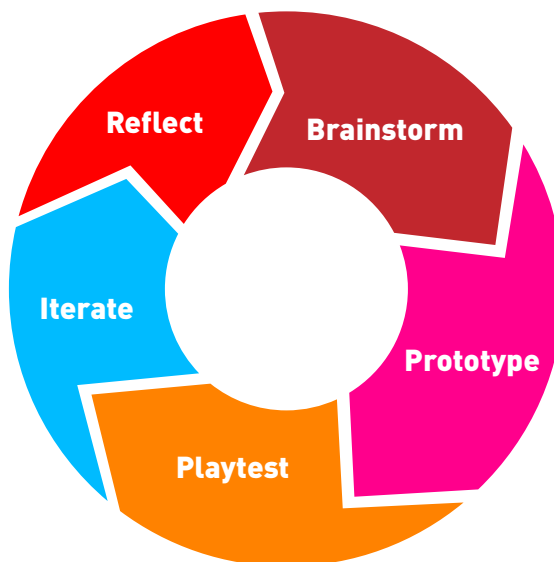# INTRO TO GAME DESIGN

## What does it mean to be a game designer?

So you want to be a game designer? The first step to being a game designer is thinking like one! Game designers see the potential for play in just about everything. Just walking down the street or doing any routine task can feel like a game if you see things through the lens of a game designer. Even the apple you have with lunch can be a game piece!

Game designers have the magical power to dream up playful ways of interacting with everything around them. It's all about observing, exploring and tinkering, and of course, playing and testing out your creations. When game designers have an idea for a game, they immediately create something playable to test out their idea. They also invite others to play with their creation and to give them feedback.

Game designers rarely design a game without moving through a process of playing, trying, testing, and improving - This is called the **Game Design Process**.

**GAMES FOR CHANGE**

Reflect

Brainstorm

Iterate

Prototype

Playtest

# Now that you know why the design process is important, let's break it down!

### STEP 1- BRAINSTORM
Brainstorming is the first step in the design process. During this phase, game designers ask themselves what kind of game they can make with the materials at hand to meet their design constraints and goals. Often, you might just come up with a few kernels that can be developed into a game and by testing it out, running it by other people, and pushing your creativity, you can come up with something great! It's important to come up with many ideas during the brainstorming phase - don't edit yourself and certainly don't write anything off just yet!

### STEP 2- PROTOTYPE
Once you've brainstormed a number of ideas, it's time to select one or two favorites to push forward and start building. Prototyping is all about trying to get your idea on paper in order to create something playable so that you can test out your idea and get feedback. You want to think about which ideas seem the most possible, given the time you want to spend, the materials you have, and the design challenge at hand. Create a sketch of your idea if you'd like, then start to use the materials to build your game. Index cards and post-its are great prototyping tools! It's ok to change your idea once you start to build it - that's part of the process.

### STEP 3 - PLAYTEST
Once you've built a playable prototype and tested it and refined it yourself or with your team members, you're ready to have someone else play to help you determine how to make it the best possible game. Find one or more people to play your game and ask them what they think. It helps if you ask them specific questions about their experience such as:

+ How fun was this game? What did you like about it? What didn't you like?
+ What suggestions do you have for improving it?

Record some notes so that you can use them later to improve your design. Also - you'll be able to learn a lot just by watching them play the game. Did they understand the rules? Did they interact with the game in the way you intended? Was anything confusing or overly challenging? What were you surprised by?

### STEP 4 - ITERATE
Iteration is a fancy word for making changes to your game in order to make it better and more fun. What changes need to be made to your game based on the playtest? How can you improve your game? Using playtester feedback, pick one or two ideas that you think are best for making a change to your game to improve it, then put those changes into action by redesigning your game. You can playtest it again and get more feedback if you want until you feel you are done with it.

### STEP 5 - REFLECT
Reflection is a key part of the game design process. As game designers, we are constantly evaluating our work and processes and getting feedback from others in order to improve and grow. Think about what you learned during your game design process. It's helpful to think about what you liked about the process and your game, but more importantly, consider what didn't go so well and what you would change if you were going to do this again. The game design process is about reframing failure or mistakes as an opportunity to improve

# Time to Reflect!

Think about one of your favorite games. What makes it fun? What makes it challenging? If you could give the game designer feedback on the experience of play, what would you tell them?

