

ICT Gaming Essentials

Lesson 1: Introduction to Game Design

LESSON SKILLS

After completing this lesson, you will be able to:

- Describe the role of games in modern society (e.g., education, task training, social networking, therapy, recreation).
- Identify various types of games (e.g., chance, skill, knowledge, role-playing, storytelling).
- Identify the steps of the design process for creating a game.
- Analyze (deconstruct) existing games.
- Identify the tools and components needed for creating games.
- Identify design criteria and constraints.
- Create storyboards to model a game's program flow and functionality.

KEY TERMS

brainstorming	deconstructing	role-playing
chance	feedback	skill
constraints	genre	storyboard
criteria	prototype	

Points to Ponder

These Points to Ponder are designed to help you focus on key elements in this lesson. They are also suitable for use to spark discussions or individual research.

- Explain the term "game,"
- Name three ways that games can be used or are used in education.
- Think about the computer games you have played. Create a list that provides an example of each type of game: chance, skill, video and role-playing.
- What type of game do you think *Minecraft* is and why?
- Describe how discovery, plots, and rewards are used to make a game interactive.
- Describe the skills you think you have that would be beneficial in developing a game.
 - What skills do you lack that you might need help with?
- Explain how designing a game is similar to writing a story.
- What are two strategies you can use when you get trapped while designing a game?
- Suggest the kinds of people who would be useful for giving you feedback about your game.
- Discuss the kinds of the constraints you might face are when developing a game?

Overview

This lesson will introduce you to the principles of game design. It will explore the ways that people use games in modern society and identify various types of games. This lesson will also begin studying the design process for game creation.

There are a number of game creation Web sites available such as [Scratch](#) and [Kodu](#), which can be used to create and play animated games online. Scratch is a project of the Lifelong Kindergarten Group at the MIT Media Lab where students can create interactive stories, games and animation while Kodu is a programming integrated development environment (IDE) by Microsoft's FUSE Labs. It runs on Windows PCs and Xbox 360.

Why We Play Games

Objectives

10.1.1: Describe the role of games in modern society (e.g., education, task training, social networking, therapy, recreation).

10.1.2: Identify various types of games (e.g., chance, skill, knowledge, role-playing, storytelling).

The term "game" can be defined in numerous ways. In general, a game is an interactive avenue through which a setting is discovered, and a plot is progressed by the actions of the player(s), with the winning player most often being rewarded through benefits and/or awards to the next stage of the plot.

In its most fundamental form, a game involves problem solving.

Games play a number of roles in modern society depending on how people use a particular game. Some examples include:

- **Education** — Games built to train or educate the player.
- **Task training** — Businesses can use game technology to provide their employees with additional skills needed to perform a job. Task training is also used by the military (for example, flight simulators).
- **Social networking** — These games include multi-player capabilities among people with common interests.
- **Therapy** — Doctors can use 3D imaging and simulations to assist patients with the healing process. Psychological therapists often use game play to help diagnose and treat patients.
- **Recreation** — Many games focus on players' movement to exercise their bodies and minds, build skills, and advance through increasing game difficulty.



Figure 1-1: Flight simulator

Like other types of games, all computer-based video games come in various types, or genres. For example:

- **Chance** — Luck or possibility plays a role in determining the outcome of the game (for example, dice, cards).
- **Skill** — The player's skill determines the outcome of the game.
- **Role-playing** — People assume roles of characters and act out or base decisions on their roles (for example, Dungeons & Dragons).
- **Video** — Interaction with the game takes place in a virtual environment (for example, television, computer, handheld device).



Figure 1-2: Game of skill

Suggested activities

- Gaming Types (Online)
- Rolls and Genres of Games (Hands-on)

The Design Process for Creating Games

Objectives

10.2.1: Identify the steps of the design process for creating a game.

10.2.2: Apply the design process to solving a problem.

10.2.3: Analyze (deconstruct) existing games.

10.2.4: Identify the tools and skills needed for creating games.

10.2.5: Identify design criteria and constraints.

10.2.6: Create storyboards to model a game's program flow and functionality.

When playing a game, one interfaces with the final product. There's a lot that goes into building that game; it isn't as simple as sitting in front of a computer and writing out code. Every game presents some form of a challenge or problem, and the goal of playing the game is to meet the challenge or solve the problem.

Designing a game is similar to writing a story that has a setting, story line or plot, and characters. In fact, the story is what makes the game fun and interesting to play. Just like writing a story, the game designer must use their imagination to create the setting, story line and characters.

