

UNIT A: LESSON 6

LEARNING TARGETS

INSTRUCTIONS FOR TEACHERS:

- Refer students to the standards and objectives.
- Review the standards and objectives with students one at a time.
- At the end of the lesson, ask students what they did in class to meet the standards.

INSTRUCTIONS FOR STUDENTS:

Listen as your teacher reviews the standards and objectives. Your teacher will call on an individual or pair to explain what they mean.

Learning Target:

I can **determine** the **main** ideas and **supporting details** in the **article** "The Digital Revolution and Adolescent Brain Evolution."

Learning Target:

I can **analyze** the basic **structure** of a **complex** sentence.

determine – decide

main – central or most important

supporting details – helping ideas

article – a short text in a newspaper or magazine

analyze – study something and explain it

structure – the way parts of something are joined together

complex – something that has many different parts

ACQUIRING AND USING VOCABULARY

INSTRUCTIONS FOR TEACHERS:

- Review student instructions.
- Familiarize students with their glossary. It is located in Appendix A (Glossary; labeled “Appendix: Glossary” in the student version). Tell students to use the glossary throughout the lesson.
- Pre-teach the vocabulary selected for extended instruction, provided as word cards in Appendix B (Teacher Resources). This vocabulary is abstract and critical to understanding the text.

INSTRUCTIONS FOR STUDENTS:

Your teacher will pre-teach several key words. Use your glossary for the rest of the lesson to find meanings for words you don't know. Words that are **bolded** in the text and word banks can be found in the glossary. The glossary is located in the Appendix at the end of the lesson.

THINKING LOG

INSTRUCTIONS FOR TEACHERS:

- Read the guiding question and text aloud to students, modeling appropriate pace and intonation.
- During the read-aloud, define words and phrases in context that students are unlikely to know, drawing definitions from the glossary when you can. Translations, examples, gestures, and visuals also help.
- Ask students to read the text on their own and work with a partner to answer supplementary questions.
- Ask students to use their glossary to help them with word meanings.
- Call on pairs to answer the supplementary questions.
- Discuss the guiding question(s) as a group and then have students write the answer in their student chart.

INSTRUCTIONS FOR STUDENTS:

Your teacher will ask you a guiding question that you will think about as your teacher reads the text aloud to you. As your teacher reads the text aloud, listen and follow along in your text. After the text has been read aloud, work with a partner to reread the text and answer the supplementary questions. Use your glossary to help you. Your teacher will review the answers with the class. You will then discuss the guiding question(s) with your teacher and the class. Finally, you will complete a written response to the guiding question(s).

GUIDING QUESTION: *Why do so many people play video games? How does neurology help us understand the human attraction to video games?*

THE DIGITAL REVOLUTION AND ADOLESCENT BRAIN EVOLUTION

EXCERPT 3: ENTERTAINMENT

The most common forms of digital **entertainment** are TV (4.5 hours/day), music (3 hours/day), and nongaming use of **computers** (1.5 hours/day). Next most common are video games (1.25 hours/day)—from **computers**, the Internet, game consoles, or handheld/mobile devices.

Video games are a \$25-billion-per-year **industry** and are popular and **available** across socioeconomic status and gender—99% of teen boys and 94% of teen girls play video games on one or more of the aforementioned platforms. The amount of time spent on video games is increasing across all age-groups as the quality and **variety** of games continue to improve and the availability of mobile devices becomes more **ubiquitous**.

Highly popular games encompass a wide **range** of genres, degree of intellectual **demand**, and **solitary** versus interpersonal **formats**. Game consoles such as Wii Fit and Kinect interact with body movement, providing indefinitely scalable **physical** challenges that blur the **distinction** between video gaming and **conventional** athletic endeavors.

From a neurobiological **perspective**, the popularity of the games reflects their capacity to **stimulate** the brain's **reward circuitry**. **Dopamine** is the **predominant** molecular **currency** of the **reward** system, and a key **component** of the **circuitry** is the nucleus accumbens. The commonality of reward **circuitry** across **domains** is striking. All of our basic drives (e.g., hunger, sex, sleep), all **substances of abuse**, and everything that may lead to **addiction** (i.e., compulsive behavior characterized by loss of control and continuation **despite** **adverse** consequences) increase dopamine in the nucleus accumbens.