Think about an activity that you do everyday, like brushing your teeth. Now look at that activity through the lens of a game designer. What are the potentials for play? Would it be more fun if you added a timer? Made it a competition? The possibilities are endless!

# What makes a game a game?

A true GAME is different from just PLAY. There are qualities that a true game has that are missing in play. This doesn't mean a game is better than play – it just means it is different. You probably know this already, because you have said "Let's play a game" – but not "let's game a play!" So play is part of a game, but you can play something without it having to be a game.

It sounds very obvious, but it's worth us breaking this down so you can really understand as a game designer what makes a game really a GAME.

# Test Your Knowledge!

**Can you tell the difference between what is a GAME and what is PLAY? Examine the following scenarios. What do you notice?**

You are sitting in your chair in class. There is a rubber band around your pencil. You start stretching the rubber band and moving it around your pencil. You start to spin the pencil around, holding the rubber band around your fingers. Is this a game, or just play?

**GAME**    or    **PLAY?**    (CIRCLE ONE)

**How do you know?**

Your little sister starts kicking a ball around the hallways of your house. Sometimes she kicks it at a wall, other times she picks it up and throws it to your mother, and eventually, she just sits down and balances the ball on her feet. Is this a game, or just play?

**GAME**    or    **PLAY?**    (CIRCLE ONE)

**How do you know?**

You and a friend start to run around the playground. He says that you have to make it around to the slide in 15 seconds, and whoever comes down first wins. Is this a game, or just play?

**GAME**    or    **PLAY?**    (CIRCLE ONE)

**How do you know?**

#1 and #2 are both play and COULD become games, but there were some things missing.  True games are structured ways to play - this means there are things like winners, goals, and rules.  Do they always need to have a winner? Maybe not - but they  do have to have some kind of organization to them, whereas play can just be doing something for pure enjoyment. There doesn't need to be any rules.

**So what is a game? A game is an organized way to play. It has rules, a goal, and a few other things that we will learn about later.**

Games and play can have many similar qualities - both can be fun, both can involve multiple people, both can use materials like balls or dice or any other object.
And obviously, you do play a game!

## Think outside the (sand) box!

Distinguishing between play and a game sounds simple, right? It isn't too hard, but sometimes this can get a little tricky. Think about a game like Minecraft.  If you have played this game, you know you can be in creative mode, and there is no real "winner".  Is it still a game?  That's a tough one!  We call Minecraft a game because it does have rule and objectives you can complete, even if there isn't a real "winner."  It's known as a sandbox game.  You might have other examples like this that you can think of.

# Parts of a Game

The best way to examine what is a game is to look at the parts of a game. Throughout time and across cultures, most games have the same six parts - **a goal, a challenge, core mechanics, components, rules** and **space**. The table below explains each part in more detail.

Understanding the parts of a game opens up the world of game design because with this knowledge, you can change one part of a game to create a new game (called modding) or design your own unique game by taking all six parts of a game into account.

## GAME DESIGNER TIPS

- Remember the difference between components and core mechanics - components are nouns and core mechanics are verbs.

- If….then….or you may…. you may not….are good sentence starters for rule making.

# Parts of a Game Vocabulary

## Goal

**What does a player or team have to do to win?**

*Cross the finish line first, collect the most marbles, be the last standing, etc*

## Challenge

**What obstacles might you put in the player's way to make reaching the goal fun and interesting?**

*How is she being kept from doing it? Her leg is tied to her teammate's, the marble is hidden, getting hit with a ball ends game play, etc*

## Core Mechanics

**What core actions or moves does the player do to power the play of the game?**

*Jumping, wiggling, searching, solving clues, ducking, bobbing, weaving, dodging*

## Components

**What parts make up the materials of play?**

*Bandanas? A grassy field, red rubber balls and a court?*

## Rules

**What relationships define what a player can and cannot do in the game?**

*Players' legs are tied together, they must start on the same line, all marbles must be gathered waiting 3 minutes, balls can only be thrown outside the line towards the midsection.*

## Space

**Where does the game take place and how does the space affect the game?**

*Basketball court? A circle? Classroom? The park?*

# What are the Game Parts of_____?

Before designing games, it is important to practice identifying parts of familiar games. In the example below, the parts of Rock, Paper, Scissors are identified. After you read the example, pick a game you like to play and try to break it down into its six parts.

