seem more authentic. For example, if you have a board game with trains, add train whistles and engine noises during gameplay. Just make sure that your soundscape doesn't interfere or distract players during the game. Learn more about adding sound effects with the **ASK Sound Library**.

Let's take a look at an example for chess:

> **Alexa:** *"White, it's your turn. Let me know when you make your move."*
> *[Plays concentration music for 30 seconds. No response from Player 1.]*
> *"Need more time?"*
> **Player 1:** *"Alexa, moving from D4 to C6"*
> **Alexa:** *"Your knight gallops towards C6." [Plays a clip of a horse galloping.]*
> *"Black, your turn."*
> *[Plays concentration music.]*
> **Player 2:** *"Alexa, moving from C4 to C1"*
> **Alexa:** *"[Plays sound of rocks tumbling.] Awesome move, your rook lands at C1. Uh oh,"*
> *[Battle scene noises, swords clashing] White, your king is under attack! What's your next move?"*
> *[Plays concentration music]*

Provide variety: Users are going to spend a lot of time with your skill and listening to the same music over and over again can get annoying. The same goes for sound effects unless they're linked to a specific event in the game that players recognize, for example in the chess example, we had a sound effect of a battle scene which cues that the king is under attack. However, if an event is expected to come up frequently in the game, provide a sample of similar sounds associated with the same meaning. In this case, playing different sounds of a galloping horse for variety is a better experience since the knight chess piece will be moved many times throughout the game.

Repeat and help: Sound effects should not be used if a player asks for help or has a question about how to play the game. The music may get in the way of the explanation. Voice commands such as, "go back," "repeat" and "rephrase" should not have sound effects either. If the original phrase from Alexa had music playing in the background, you may want to consider taking out the background music or sound effect to make sure the user can hear the phrase correctly.

Foreground vs. background music: Sound effects or music should be brought to the foreground when it can add to the mood, such as when an action is taken or as part of the narration. Foreground soundscapes can be louder for emphasis, increase the tempo, and add tension to a scene. Music and sound effects need to transition to the background when the user or Alexa is speaking so it doesn't interfere with comprehension. You can avoid having awkward silence in a room by providing background music during times where players interact with each other or are thinking about a move. Background music needs to be at a low volume, slower tempo, and more relaxed than foreground audio.

Note: Always test your audio in the skill to make sure it's at the right volume for the context. Avoid extremes when raising or lowering the volume in a skill because that can be very startling to users.

Thematic music: Playing a branded audio track that represents the game's story along with narration from a voice actor can deliver a knockout performance. The right combination of music and narration can instantly get a group in the right mood. Make sure to have varied welcome responses and music for first time vs. returning users. For example, if a game was restarted within a few minutes, welcome them with a short bit of audio, give a status update, and go back into the game. If it's been weeks or months, redeliver the whole intro. Remember to support user commands to stop the audio and skip through game sections such as "continue," "skip" or "next" for users who just want to get to the game quickly.

Narration and Voice Over

Games with narrative content usually have narration or a game host that delivers the story. You can use Alexa's voice, use Polly voices or record custom audio for the narrative your skill will have.

Alexa's voice: With SSML, you can change Alexa's voice to be emotional, emphasize, whisper, change her **speaking style** or pitch, volume, and speed.

Polly voices: This option is great if you're looking for a range of text to speech voices in cases where you have multiple virtual players or conversations in a story between characters. Like Alexa's voice, Polly voices use **SSML voice tags**.

Voice recordings: Recording custom audio gives your game a branded voice. With voice over, you have absolute control on inflection, pronunciation, and emphasis.

Dynamic Content

Your Alexa skill can turn any traditional board game into an ever-changing experience by showcasing dynamic and personalized content so there's never a dull moment. You can make the entire experience free or offer premium content and new gameplay available using **In-Skill Purchasing.** You can also leverage mood setting and random generators to vary output of speech, sounds, music and narratives. Even if your content doesn't change over time, this creates new experiences which surprise and excite board game players. Your skill can also do seasonal customizations (e.g. holiday-themed ambiance), offer consumables (e.g. inventory items, extra lives), etc. to deepen the experience ensuring players have new content to play every time.