WORD BANK:

25 billion	boys	losing control	social standing
abuse	computers	music	stimulate
addiction	difference	other people	TV
adverse consequences	difficult	quality	variety
alone	dopamine	reward	video games
available	girls	sleep	

SUPPLEMENTARY QUESTIONS:

1. *This section of our text talks about how we use digital media for entertainment, or fun.*

What are the three most common forms of digital entertainment?

The three most common forms of entertainment are TV, music, and using computers for purposes, or reasons, other than gaming (video games).

2. *What is the fourth most common way we use digital media?*

The fourth most common way we use digital media is video games.

3. *How large is the video-games industry?*

The video-games industry earns 25 billion dollars a year.

4. *The text says that video games are popular across socioeconomic status and gender. What does this mean?*

Video games are played by people of different social standing and by both girls and boys.

5. *Why is the use of video games increasing?*

The use of video games is increasing because the quality and variety of video games is getting better and mobile devices are more available.

6. *The text says that popular games use formats that are “solitary versus interpersonal.” What does this mean?*

Solitary versus interpersonal games mean that some games can be played alone while other games are played with other people.

7. *Some games interact with body movement. In fact, physical challenges may blur the distinction between video games and conventional athletics. What does “blur the distinction” mean?*

“Blur the distinction” means that it may be difficult to see the difference between video games and traditional athletics, or sports.

8. *If we think about neurology and the brain, why are video games so popular?*

Video games are so popular because they stimulate the brain’s reward circuitry (network).

9. *What does this mean?*

This means that playing video games makes dopamine, a neurotransmitter in the brain that helps control the brain’s reward system.

10. *What increases dopamine in the brain’s circuitry? What can this lead to?*

Hunger, sex, sleep, and substance abuse may all lead to increased dopamine. This can lead to addiction.

11. *What is addiction?*

Addiction is losing control and continuing to do something even though we know it has adverse consequences (it is bad for us).

RESPONSE TO GUIDING QUESTION(S):

Why do so many people play video games? How does neurology help us understand human attraction to video games?

Suggested Response: So many people play video games because the quality and variety of video games is getting better all the time and the availability of mobile devices to play video games is everywhere. Playing video games produces dopamine, a neurotransmitter in the brain that helps control the brain’s reward system. Increased dopamine can lead to addiction.

NEUROLOGIST NOTEBOOK

INSTRUCTIONS FOR TEACHERS:

- Review student instructions.

INSTRUCTIONS FOR STUDENTS:

Work with a partner. Use your neurologist notebook to write down key, or important, information from the text. You will write down main ideas and some details, or specific information, about each main idea. You can use information from your Thinking Log. Some information is already filled in for you.

WORD BANK:

adapt, addictive, addictions, available, basic, better, boys, dopamine, entertainment, faster, girls, increasing, interpersonal, physical, reward, solitary, substance, technology, video games

Summary from before:

Teens are encountering more technology at a faster pace than ever before. It might be possible for teen brains to adapt or get used to these changes.

Main idea:

The amount of time people spend on video games is increasing.

Supporting details:

Video games are a common form of digital entertainment. 99% of teen boys and 94% of teen girls play them. More people will use video games as they become better and more available.

Main idea:

Video games come in many forms.

Supporting details:

Some video games require a lot of thinking. Others are physical. Some video games are solitary (you play alone) and others are in interpersonal formats (you play with friends).

Main idea:

Video games may be addictive.

Supporting details:

Video games stimulate, or trigger, the brain's reward circuitry. When we play them, our brain releases dopamine. This is similar to basic human drives as well as substance, or drug, abuse and other addictions.

FUNCTIONAL ANALYSIS

INSTRUCTIONS FOR TEACHERS:

- Review student instructions for functional analysis with the whole class.
- Complete the functional analysis with the whole class.
- Have students work with a partner to rewrite the sentence in their own words.