## Rock, Paper, Scissors

**GOAL**
The goal is to choose the winning object.

**CHALLENGE**
Three different objects exist - rock, paper, scissors - and players do not know what the other player is going to choose as their object.

**CORE MECHANICS**
Players "throw" an object meaning they make the shape of an object with their hand and extend their arm to "throw" it.

**COMPONENTS**
The components are one hand from each player.

**RULES**
Each person throws an object with one hand. Rock (a fist) beats scissors (a v-shape made with index finger and second finger). Scissors beats paper (flat hand). Paper beats rock. Whoever wins gets a point.

**SPACE**
The space is anywhere enough space exists for two people to stand facing each other and extend one arm.

## Name of your game:

_____

**GOAL:**

**CHALLENGE:**

**CORE MECHANICS:**

**COMPONENTS:**

**RULES:**

**SPACE:**

# Now Try This!

## Coin and Cup Game Design Challenge

Your challenge is to design a game using only coins and paper or plastic cups!

**STEP ONE:** **Gather your components**

Look around your home or classroom for different sized coins and plastic or paper cups. Grab a bunch, you don't have to use them all but it is better to have lots of different shapes and sizes to choose from.

**STEP TWO:** **Explore the core mechanics**

Explore all the things you can do with coins. How can they move? Can you stack them, spin them? What else can you do with them?

**RECORD YOUR IDEAS:**

Explore all the things you can do with cups. How can they move? Can you flip them, stack them? What else can you do with them?

**RECORD YOUR IDEAS:**

Now explore how you can use these two components (coins and cups) together. Can you toss and catch? Can you hide? What else can they do together?

**RECORD YOUR IDEAS:**

**STEP THREE:** **Game design time!**

Using what you learned about what your components can do and what their core mechanics are, design a game using only coins and cups.

Describe your game below. What do the players need? What will the players do when they play? How will they know who wins? Any other important details they need to know?

**STEP FOUR:** **Playtest and Reflect**

Find someone to playtest your game. Tell them the rules and show them what they will need. Watch them play the game. Does it look like they are having fun? Does the game give them a good amount of challenge? Does the play look how you imagined it to be?

Once they are done playing ask them what they thought of the game and record your findings below.

# Rules, Space and Challenge

**Rules** are the relationships that define what a player can and cannot do in a game. For example, in soccer you are not allowed to hold the ball with your hands but can kick it with your feet. Developing clear and concise rules is essential to designing a successful game. When you think about defining rules for your games you will need to think about what the game is about, how you win the game, how many people can play, what materials you need and how they can be used, the setup and how you play the game.
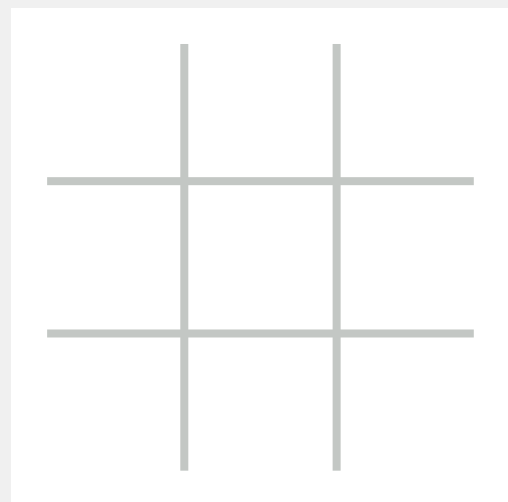
The **space** is very simply where the game takes place. Does game play happen in a field, on a table, on a computer screen, etc. While this is simple to define it is important! If you try to design a game in a space that doesn't work with the rules then your game will not work. Imagine playing basketball on a football field, would the game still be fun to play and watch?

The **challenge** in a game is the obstacle or circumstances that stand in the way of the player reaching the goal easily. The challenge is very important and should require a lot of careful thought and feedback from players so you, as the designer, gets it just right. Have you ever played a game that is too hard? Do you want to keep playing? Similarly, have you ever played a game that is too easy? Do you want to keep playing? The answer to both of those questions is probably no! One of the most important parts of a good game is designing a perfect amount of challenge. The best games are not too hard and not too easy - just like goldilocks and her porridge, they are just right!