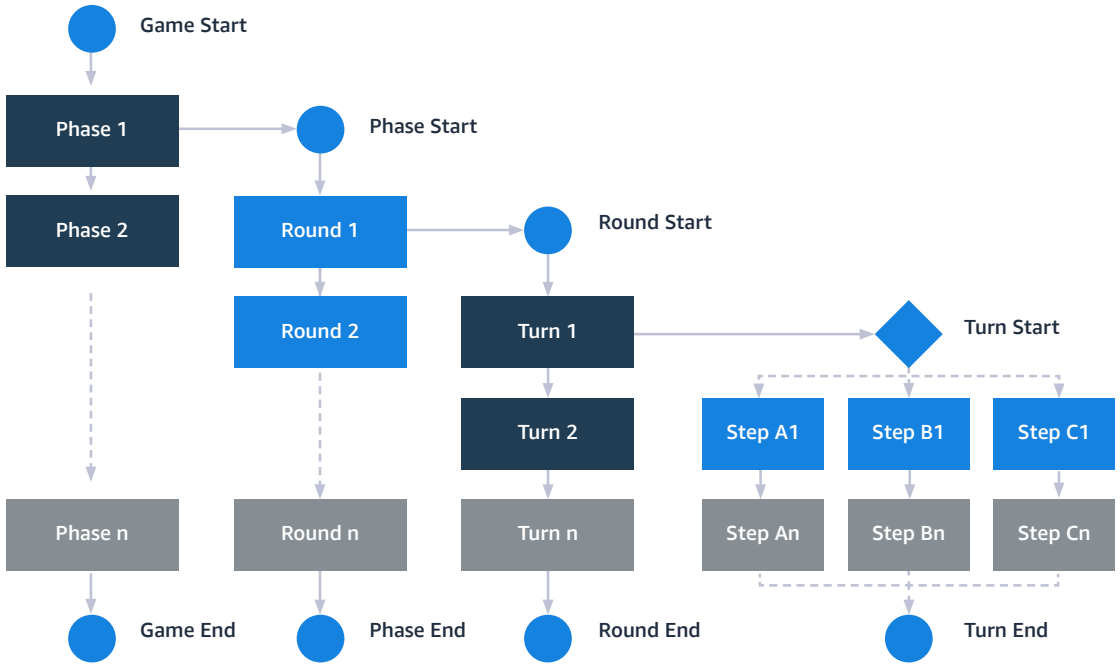
In addition to adding new content, a skill can also add or change existing mechanics, game pieces and rules of a board game, which creates an entirely new game experience. For instance, if an Alexa skill opens up or wraps up a game, a phase, round, turn or player action during the game, it can explain new rules or winning criteria, change the turn order of a round or time-box player actions. In particular when acting as a game master or performing virtual game roles, your skill can add new campaigns and scenarios players need to act upon with new strategies. Lastly, if an Alexa skill is used to generate random input, it could add a set of new virtual cards which brings a new condition or capability to the game .

Game Mastering

By taking on a game mastering role, skills can walk players through a board game by letting them know who's next or what to do next. In particular, this is interesting for board games which progress dynamically (e.g. rounds have no fixed turn orders) or branch out into parallel phases and rounds, and real-time based games such as trivia games. However, any board game with non-sequential elements can benefit from

using an Alexa skill as a game master as well as any group of players who need coordination and guidance, such as young children who play together.

Game mastering is an efficient strategy to get a lot of useful information about an ongoing game from the player side as the opening and closing of game episodes like phases, rounds, turns and player actions are key events in a board game. Please take another look at the gameplay model.



A skill can choose to intercept and take over as a game master in order to get game-related information from players when it is needed.

Use skills to open up an episode of the game: Whether performing as a narrator or acting as a host, an Alexa skill can set the stage for an entirely new game, a new phase, a round or a player turn by introducing new conditions like a new rule or situation. An opening is used to provide all relevant information for players to go through this episode of a game. Here are a few examples:

- The skill opens up a new cooperative role-playing game as a narrator by describing an apocalyptic scenario. It randomly assigns roles to each player and quickly explains their skills in the game.
- The skill opens up the showdown phase of a trivia quiz game by explaining the special rules to all players. For instance, Alexa explains that this phase is time-boxed to five minutes in which each correct answer counts twice.

(Example continues on next page)

- The skill opens up a new round for a strategy game in which the turn order for all players is determined by their current score ranking. As the skill is tracking scores for each player it knows exactly who goes first.
- The skill opens up the next turn for a player in a role-playing game. In order to move his piece on the board, the player needs to roll two dice. Alexa asks the player what these dice show in order to present a corresponding narrative, before letting the player go with his move.

