Video Game Literacies: Middle-School Children's Multimodal Analyses of Video

Gameplay

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Abstract

This study explores how middle-school students engaged in multimodal analyses of video games. The 31 participating children spent one hour for four consecutive days playing video games, analyzing multimodal symbols within games, and writing reflections about how various multimodal symbols informed their interpretation, learning, and decision-making processes during gameplay. Participant analyses were guided by the Gamer Response and Decision (GRAD) Framework and a variety of researcher-created writing prompts. The data for this study consisted of 124 reflections from students, which were analyzed using descriptive and process coding via template analysis. Results indicate that students identified a variety of ways multimodal symbols, including dynamic visuals, audio, oral language, written language, abstract symbols, and tactile experiences, influenced interpretation and decision-making processes during gameplay. This article illustrates how children's video game literacies are relevant to English language arts education and demonstrates opportunities for classroom instruction.

Keywords: Multimodality, Video Games, Digital Literacies, Video Game Analysis

Introduction

Substantial scholarly attention has been paid to expansive views of literacy over the last 25 years (Alvermann & Kaminski Sanders, 2019; New London Group, 1996). Generally, there has been a shift away from traditional conceptions of literacy, which focus primarily on the written word, and an increased focus on how new literacy practices develop, which are highly mediated by new technologies and a variety of social practices (Lankshear & Knobel, 2011). Researchers recognize there are multiple literacies, or multiliteracies, in which people interpret and communicate using a variety of modes of communication for various social purposes (Cope & Kalantzis, 2016).

An important theme across this research is multimodality. Scholars interested in multimodality recognize that many texts in the 21st century are multimodal in nature, regularly combining written language, oral language, images, videos, sounds, and other forms of communication (Kalantzis et al., 2016; Silva Dos Santos et al., 2020). Different communicative modes can convey different types of information, and combining different communicative modes into a single text or artifact allows authors/creators to effectively convey their ideas to an audience (Kress, 2003). Students regularly need to engage with multimodal texts in the modern world (Serafini, 2015), as they learn from and communicate through digital media in both formal and informal learning experiences, such as visiting websites, watching online videos, or even playing video games. Bezemer & Kress (2015) emphasize that multimodal communication and learning are intricately linked. Multimodal symbols are ubiquitous and influence how people make meaning of their environments, meaning that directly impacts their learning. Overall, the ability to interpret and create multimodal texts presents valuable opportunities for students to participate and find success in academic, social, economic, and civic processes in the modern world (Gleason & von Gillern, 2018; Jenkins, 2009).

The importance of multimodality has been investigated by a variety of scholars from

different disciplines who have examined its relevance for literacy practices including reading

responses (Lee, 2013), disciplinary literacies (Stufft, 2017), digital scrapbooking (Lenters, 2016),

and more. One area that has received relatively little scholarly attention as relates to multimodal

literacy practices is video gaming.

Video Game Literacies

A handful of scholars have recognized the connections between video games and literacy

(Gee, 2003; Squire, 2011; Steinkuehler, 2007). Gee (2003, 2007) was a pioneer in the field,

recognizing that good video games function as learning systems that are multimodal in nature

and integrate numerous learning principles to promote players' growth and progress within the

game (von Gillern & Alaswad, 2016). For example, Gee notes how video games provide

multimodal information *just-in-time* and *on-demand* to help players understand what is expected

of them and how they may proceed. Video games create *well-ordered problems* to help students

develop basic knowledge and skills first, which they then utilize when encountering more

challenging problems and situations (von Gillern, 2018). All these processes are fundamentally

multimodal in nature and require gamers to engage in complex thinking, learning, and decision-

making activities (von Gillern, 2016a, 2016b).

Squire (2014) examines video game literacy and emphasizes the importance of

interactivity in video gameplay. While traditional media (e.g., books, movies, and music) are

static in nature (i.e., the words in the book, song, or movie do not change from person to person),

video games are different in that the multimodal symbols (e.g., images, words, sounds, etc.) vary

from person to person and are heavily mediated by the player's actions and decisions within the

game (Hewett et al., 2020). For example, different players choose different paths, tools, dialogue

options, and storylines, and these decisions directly affect the multimodal symbols they see, hear, and experience. Many games (e.g., *Minecraft: Story Mode*) have dialogue trees. These dialogue trees present a variety of interactive dialogue options in which players choose how they want their character to respond to another character or situation in ways that have profound implications for how the game unfolds including the formation of alliances, quarrels, and how the game ends.

Given that games are interactive media that present diverging symbols and storylines, Alberti (2008) argues "video game players are simultaneously readers and writers whose gaming decisions are inscribed within a certain horizon of possibilities but not predictability" (p. 258). As gamers read/interpret a variety of multimodal symbols within gameplay, their decisions impact how the game presents subsequent symbols. These complex literacy processes are worthy of investigation to understand how students engage with video games as interactive texts (Beavis et al., 2009).