INSTRUCTIONS FOR STUDENTS:

Work with your class to analyze an important sentence(s) from the text.

- Every sentence has someone or something that *does* something. First you determine this *who* or *what*.
- Every sentence has something that they *do* or *did*. Figure that part out next. Now you have the most important parts of the sentence in place.
- Then you will figure out what they did the action *to* or *for*.
- Finally, you will write the descriptive details.
- Write your answers in the spaces below.
- When you are done, write the sentence again in your own words.

You may want to use definitions from the glossed text in the sections above.

Functional Analysis:

The amount of time spent on video games is increasing across all age-groups as the quality and variety of games continue to improve and the availability of mobile devices becomes more ubiquitous.

WHO OR WHAT: *The amount of time*

DESCRIPTOR (What): *spent on video games*

WHAT HAPPENED (Action): *is increasing*

WHERE: *across all age-groups*

TRANSITION: *as*

WHAT: *the quality and variety of games*

WHAT HAPPENED (Action): *continue to improve*

AND

WHAT: *the availability of mobile devices*

WHAT HAPPENED (Action): *becomes*

WHAT: *more ubiquitous*

What the first part of the sentence says:

My own words:

The amount of time

spent on video games	_____
is increasing	_____
across all age-groups	_____
What the second part of the sentence says:	My own words:
as	because
the quality and variety of games	_____
continue to improve	_____
What the third part of the sentence says:	My own words:
and	and
the availability of mobile devices	_____
becomes	_____
more ubiquitous	_____
Write the sentence in your own words and then explain it to your partner.	

EXIT TICKET

INSTRUCTIONS FOR TEACHERS:

- Review student instructions with the whole class.

INSTRUCTIONS FOR STUDENTS:

This graphic organizer will help you keep track of information about the brain for all of the readings. Each day you will write down new information from each reading.

Today's reading was about video games. Write down details about the three things we learned about video games:

- Video games are ubiquitous (very common).
- Video games come in many forms.
- Video games may be addictive.

WORD BANK:

94, 99, better, dopamine, **intellectual** (require thinking), **interpersonal**, more available (easier to get), **physical**, **substance abuse**

Video Games...

... are ubiquitous	... come in many forms	... may be addictive
<p><u>99%</u> of teen boys and <u>94%</u> of teen girls play video games. More people will use video games as they become <u>better</u> and <u>more available</u>.</p>	<p>Video games can be:</p> <ol style="list-style-type: none"> 1) <u>intellectual</u> 2) <u>physical</u> 3) solitary or <u>interpersonal</u> 	<p>When we play video games, our brains release <u>dopamine</u>. It is similar to <u>substance abuse</u>.</p>

Appendix A: Glossary

Word	Definition	Example
adapt	adjust or get used to something new	It might be possible for teen brains to adapt or get used to technological changes.
addiction	depending on, or craving a substance, like drugs; habit	Anything that may lead to addiction increases dopamine in the nucleus accumbens.
adverse	bad or harmful	People who are addicted to something continue despite adverse , or bad, consequences.
available	possible to get something	Video games are a \$25-billion-per-year industry and are popular and available across socioeconomic status and gender.
basic	fundamental or essential (very necessary)	All of our basic drives (e.g., hunger, sex, sleep), all substances of abuse, and everything that may lead to addiction (i.e., compulsive behavior characterized by loss of control and continuation despite adverse consequences) increase dopamine in the nucleus accumbens.
circuitry	the design of elements in an electric circuit	Dopamine is a key component of the circuitry in the nucleus accumbens.
<i>component</i>	a part of something	Dopamine is a key component of the circuitry in the nucleus accumbens.
<i>computer</i>	an electronic machine that is used to store, sort, and work with information at a high speed	The most common forms of digital entertainment are TV, music, and nongaming use of computers .
<i>conventional</i>	traditional	New game consoles blur the distinction between video gaming and conventional athletic endeavors.