In order to bring all these pieces together, we are going spend a little time with a very common game that you have probably played before - **Tic, Tac, Toe**.  Your probably already know how to play Tic, Tac, Toe. It's a very simple game, right? That's what most people think but even the simplest games are quite as simple as you think! Tic, Tac, Toe involves looking ahead and trying to figure out what the person playing against you might do next. That's not easy! Just in case you haven't played it before, check out the rules, then challenge someone to a game below!

## RULES FOR TIC-TAC-TOE

**1.** The game is played on a grid that's 3 squares by 3 squares.

**2.** You are **X**, your friend (or the computer in this case) is **0**. Players take turns putting their marks in empty squares.

**3.** The first player to get 3 of her marks in a row (up, down, across, or diagonally) is the winner.

**4.** When all 9 squares are full, the game is over. If no player has 3 marks in a row, the game ends in a tie.

# Test Your Knowledge!

One entry point to becoming a game designer is to mod a game - change one part - to create a new game. Before you change one part you have to understand all the parts and how they work together. Look at the parts of a game chart one more time, below. After reviewing the definitions, match the words below (on the right) to the correct part(s) of Tic Tac Toe.

## Parts of a Game

**GOAL**
What does a player or team have to do to win?
*Cross the finish line first, collect the most marbles, be the last standing, etc*

**CHALLENGE**
What obstacles might you put in the player's way to make reaching the goal fun and interesting?
*How is she being kept from doing it? Her leg is tied to her teammate's, the marble is hidden, getting hit with a ball ends game play, etc*

**CORE MECHANICS**
What core actions or moves does the player do to power the play of the game?
*Jumping, wiggling, searching, solving clues, ducking, bobbing, weaving, dodging*

**COMPONENTS**
What parts make up the materials of play?
*Bandanas? A grassy field, red rubber balls and a court?*

**RULES**
What relationships define what a player can and cannot do in the game?
*Players' legs are tied together, they must start on the same line, all marbles must be gathered waiting 3 minutes, balls can only be thrown outside the line towards the midsection.*

**SPACE**
Where does the game take place and how does the space affect the game?
*Basketball court? A circle? Classroom? The park?*

## Parts of Tic Tac Toe:

**Match the items below to the appropriate part(s) of Tic Tac Toe.**

- WRITING UTENSILS
- WHITE BOARD
- BLOCKING
- BE THE FIRST TO GET THREE IN A ROW
- 3X3 GRID
- PLAYERS TAKE TURNS WRITING THEIR SYMBOL
- CHALKBOARD
- 2 PLAYERS
- X AND O
- PAPER
- WRITING
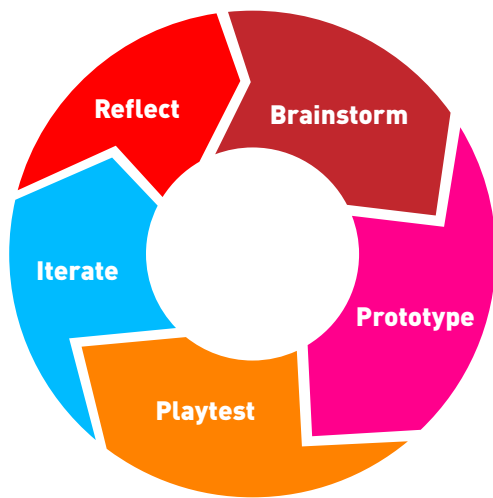- YOU DON'T KNOW WHERE YOUR OPPONENT WILL PLACE THEIR SYMBOL

# Now Try This!

## Tic, Tac, Toe Mod

Now it's time to modify or as real game designers say, "mod" a game. During this activity you will focus on how the Space, Rules and Challenge of a game affect gameplay. Your challenge is to make a new version of Tic, Tac, Toe that is playable for three players! Ready, set, design!

