

KEY IN-CLASS STUDENT ACTIVITY 2.4 MANAGE GAME PERFORMANCE

Lesson Objective 2.4:

Manage game performance. *Topics:* CPU vs. GPU, Reach vs. HiDef, and graphics networking performance.

Resources, software, and additional files needed for this lesson:

1. Internet access

Guiding questions:

1. **What are the differences between CPU and GPU?** The major difference between a central processing unit (CPU) and a graphics processing unit (GPU) is that a CPU is capable of running many different applications, while a GPU is specifically designed for graphics processing. A GPU can process faster than a CPU.
2. **What determines if a designer uses a Reach or a HiDef profile?** The Reach profile is used most often for Windows Phone® and lower-end computers. A HiDef profile is used most often for higher-performance Microsoft Windows®-based computers and the Xbox 360®.

Student Activity:

Directions to the student:

Read the following scenario. Read the articles. With a partner, complete the chart to compare and contrast CPU and GPU using key terms from the list.

Scenario:

David Hamilton works as a developer at A. Datum Corporation and has been selected to help interview some potential new game designers for his department. He wants to be sure that his knowledge of game design fundamentals, including CPU and GPU concepts, is current with what the new graduates have been learning. A comparison of the two will help David solidify his knowledge.

Content:

1. Fill in the table that follows with a phrase or words associated with each heading. Use terms and concepts from the readings.

Difference Between CPU and GPU: <http://www.differencebetween.net/technology/difference-between-cpu-and-gpu/>

How Graphics Cards Work: <http://computer.howstuffworks.com/graphics-card.htm>

How Xbox 360 Works: <http://electronics.howstuffworks.com/xbox-three-sixty.htm>

2. Include these terms in your comparison:

2-D and 3-D graphics
"Brain" of the computer
Faster processor
Specialized
Geometric computations
Shader
Parallel processing

Answers will vary but should include these basic concepts.

CPU	GPU
"Brain" of the computer	GPU and the CPU can exist on the same computer. The GPU is only meant to complement the CPU.
Can perform the functions of a GPU but at a slower speed.	Specialized to render graphics specifically.
The CPU is where all the program instructions are executed.	GPUs can also work in tandem. just like the CPU's multicore capability.
	Designed to render 2-D and 3-D graphics .
	In real-time graphics and video games, shaders work with the graphics processor. The Xbox 360 has an ATI graphics card, which offers unified shading so both of the shaders (vertex and pixel shaders) share the same pipeline.
	Faster processors work more like parallel processing .
	GPUs are now generally floating point processors that can easily crunch geometric computations (calculations necessary to create complex images) along with texture mapping tasks.