Use skills to wrap up an episode of the game: Similar to opening an episode, a skill can close an episode by following up on its outcome. Below are a few examples:

- The skill wraps up an apocalyptic role-playing game by telling the story of a cooperative group of players winning this game and saving mankind, accompanied by heroic music and a cheering crowd. Alexa closes by announcing the player with the highest score.
- The skill wraps up the showdown phase of a trivia quiz game by presenting the final scores for all players.
- The skill wraps up a round for a strategy game by assigning new resources to all players, depending on how they did on their turns.
- The skill wraps up a player's turn in a role-playing game by letting him know his last move ate up all of his energy. Alexa lets the player roll two dice to decide if he can stay in the game or must leave it.

Use skills to lead time-based games: Unlike turn-based games, time-based games are more dynamic and need precise coordination and time keeping in most parts of the game. An Alexa skill can help do this job which usually is performed by one of the players at the table. We already talked about keeping time in our "Bookkeeping" chapter and use this knowledge to understand how an Alexa skill can coordinate time-based rounds, turns and player actions in board games.

- The skill keeps time of a trivia quiz game which is time-boxed for one hour. After each round it lets all users know the remaining time to score points. When time's up, Alexa ends an ongoing round by sharing all current player scores before opening up the showdown phase.
- In chess, Alexa keeps the time for each player turn. The skill uses the total time to calculate a final score for each player to award the fastest mover when the game is wrapped up.
- In a party game, an Alexa skill sets a timer for one minute in which a player needs to explain as many words to his group as he sees on a card. Technically, the timer is an audio file playing quiz show music for exactly one minute, followed by a buzzer sound, and Alexa following up on the group to ask for the number of words they guessed correctly.

Be clear on who's expected to prompt Alexa: Time-based games can become hectic at times. Avoid situations in which players simultaneously shout at Alexa as overlapping voices and noise lead to distorted speech recognition. For example, you should avoid having the skill ask a question to everyone in the room at the same time. Instead, try to work around these situations by providing a question to only one player at a time, or, players write down their answer before Alexa goes clockwise to ask for them individually.

Be clear on who's expected to respond to Alexa: Keep in mind that a skill is talking to more than just one person. If you don't specify the individual you're talking to, you might get voice input from several people talking across each other. Make sure to clearly address the person who's expected to respond to your skill's prompt. You most likely will not have the name of a player but you might know their player color, role, or position on the table. That being said, you can address an individual player in one of the following ways:

- "Green player, what's your next move?"
- "Leader of team red, please draw a card and tell me what you see."
- "Murderer, please choose your next victim"
- "To the player who took the first turn, please tell me your player color"

Be careful on when you prompt a player: anticipate any situation in which players might still interact with each other. Make yourself heard and delay opening of the microphone to give time for the group to settle down and listen up. Let's have a look at how this might work for a party game:

> **Alexa:** *"Team red, you have one minute to guess as many words as your leader describes. Go! [plays game show music for 60 seconds and ends with longer buzzer sound] Time's up! [plays short buzzer sound] Leader of team red, [pause] how many words did your group guess correctly?"*

Give and take: whenever your skill jumps in an ongoing game to ask for information about the game, try to immediately give something back to the players so they see value in answering your questions. Try to avoid tracking every single player action to the final score, which is only shared at the very end of the game. Instead, you might use these scores to present preliminary total scores and player rankings. You can also give an instant reward. The instant reward doesn't need to relate to the given information itself. For example, you can play a matching sound effect and give kudos to the player for having made an "awesome move."

Virtual Roles in the Game

Your Alexa skill can also embody or impersonate virtual roles and players in the game. By using narrator, bookkeeper or game master features, Alexa can take on virtual roles in a board game which can usually be found in (semi-)cooperative and solo games. When a player or group of players compete against an opposing force in a board game (e.g. a bank, an epidemic, or a barbarian civilization), your skill can use different voices, sounds and random input to embody thematic elements in the game or even impersonate virtual opponents (e.g. a traitor, murderer or quizmaster). Taking on such a role lets Alexa join the game as a player who makes random decisions that players need to act upon. Please have a look at some examples:

- Acting as a quizmaster, Alexa is the entertainer who asks trivia questions to players in a party game
- Acting as a villain, Alexa randomly selects her next victim in a murder-mystery game
- Acting as a stock market, Alexa manages market prices and sells stocks to players in an economic board game
- Acting as an epidemic, Alexa randomly decides on outbreak and spread of a disease which players need to cure

For taking on such roles, an Alexa skill can adopt game master techniques to get deeply involved in a board game.