**STEP ONE:** **Gather your materials**

Now it's time to modify or as real game designers say, "mod" a game. During this activity you will focus on how the Space, Rules and Challenge of a game affect gameplay. Your challenge is to make a new version of Tic, Tac, Toe that is playable for three players! Ready, set, design!
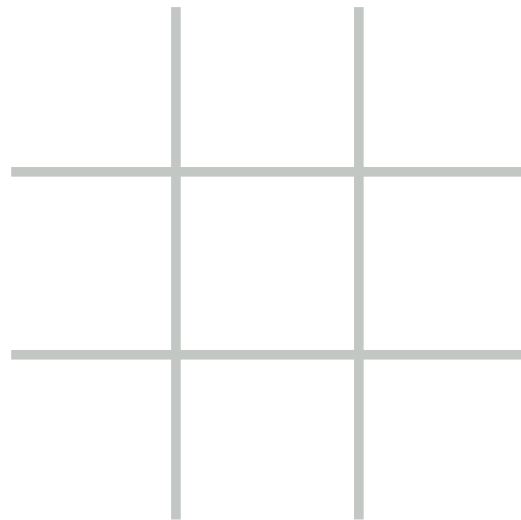
**STEP TWO:** **Remember the design process**

At the beginning of your journey to becoming a game designer you learned about the design process. Now you are going to put it to use. In order to modify Tic, Tac, Toe, you will move through each step of the design process. Take a look at the process and go back to the first section to read about any step that you have questions about. Once you remember the process, it's time to get started.

Reflect · Brainstorm · Iterate · Prototype · Playtest

**STEP THREE:** **Game design time!**

BRAINSTORM: Part of the first step of the design process is to really understand what you are designing and who you are designing for. In order to really understand your design challenge you need to play a lot of Tic, Tac, Toe and since you are being challenged to redesign for three people, you need to play with three people! Follow the steps below to begin your brainstorming.

**1** Find two other people to play Tic, Tac, Toe with you. Make sure they understand how to play regular Tic, Tac, Toe. Now explain that they are going to help you understand how to play Tic, Tac, Toe with three players. The only change will be that you will play with an X, an O and a Y.

## Tic, Tac, Toe Mod *(CONTINUED)*

**2** After a few minutes of playing check in with your players and see how it is going. Here are some questions you might ask:

    a)  What works and doesn't work with this new Rule of 3 players in the game?
    b)  How does the new rule affect the challenge of the game?
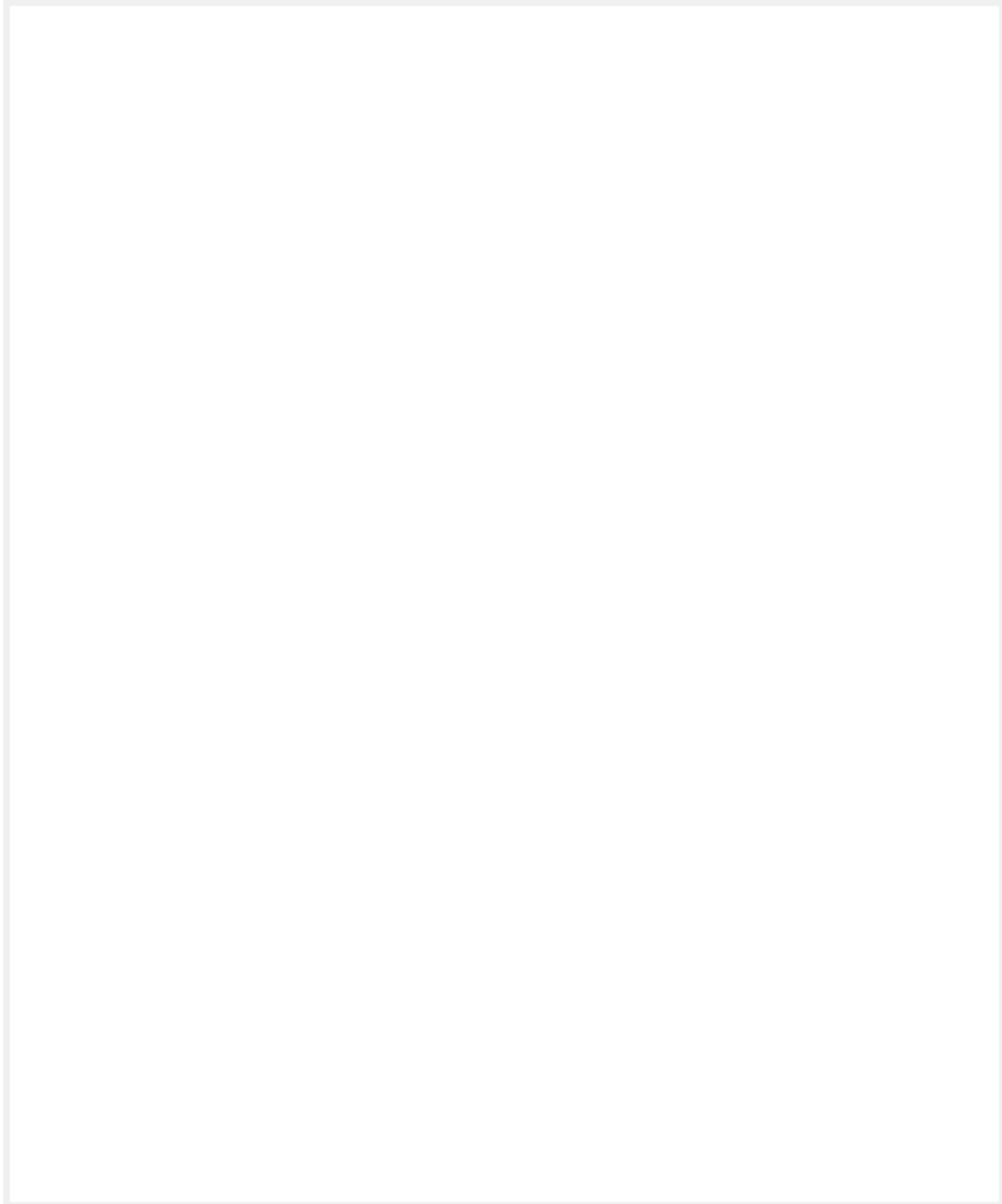    c)  How does the new rule affect how fun the game is?