Conceptual Framework

This research conceptualizes video gameplay as a literacy practice (Squire, 2014) and more specifically recognizes that people interpret multimodal symbols during gameplay, which fosters learning and informs decision-making processes (Bezemer & Kress, 2015). While the Gamer Response and Decision (GRAD) Framework (von Gillern, 2016a; see Figure 1) draws upon a variety of literature and theoretical perspectives, a few features are particularly relevant to this study. First, the GRAD Framework utilizes a reader response perspective, and much like Rosenblatt's (1994) Transactional Reader Response Theory in which readers draw from their own backgrounds and experiences while reading and many interactions occur among reader, author, and text, gamers also interact with the game and comprehend multimodal symbols as

they process video games as interactive texts. This study also utilizes the concept of selective

attention (Rosenblatt, 1994), which posits that because different readers have different

backgrounds, some people focus more on some textual features than others. Second, the GRAD

Framework draws upon Gibson's (1977) Theory of Affordances that posits that in order to

interpret and function within the world people identify affordances, which are things that can be

used for some purpose. In video games, for example, in-game objects serve various purposes

(i.e., they have various affordances) that gamers need to identify and then make decisions about

if/how they want to utilize those objects/affordances during video gameplay (Gee, 2015). Third,

multimodality is a critical concept in the GRAD Framework, which recognizes that gamers

interpret and learn from a variety of multimodal symbols (Kalantzis et al., 2016) during

gameplay to understand and guide decision-making processes (Gee, 2015; Squire, 2014)

The GRAD Framework identifies gamers as a fundamental part of video gameplay and

posits that each gamer has his/her own profile consisting of knowledge, experiences, skills,

goals, agency, and self-efficacy, which aligns with Rosenblatt's (1994) Reader Response Theory

by recognizing all gamers, like all readers, have their own background and experiences.

Knowledge represents how each gamer possesses unique knowledge related to the real world as

well as video games (e.g., how they function, strategies for success, etc.). *Experiences* relate to

how each gamer has distinct past experiences in both the real world and game worlds that

influence his/her interpretations of the present situation, including those related to video

gameplay, which may relate to issues such as the game's mechanics, story, or multimodal

information. *Skills* refer to the accumulated knowledge and experiences influencing gamers'

abilities to perform certain actions, including those necessary to progress in a game. *Goals* are

important as gamers form goals related to video gameplay. For example, they may seek to

achieve a high score, collect a variety of in-game items, or beat a level stealthily without alerting

enemies. *Agency and self-efficacy* refer to how people, including gamers, have agency to act in

various ways and pursue particular goals, and their self-efficacy, or perceived ability to achieve a

particular outcome, influences their actions and what goals they pursue (Bandura, 2006). For

example, gamers with a high-level of self-efficacy related to video gameplay may choose a more

difficult setting for the game or pursue a more difficult path of progression (von Gillern, 2016b).

Figure 1. The Gamer Response and Decision (GRAD) Framework (von Gillern, 2016a)
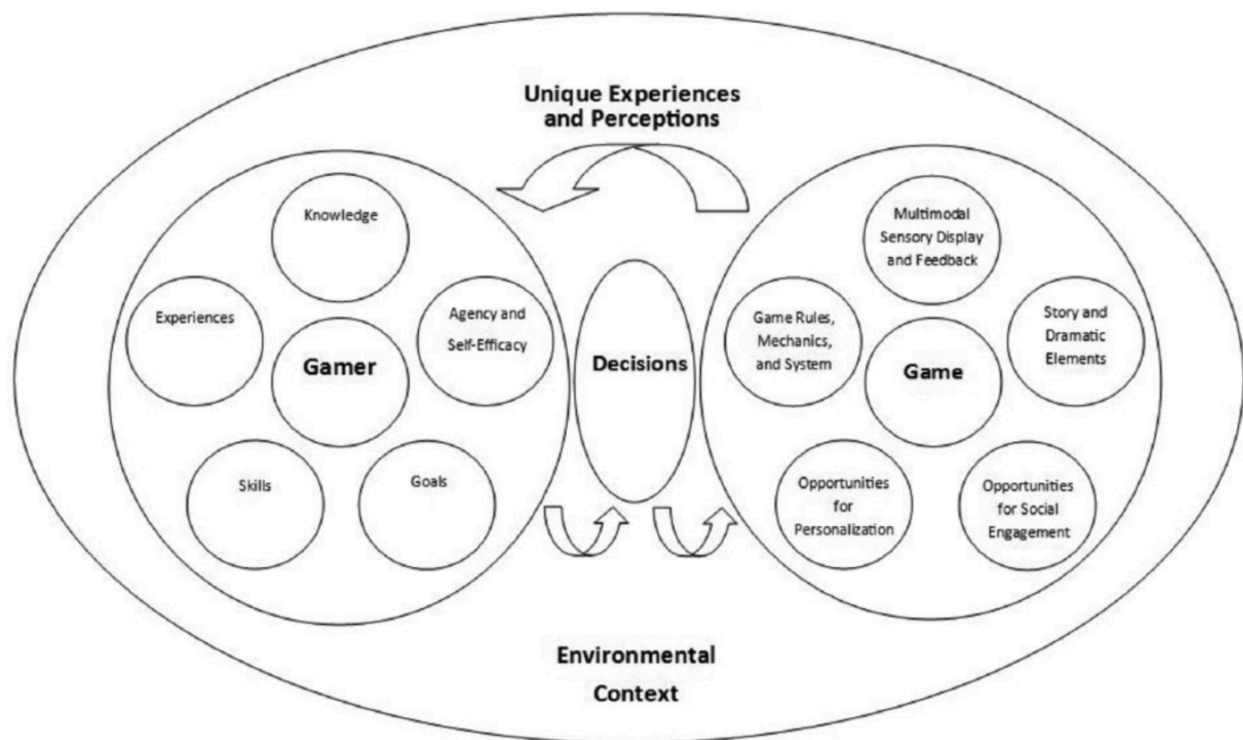
Furthermore, each game also has its own unique features (i.e., multimodal sensory

