Teacher's Guide for MUSE

Game On: Press Start

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Teacher's Note:
This guide contains project ideas, short answer, extended response, fill-in, and true/false with correction. The variation is designed to have the students think critically, as well as to test their comprehension. An answer key to the short answer sections can be found at the end of the guide.

Extended Response: Comprehension & Critical Thinking
The questions below can be used as written, simply answered in complete sentences or easily transformed into longer essay (ELA) style questions, or even research topics. In any case, have the students support their answers with details from the text or use critical thinking skills to create a thorough and interesting answer. The questions, essays and projects have been aligned with the **Common Core Standards**. Consider the level of your students when deciding how to use the questions.

"Let's Play a Game" p. 6-9

1. What is game theory?
2. What does a 'game tree' illustrate?
3. What is unique about a 'zero-sum' game?
4. How is game theory useful for multi-player interactions?
5. What are some ways that you can choose to be a 'game changer'?

"Your Life: The Game" p. 11-13

1. What is the basic idea of gamification?
2. List some game techniques that can make mundane activities more exciting.
3. How is Duolingo using gamification as a strategy to perk up the process of learning a new language?
4. Do you think it is beneficial to reward small steps when learning something new? Why or why not?
5. How is Quirky using game-inspired techniques to create products?
6. Explain the three psychological needs that games satisfy.

Verbal Debate: Do you think gamification is a useful tool in creating real products? Work with a friend to debate the pros and cons of using this technique. Be sure to have reasons to support your point of view.

Activity: Choose an activity that is NOT fun. Try to think of something you must do with regularity. Apply the three psychological needs of gamification to your task. Devise a written plan that you intend to follow for a two-week period. Record your thoughts daily on how gamification has affected your completion of this task.

"Fun and Brains" p. 14-17

1. Define 'artificial intelligence' and explain what AI game code does.
2. What is a finite state machine? Give an example of how it works.
3. How do game developers use state machines to describe the combat cycle in an action game?
4. What is the real goal of the programmers?
5. Why are 'barks' placed in the game?

"Get in the Zone" p. 24-27
Read the article in its entirety and then fill in the blanks. Refer back to the text if necessary.

1. Good games are designed to get you 'in the zone' - a heightened state of _____, and enjoyment.

2. In _____ state you don't have to think. Your performance is automatic. The rest of the world falls away and you are wholly focused on the screen.

3. Unlike the real world, video games are designed to get us into the flow state as _____ as possible.

4. Flow happens only when there's a perfect balance between the _____ of the game and the skill level of the player.

5. Games are the most fun when the level of difficulty is just _____ your level of skill.

6. Increase your gaming flow by removing _____.

7. It's a delicate balancing act: in order to keep us in the zone, games have to increase their level of difficulty at precisely the same rate at which players improve their _____ of skill.

8. The games we love force us to concentrate at just the right level; but in order to get us in the zone, they must _____ our concentration in the right way, too.

9. The best game designers keep us in the zone by steering our _____ from one challenge to the next.

10. _____ are built into games to keep us coming back for more.

11. Rewards release a chemical called _____ in our brain, which feels good.

12. The best games break long-term goals into clear, manageable chunks and _____ us for achieving each one. Rewards are like fuel for flow.

"Women in Gaming" p. 28-31

1. What has typically been the situation for women programmers in the work force?
2. What efforts are in place to increase the number of women working in programming jobs?
3. What does Stacy Layton advise young female programmers to do? What are some of her accomplishments?
4. How did Rebecca Heideman become CEO of her own company?
5. What was Jessica Dommes' path to success? What is her advice?
6. What appeal does programming have for Barbara Rotundo?

"Fold, Fine, Sort, Unwind" p. 33-35
Mark the following statements TRUE or FALSE. Provide the correct answer if false.

1. _____ Many scientific tasks require human levels of language ability or pattern recognition.

2. _____ Scientists have launched video games to collect data for projects ranging from genetics to nanotechnology.

3. _____ In "Old Weather", players choose a 19th-century voyage and join a crew. Scientists use the weather records to predict volcanic eruptions.

4. _____ "Eyewire" players track complex shapes through a 3D grid.

5. _____ In "Foldit", players twist and coil complex strings into the smallest area possible. These strings represent the building blocks of cells.

6. _____ In "Phylo", players maximize pattern matches across strings of colored blocks. These blocks represent the genetic codes for 100 plant species.

Activity: Create an outline for a video game that could be used to collect useful data. Include the goal, the various pathways and the reward system.

General Activities for this MUSE issue:
- Choose your favorite article from this issue and summarize it in no more than three paragraphs. Remember that summarizing means repeating main ideas and important supporting details only.
- Choose an article that particularly appealed to you and create a comic strip to convey the main idea.
- Locate and define eight new terms from this issue. Cite the word from the article and then create your own original sentence.

ANSWER KEY

"Get in the Zone"

1. concentration
2. flow
3. quickly
4. challenge
5. above
6. distractions
7. level
8. direct
9. attention
10. goals
11. dopamine
12. reward

"Fold, Find"

1. True
2. True
3. False, model climate change
4. True
5. False, proteins
6. False, animal species