Steps of the Game Development Process

The steps in the game development process include:

1. **Brainstorming** – One of the best ways to encourage creativity and come up a unique game or solution is to ask a group of people to brainstorm ideas. When people brainstorm, they offer spontaneous (non-rehearsed or researched) ideas and solutions. There are no bad, wrong, or incorrect ideas. Once all the ideas have been identified, the group reviews each and tries to come up with the best idea or combination of ideas for the game.
2. **Create a storyboard** – A storyboard is like a graphic organizer that uses illustrations or images displayed on a piece of paper or created in software. The images are arranged in the order of the story and help the team plan the sequence of events – every step – in the game's animation. A storyboard helps with identifying how the characters interact with each other and with the game environment.

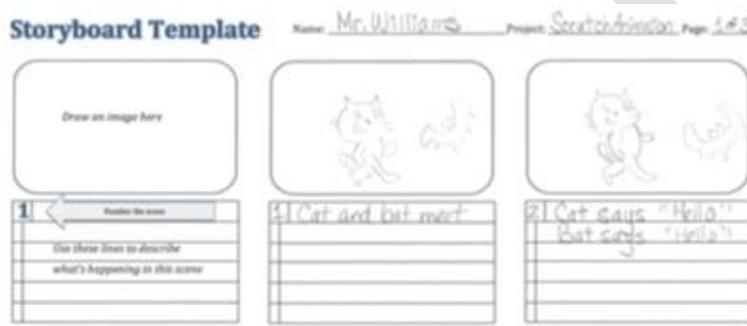


Figure 1-3: Storyboard example

3. **Create a prototype** – A prototype is the first functional example of a game. It is often referred to as a first draft of the game. It offers a platform for individuals to play and test a game for the first time and offer their feedback or suggestions for improvement.
4. **Test and gather feedback** – It is best practice to have a group of individuals test your game that is not familiar with the game or its design process. They should have varying degrees of expertise with playing games. This ensures that their feedback is not influenced by preconceived ideas about what the game is, how it should be played or how difficult it is. They will then provide the development team with feedback: suggestions and ideas for improving or refining the game or issues with playing the game.
The testing and feedback step is the best way to find issues with how the game works and ensures that the game appeals to the widest variety of people.
5. **Revise the game** – Once the development team has received feedback from the group of individuals that were testing the game, the development team needs to create and execute revisions to the game that address the suggestions and issues identified by the testing team.
6. **Re-test and gather feedback.**
7. **Finalize the game.**
8. **Revise and re-test** (if necessary).

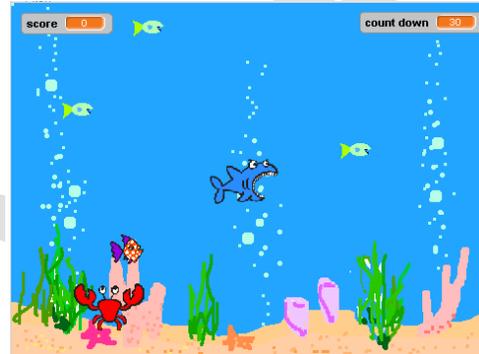


Deconstructing a Game In Scratch to Analyze It



There are several game engines you can utilize to design and build your game. Whichever game engine you choose to create your game it's always important to learn how the audience, elements, and characters in a game work together before going through the game design process.

In this activity, you will analyze a game created in Scratch (game engine) and deconstruct it to understand the design process of a game designer.



1. Visit, <https://scratch.mit.edu/projects/2370244/> and play the game to understand how it works. Note – play more than once by clicking on the green flag
2. What elements do you see in the shark and fish game?