<i>currency</i>	something of value that can be exchanged, or traded	Dopamine is the predominant molecular currency of the reward system.
demand	what is required	Highly popular games encompass a wide range of genres, degree of intellectual demand , and solitary versus interpersonal formats.
<i>despite</i>	even though or regardless of	People who are addicted to something continue despite adverse, or bad, consequences.
<i>distinct</i> (<i>distinction</i>)	different	New game consoles blur the distinction between video gaming and conventional athletic endeavors.
<i>domain</i>	an area of interest or activity	The commonality of reward circuitry across domains is striking.
dopamine*	is a chemical the brain produces, or makes, when a person is doing something fun or exciting	Dopamine is the predominant molecular currency of the reward system.
entertainment	something you do for fun	The most common forms of digital entertainment are TV, music, and nongaming use of computers.
<i>format</i>	the way something is arranged or organized	Highly popular games encompass a wide range of genres, degree of intellectual demand, and solitary versus interpersonal formats .
industry	a group of companies that make the same type of product	Video games are a \$25-billion-per-year industry .
intellectual	requires thinking	Highly popular games encompass a wide range of genres, degree of intellectual demand, and solitary versus interpersonal formats.
interpersonal	between two or more people	Highly popular games encompass a wide range of genres, degree of intellectual demand, and solitary versus interpersonal formats.

<i>perspective</i>	the way things are seen from a particular point of view	From a neurobiological perspective , the popularity of the games reflects their capacity to stimulate the brain's reward circuitry.
<i>physical</i>	of the body	Game consoles such as Wii Fit and Kinect interact with body movement to provide physical challenges.
<i>predominant</i>	main	Dopamine is the predominant molecular currency of the reward system.
<i>range</i>	the two end points that define how much something can vary, or differ	Highly popular games encompass a wide range of genres, degree of intellectual demand, and solitary versus interpersonal formats.
reward	something that pleases you or makes you feel good	From a neurobiological perspective, the popularity of the games reflects their capacity to stimulate the brain's reward circuitry.
solitary	alone; something you do by yourself	Highly popular games encompass a wide range of genres, degree of intellectual demand, and solitary versus interpersonal formats.
stimulate	provoke or rouse to action; make something begin	The popularity of the games reflects their capacity to stimulate the brain's reward circuitry.
substance	a drug or alcohol	All of our basic drives (e.g., hunger, sex, sleep), all substances of abuse, and everything that may lead to addiction (i.e., compulsive behavior characterized by loss of control and continuation despite adverse consequences) increase dopamine in the nucleus accumbens.
substances of abuse	things that people use too much of even if it bad for them.	Alcohol is a substance of abuse for people who drink too much.

ubiquitous	seeming to be everywhere at the same time	Mobile devices have become more ubiquitous .
variety	diversity; when there are many different types of something	The quality and variety of games continue to improve.

**Vocabulary from the Expeditionary Learning lessons.*

Italicized words are from the Academic Word List.

Appendix B: Teacher Resources

dopamine



- Look at the pictures. The pictures show teens having fun. When an activity is fun or exciting, it makes you feel good. It makes you want to do the activity more. This feeling is caused by dopamine.
- Dopamine is a chemical in your brain. Your brain produces, or makes, dopamine when you are doing something fun or exciting. This is your brain's way of making you want to do the activity more.
- Partner talk: Some drugs act like dopamine in your brain. Why would that make them addictive, or something you want to do over and over?

perspective



[https://en.wikipedia.org/wiki/Edwin_Boring#/media/File:My_Wife_and_My_Mother-In-Law_\(Hill\).svg](https://en.wikipedia.org/wiki/Edwin_Boring#/media/File:My_Wife_and_My_Mother-In-Law_(Hill).svg)

- Look at the image. Do you see an old lady or do you see a young woman? Can you see both?
- What you see in the picture depends on your perspective. Perspective is the way you perceive, or notice, something depending on your point of view
- Partner talk: Should you have a longer lunch break? Think about the question from *your* perspective. Now think about it from your *teacher's* perspective.