Virtual Players of the Game

Alexa can play against a user or create multiple virtual players in a game. This helps users who don't have enough people to play or want to practice the game. Unlike the game master or virtual game roles, virtual player roles follow a winning strategy and adjust their own decisions and actions taken as a player to new conditions in an ongoing game.

Starting the game

An Alexa skill can offer to join a board game as one or even multiple players in the same way human players do. When the players invite Alexa to play with them, provide instructions on how to help the virtual player interact with the board since they're not physically present. When a new game starts, ask one player to set up the game for Alexa. For example, that could be drawing cards or choosing a player color.

Player: *"Alexa, open My Chess"*

Alexa: *"Welcome back to My Chess. Do you have a human opponent?"*

Player: *"No"*

Alexa: *"Would you like me to join your game?"*

Player: *"Yes"*

Alexa: *"Great. To get started, please set up all my chess pieces. Do you want me to assist you with that?"*

Player: *"No"*

Alexa: *"Ok. Should I toss a coin to see who goes first?"*

Player: *"Sure"*

Alexa: *"Thanks. Looks like you get the white pieces. White always goes first. Good luck. [...]"*

Taking turns

If your skill can't always track turns, the players will have to tell Alexa when to go. This happens with games where players can skip a turn or there's a change in the player order due to a new action. Your skill should evaluate the current state of the game or ask questions like, "Who went last?" Many board games initiate player turns randomly such as drawing cards or rolling dice. You can simulate this procedure or ask players to act for the skill ("please draw a card for me and let me know what it shows.") Once you have all the information needed, Alexa should ask one of the players to execute an action, such as moving a game piece

Use emotions: Have Alexa or the Polly voices act and talk like a human player would. A reasonable reaction to drawing a bad card might be to show anger ("oh snap" or "not my day") and cheer in response to advantageous events. **Alexa speechcons** have a whole roster of phrases to use, just try to not overdo it.

Be verbose with descriptions: Virtual players should always comment on their turns to be fully transparent about what's happening. For instance, if there's more than one deck of cards, you'd need to say which deck you want to draw from. For instance, "Ok, please draw two cards from the green card deck for me."

Be nice, play fair: Unless you're playing a character, virtual players should not be mean and provoking. Don't be a sore loser or an obnoxious winner. Try not to give Alexa an advantage in order to make her more competitive or to compensate for one of her handicaps. Players will pay close attention to how Alexa plays, what cards she draws, and which moves she makes.

Keeping secrets

In many board games, players keep secrets from each other. In some cases, this is a very difficult challenge for virtual players in an Alexa skill.

- When virtual players ask human players to take physical action on their behalf, its outcome will be transparent for everyone at the table even if it should be kept as a secret. For example, asking a human player to draw Alexa a card and tell her what she got will eventually reveal her secret to everyone.
- A potential workaround is to simulate the physical action and draw from a virtual deck of cards. However, this will cause a rift between the physical and virtual decks. To even up the odds of drawing specific cards, simulate drawing cards from the virtual deck for each human player and discard them immediately. The same procedure can be done by human players who might discard cards from their deck whenever Alexa draws from her virtual deck. This still won't avoid having duplicate cards in Alexa's hands which can be an issue for decks of only individual cards. In this case there's no way around of drawing cards for Alexa and revealing her secret. Depending on the type of gameplay this might work as a tradeoff for having Alexa in the game.
- In cooperative games, teams can share secrets among each other by whispering or showing secrets to each other while hiding them from their opponents. A virtual player cannot receive the secret information from its team. In order to work around this constraint, a non-verbal communication channel could be used to share the information with the skill such as a website or app. Or just make the opposing team leave the room.

Conclusion

By the end of this guide, you should understand the types of actions your Alexa companion skill can take to enhance a board game experience, stages in the user journey throughout the game, and how to build a skill that interacts with each stage of the user journey.

Get started today and we can't wait to see you what you build!

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