Record the information you gather:

**3** You probably observed that when you add an additional player to Tic, Tac, Toe but keep other parts of the game the same, it's not that fun and doesn't really work. In fact, it breaks the game! Once you added a new rule of adding a third player, it threw the rest of Tic, Tac, Toe off balance. **A good game is a balanced game!** As a game designer, your job is to fix the broken game. How can you mod the game for a third player AND make sure the game stays fun and challenging? Think about how you can mod the SPACE, RULES and/or CHALLENGE to make it more fun for 3 players? Brainstorm some ideas below!
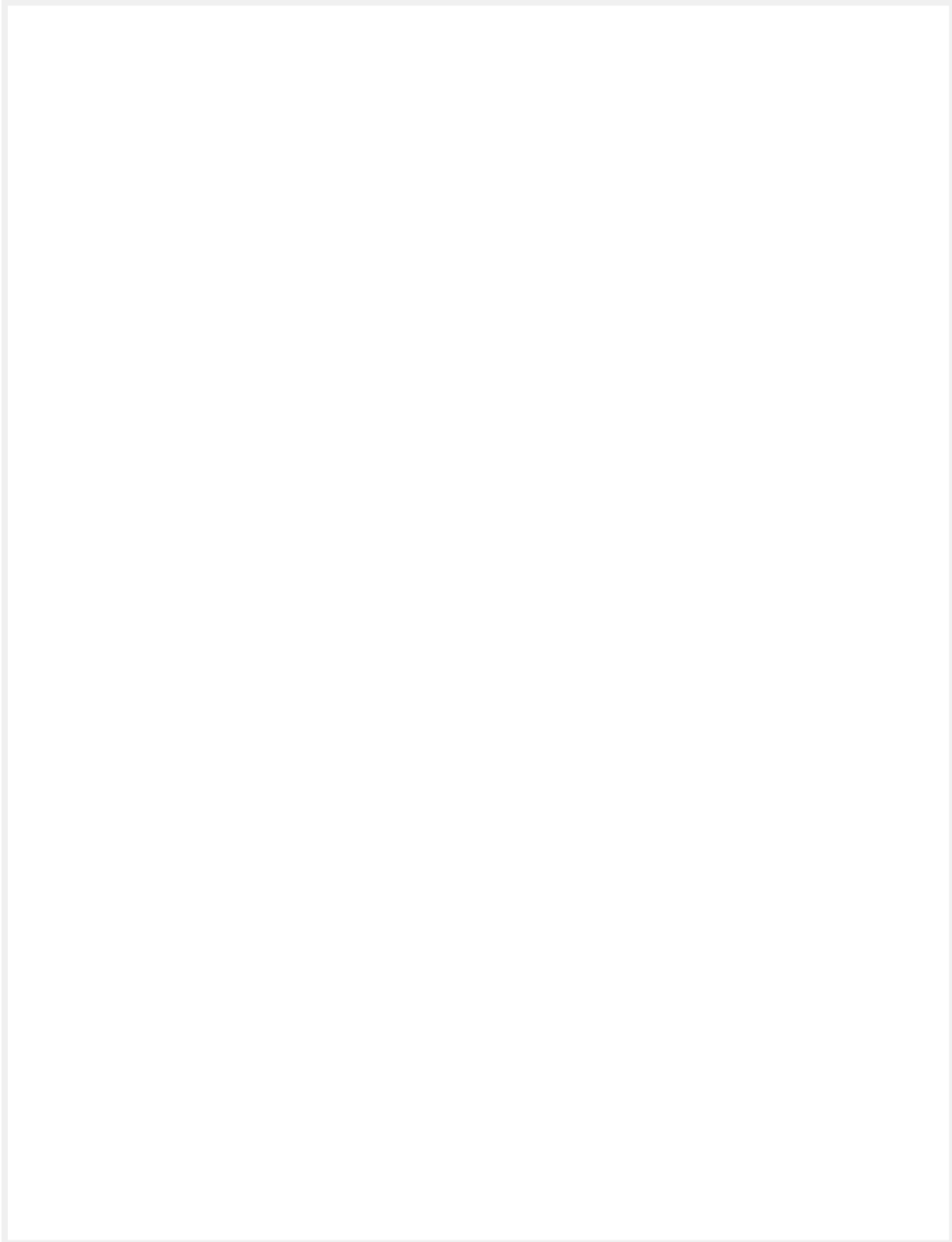
## Tic, Tac, Toe Mod *(CONTINUED)*