3. How do the elements work together in the game? (Click on the  button to look at the code.)

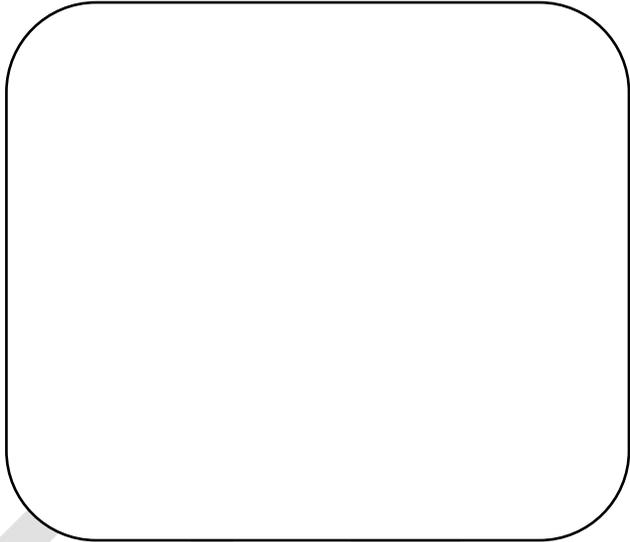
```
when green flag clicked
  go to x: -220 y: pick random -160 to 160
  show
  forever loop
    move 4 steps
    if touching edge? then
      go to x: -220 y: pick random -160 to 160
    if touching shark? then
      hide
      change score by 1
      wait 2 secs
      go to x: -220 y: pick random -160 to 160
      show
```

Explain what happens when the fish touch the shark?

```

when clicked
  go to x: -200 y: pick random -160 to -120
  show
  forever
    move 2 steps
    if touching edge? then
      go to x: -200 y: pick random -160 to -120
    if touching shark? then
      say you just lost 5 points for 2 secs
      hide
      change score by -5
      wait 2 secs
      go to x: -220 y: pick random -160 to -120
      show
  
```

Explain what happens when the crab touches the shark?



4. Looking at the code below, how does the audience interact with the game?

```

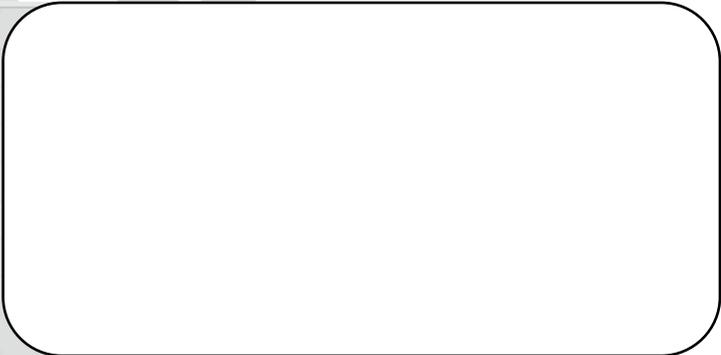
when clicked
  forever
    if key up arrow pressed? then
      change y by 5

when clicked
  forever
    if key right arrow pressed? then
      change x by 5
      point in direction 90

when clicked
  go to x: 0 y: 0
  point in direction 90
  forever
    switch costume to shark1-a
    wait 0.5 secs
    switch costume to shark1-b
    wait 0.5 secs

when clicked
  forever
    if key down arrow pressed? then
      change y by -5

when clicked
  forever
    if key left arrow pressed? then
      change x by -5
      point in direction -90
  
```





Deconstructing a Game in Groups



You've now had the chance to brainstorm different computer or console games and analyzed what their intended purpose is. Now, let's take it a step further and dig deeper as to the story behind your favorite game. Check out Sony's new game for inspiration: <http://bit.ly/2fcNZYM>

Directions: Form groups of similar game interests and choose one game you'd like to deconstruct out of the list you previously analyzed. As a group discuss and research what the story is behind the game you chose.

Name of Game:

Describe the characters in the game.

What's the storyline behind the game?

Describe the main setting(s) of the game?

How does the game add entertainment?

How would you change the game?

Case Study: Storyboarding Your Game

As you have already experienced, creating games takes great amount of detail and planning before it can come to life. But, it's in the preparation where games become successful. All games have an end goal and a limitation integrated their platform. It's what helps make the game interesting, fun, and engaging.

In this case study you will be completing the first two steps of the game design process for your final project. If possible, work with a partner.

Step # 1 – Brainstorming

Think about what types of game you'd like to create. Discuss and write down your final decision in the planning sheet below.

Student Name(s):			
Name of the Game:			
Game Genre:		Role of the Game:	
Describe the overall objective of the game (less than 10 words):			
Detailed description of game (approx. 100 words):			
Purpose of the Game:			
Intended Audience:			
Game Setting(s):			
Characters' names and descriptions:			
Constraints:		Criteria(s):	

Step # 2 – Storyboarding

In this next step, you will be planning every step of your game.

Scene Title:
Description:
Dialogue:
Audio/effects:

Scene Title:
Description:
Dialogue:
Audio/effects:

Scene Title:
Description:
Dialogue:
Audio/effects:

Scene Title:
Description:
Dialogue:
Audio/effects: