Games, the Game Industry, and Game Technology

GAMES HAVE EVOLVED in various ways. Dice games seem to be the first types of games played, according to historical findings. From dice, games have progressed to board games, arcade games, and video games. The first video games were played at arcades. Now video games can be accessed almost anywhere because of technology. Games have moved from personal computers to televisions to mobile devices.



Objective:

Provide an overview of the history of gaming, and compare early video game technology to recent innovations in game technology.

Key Terms:

- arcade games
- board games
- controller knobs
- electromechanical games
- game control pads
- gaming consoles
- handheld gaming device
- input devices
- joysticks
- motion gaming controllers
- pinball machine
- video games

Understanding Game Technology

Throughout history, people have enjoyed games for entertainment. In modern times, video games have become the most popular form.

GAMING HISTORY

Although new games are created constantly, the idea of games has existed for centuries.

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Ancient Gaming

Indications are that humans have relied on games for thousands of years for entertainment and competition. Ancient murals and other artifacts show that games existed as early as 3500 B.C.E. It is unknown exactly when dice games came into existence, but dice-like objects (possibly more than 5,000 years old) have been found in tombs and excavation sites in various countries, indicating that many cultures developed dice games.

Board Games

Board games are activities that require pieces to be moved on a board that has pre-determined and meaningful colors, notations, or markings of some sort. It is thought that board games originated in China as early as 3500 B.C.E. Throughout history, all societies have developed board games, some of which have lingered in popularity. Mancala and backgammon date back as far as the 6th century, and early versions of chess appeared around the same time. Board games became commercially available in the early 19th century.



FIGURE 1. Throughout history, all societies have developed board games, some of which have lingered in popularity.

Physically Challenging Games

Physically challenging games (e.g., the Olympic games of Ancient Greece) included combat and racing competitions. The games of the Roman Empire included gladiator battles, chariot races, and games of sport (e.g., swimming, fishing, and hunting).

Card Games

Card games were invented in ancient China sometime around the 9th century.

Modern Gaming

Card games and board games are still highly popular, and new games are constantly under development. Table top, lawn, and floor games exist. Billiards and shuffleboard date to the late 15th century and are still highly popular.

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Arcade Games

Arcade games are coin-operated entertainment appliances. They are primarily found in restaurants and amusement parks as well as on boardwalks. Some arcade games are not technically considered video games, such as pinball machines. Others, however, are considered video games, such as Pac-Man and Space Invaders.

Electromechanical Games

Electromechanical games are activities that rely on mechanical engineering concepts and electrical engineering relays rather than a microprocessor to activate the actions. They are still commonly found. An example is the claw game, in which a claw is dropped into a bin of items and closes. If lucky, the winner claims a prize that is dropped into the prize shoot. The **pinball machine** is a coin-operated arcade game that challenges the player to earn as many points as possible by keeping a metal ball in play through the use of flippers and bumpers; it is another well-known electromechanical game.



FIGURE 2. The pinball machine is a well-known electromechanical game.

Video Games

Video games are electronic activities that allow interaction in some manner via feedback through a visual video display, such as a computer monitor or a television. Video games can be played on personal computers, video game consoles, and handheld devices.

CHANGES IN VIDEO GAME TECHNOLOGY

Gaming technology has changed drastically and will continue changing as a result of technological developments.

Gaming Consoles

Gaming consoles are specialized computers designed for interactive game play. Consoles are commonly categorized by generation, with each new generation providing the player with improvements in one or



FIGURE 3. Gaming consoles are specialized computers designed for interactive game play.

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more of the following areas: interactivity and input device. There is some overlap in generations with regard to dates.

Generations

- First-generation video games existed between 1972 and 1977. These included Magnavox Odyssey and Coleco Telestar.
- Second-generation video games existed between 1976 and 1983. These included Atari 2600 and Mattel's Intellivision.
- Third-generation video games existed between 1983 and 1987. These included Sega SG-1000 and Nintendo Entertainment System (NES).
- Fourth-generation video games existed between 1987 and 1993. These included Sega Genesis and Super Nintendo Entertainment System.
- Fifth-generation video games existed between 1993 and 2006. These included Sony PlayStation, Nintendo 64, and Sega Saturn.
- Sixth-generation video games existed between 1998 and 2005. These included PlayStation 2, Nintendo GameCube, and Xbox.
- Seventh-generation video games include games from 2005 to the present. These include Nintendo Wii, PlayStation 3, and Xbox 360.

Portability

Early video games were large, heavy, and not easily moved. The player had to be positioned at the machine to play. Controls for interactivity were built into the game console. Arcade video games and table-top games (usually coin-operated games that typically required two players) are examples.

As hardware and software technology improved, game consoles became smaller and portable. Gaming software could be purchased and loaded on a computer system. It was no longer intricately tied to a specific piece of hardware for the end user. Although a desktop computer system is not thought of as a portable device, it can be moved with ease. More specifically, however, the software is portable, as it can be removed from one computer system and loaded on another. Game consoles (e.g., Wii, Xbox, and PlayStation) may connect to an external device (e.g., TV or computer monitor) for display.

A **handheld gaming device** is a gaming console that is small enough to fit into a pocket and is designed so the entire gaming experience from input controls to output display occurs in a person's hand. As technologies advance, gaming devices become more sophisticated and smaller. Examples are Nintendo DS, Gameboy series, and modern phones.

User Interactivity

Various devices are utilized by game players. The options are now more technologically advanced.

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DIGGING DEEPER...

UNCOVERING ADDITIONAL FACTS: The Future of Controllers

Use the Internet to conduct further research on the development of game controllers. In a one- to two-page essay, discuss your findings. What other developments are being researched in the future of game controllers? What are some of your ideas about the future of game controllers? What would you like to see be developed?

Input Devices

Input devices are objects used by the player to send data and instructions to the game program. Early controller knobs were used in games such as *Pong*.

Controller Knobs

Controller knobs are round parts that had to be turned right or left to dictate the direction the player wished to move. Controller knobs were often built into the game console, requiring players to sit at the console to play.

Joysticks

Joysticks are input devices that allow for movement in eight directions and often include buttons that provide special functionality in a game when pressed. Early joysticks were connected to the game console via a wire for more flexibility for seating away from the console. Later, joysticks offered wireless connectivity to the console, giving players even more options for seating during play.

Game Control Pads

Game control pads (game controllers) are highly specialized input devices that allow for standard movement in a game, along with specialized game interactivity through additional features (e.g., built-in thumb sticks). Most modern game control pads are wireless and can be synchronized to allow for interactive game play between multiple players.

Motion Gaming Controllers

Motion gaming controllers are devices designed to make players feel totally immersed in the game. They attempt to translate the movement of the controller into onscreen game movement. The most widely known motion gaming controller consoles are Wii and Microsoft's Kinect.

Also, computer graphics have evolved from the boxy-looking pixilated characters of the 1970s to the real-looking 3D characters used in most modern games.

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Summary:

Ancient games, such as dice games, have been found in tombs and excavation sites dating back possibly more than 5,000 years. Dice games, board games, and card games are still popular, but games have advanced dramatically in the past 40 years. Pinball machines led to arcade video games, which led to home video games. Video games can be played on personal computers, televisions, and mobile devices. The history of game consoles begins in 1972 and continues today with technological advances bringing new games and interactivity along the way. Game controllers and graphics are evolving with new systems.

Checking Your Knowledge:

1. Board games are believed to have originated in what country?
2. Pinball machines use what two items to keep the metal ball in play?
3. Early controllers used what to control the game?
4. Computer graphics have evolved from pixilated images to what?
5. List two reasons video games are easier to play today.

Expanding Your Knowledge:

According to some Web sites, computer games started well before the introduction of Magnavox and Coleco in 1972. Research these earlier version of video games. Create your own timeline discussing and summarizing information on these early video games. Be sure to include names of developers as well as the companies for which they worked.

Web Links:

Computer Game Controllers
https://www.ifixit.com/Wiki/Computer_Game_Controllers

Timeline: Video Games
http://www.infoplease.com/spot/gamestimeline1.html

Video Game History Timeline
http://www.museumofplay.org/icheg-game-history/timeline/

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