PROTOTYPE:
Once you have a few ideas, try them out! Use next couple of pages to design a couple different versions of Tic, Tac, Toe. Remember, you can use other materials that you gathered, you could change the look of the Tic, Tac, Toe board, change the rules, etc

## Tic, Tac, Toe Mod *(CONTINUED)*

More space for prototyping and writing new rules:

## Tic, Tac, Toe Mod *(CONTINUED)*

PLAYTEST:
Now gather some family, friends, or classmates and ask them to playtest. Explain the new rules to them and ask them to play. As they are playing watch them play. Does it seem like the game is fun? Do your new rules make sense? Is there anything that needs to be changed to make it more fun or more playable?

**Record your ideas here:**

ITERATE:
Use your playtest feedback to make any changes to your game to make it better and more fun.

# Share your game!
# You did it, you modded a game!

# Time to Reflect!

Did you notice that changing one part of a game – a rule, the space, or adding a component – affects another part?  If you change the space, often you are changing a rule and a core mechanic!  You  cannot change one thing in a game without affecting other things. Some changes make bigger ripples to the system than others – these are known as leverage points.  Other changes are small and superficial.  In the next section, you will learn how to make big changes to a game through the design process.

# Designing From Scratch

**Congratulations - you are ready to design your first game from scratch!**

Are you ready? Of course you are! You are already a game designer, so it's just the right time to take this to the next level.

Designing a game from scratch isn't too different from modding, except sometimes the possibilities are endless - which seems amazing, to have so much freedom - but it also can be overwhelming. So we are going to give you a challenge.

## Let's Design!

**Your challenge is to design a game using everyday materials.**

What does that mean? Well, it means you will design a game with materials you can find at home.  Follow the steps below:

**STEP ONE:** **Gather your materials. Choose 2-3.**

- **Coins**
- **Ping pong balls or small balls**
- **Bandanas**
- **String**
- **Post-its (or any paper will do)**
- **Pennies**
- **Markers**
- **Masking tape (or any tape you can find)**
- **Plastic cups or bowls**

*Missing any of these? Don't worry. Just substitute with something else you can find at home!

## Designing From Scratch *(CONTINUED)*

**STEP TWO:** **Play with your materials.**

What are all the things you can do? Capture your ideas as you go. Use the table below to record the different objects you have gathered and some of the unique things they can do.

**Coins:**

**Ping pong balls or small balls:**

**Bandanas:**

**String:**

**Post-its / paper:**

**Pennies :**

**Markers:**

**Masking tape / any tape:**

**Plastic cups or bowls:**

# Designing From Scratch *(CONTINUED)*

**STEP THREE:** **Brainstorm ideas.**

It's time to turn these materials and the things they can do into a game. If you get stuck, check out some of the ideas below for inspiration!

Write down your ideas in the space below. You can make some short notes on the goal of your game and some of the rules.  Your first idea isn't always the best, so we suggest that you brainstorm THREE ideas to start with.

**1.**

**2.**

**3.**

## Designing From Scratch *(CONTINUED)*

# Feeling Stuck?

Can you pick an action to add to your game? Jumping, Tossing, Rolling, Skipping. Sometimes just thinking of a core mechanic can help ideas come to life.

Can you think of a game that already exists and modify it as the basis for your new game?

Can you think of a challenging goal to build your game around? For example, throwing a coin into a cup (remember that one?)!

**STEP FOUR:** **Get feedback**

Pitch your ideas to a teacher, classmate, friend or family member. Which is their favorite? Pick your best idea and make your game! It's also ok to combine ideas or come up with a new one based on the feedback you get.

**STEP FIVE:** **Playtest and Redesign**

When you are ready, have someone play your game. Use the playtest reflection form or the glows and grows worksheet  that follows this section! Ask them what they liked about it and what they would change to make it better. Make sure you listen! Good designers listen and learn from their players! Use the space below to record feedback and ideas for changes.

# Playtest Reflection Form

GAME: _____     DATE: _____

NAME: _____     GRADE: _____

## Fun
How fun was the game?
*(Please circle a face)*

| SO fun! | Fun! | I'm not sure | Not so sun | Epic fail |

## Difficulty Level
How difficult was the game?
*(Please circle one)*

Too Easy          Nicely Challenging          Too Challenging

## Clarity of Rules
How clear were the rules?
*(Please circle a face)*

| Perfectly clear! | A little clear | I'm not sure | Not so clear | Not clear at all |

**What can you and other players learn from playing this game?**



**What would you change about the game? What would you add or take out?**



**What was your favorite thing about the game?**



**What was your least favorite thing about the game?**

# Glows and Grows Worksheet

**GAME:** _____     **DATE:** _____

**REVIEWER:** _____

## GLOWS
*Positive Feedback; what works well*


## GROWS
*Constructive feedback; areas for improvement*

# Designing for Impact

The Games for Change Student Challenge doesn't just challenge students to create games, it challenges students to create games for impact. Impact games are games that are about more than just having fun. They deal with real issues and challenge players to learn and even take action. You have learned what makes a game, a game. A game is play that is fun and has rules, goals and challenge. An impact game is designed not only to play and have fun but also to inspire players to make change in the world. Because games are engaging for children and adults, they do a good job of helping players deeply understand an issue and in some games the player can even try to solve problems that they might not be able to solve in the real world. This makes Impact games a powerful place to learn and grapple with real world problems.

## What's Next?

Now that you know all about what makes a game a game, what the parts of a game are, the game design process and how to design a game, you are well on your way to entering into the Games for Change Student Challenge and Competition.

Your next step is to learn about the impact themes for this year and decide which one you'd like to use as inspiration for your game entry. Each year, Games for Change invites students to design original digital games that address one of several important topics in our communities and around the world. Visit the G4C Student Challenge website to check out this year's themes learn more about each one!

Another next step is to decide what platform you'd like to use to design your digital game. Most students create a game with a game making tool called Scratch. If you've never used Scratch before, don't worry! Games for Change has resources for Scratch and other platforms on the Games for Change Student Challenge website. You are free to design in any platform that allows for web based game play.

We wish you the best of luck as you begin to design your impact game! Make sure you look at the student section of the Student Challenge website for a lot of helpful links and resources. Happy designing!

# Time for a final reflection!

What do you hope to learn while you create a game for the G4C Student Challenge? What obstacles do you expect to face while creating a game? What are you looking forward to about the G4C Student Challenge?