display and feedback; story and dramatic elements; game rules, mechanics, and system;

opportunities for personalization; and opportunities for social engagement) that coalesce into the

game profile. *Multimodal sensory display and feedback* refers to how video games convey

information to players via a variety of multimodal symbols, including visual, written, and

auditory information. *Story and dramatic elements* are important in gaming as many video games have stories and dramatic elements, including plots, characters, settings, problems, and resolutions. Notably, many of these dramatic elements are influenced by player decisions. For example, choosing a particular path or dialogue option may unlock some characters, settings, or resolutions and/or preclude other experiences and outcomes. *Game rules, mechanics, and system* are key aspects of video games. Games have rules that dictate what is possible and what is not in the game as well as mechanics, which relates to how various elements of the games function including player actions and progression. As used here, the game system "is how the rules and mechanics combine to create a unique game experience" (von Gillern, 2016a, p. 675). *Opportunities for personalization* relates to how games present players opportunities to make decisions about how they want to play the game. For example, games present options about which items to use, paths to follow, and skills to upgrade. *Opportunities for social engagement* are important in video games as games can provide a variety of opportunities for players to engage socially during gameplay. For example, games provide opportunities for cooperative and competitive gameplay, which can occur in both face-to-face and online environments.

Additionally, while many traditional forms of media (e.g., novels, movies, and songs) require the audience's attention, the outcome of the story or message is not affected by the audience. For example, the final chapter in a book has the same words for each reader, as is the case with any particular scene in a movie. This stands in contrast to video gameplay, in which gamers constantly make decisions about which paths to take, items to use, and playstyle to utilize. Thus, the GRAD Framework not only recognizes that gamers draw from their own backgrounds and experiences as they interact with the game; it also acknowledges the

importance of players' decisions during gameplay, which impact how the game (i.e., the text) unfolds and which multimodal symbols are presented to the gamer. For example, a player who chooses the left path will see and experience something different than a player who takes the right path, and other decisions, such as making choices in a dialogue tree or deciding to help one character instead of another, often lead to completely different events and endings in a game's story. Such differences and experiences are conveyed multimodally in a feedback loop in which gamers are presented multimodal information and then make decisions based on their interpretations of that information, which in turn impact the presentation of subsequent multimodal symbols, a process that is repeated throughout gameplay.

Video games convey a variety of multimodal symbols to players and contribute to gameplay experiences and how video games can be analyzed as texts. *Dynamic visuals* relate to visuals that shift during gameplay, such as when one explores a 3D game world. *Still images* include static maps and pictures. *Audio* includes music and sound effects. *Oral language* is often present in games via character dialogue and narration. *Written language* is often used in games for conveying written directions, explanations, and character dialogue. *Abstract symbols* include a variety of visual symbols, such as those that represent health and valuable items. *Tactile experiences* occur as players feel the controller, press various buttons, and experience vibrating controllers that signify important events.

Overall, this study used the GRAD Framework as a conceptual framework to help investigate and understand the students' video gameplay experiences. While reader-response inspired studies can examine readers' backgrounds to understand how they connect to characters and story events, this study focuses on participants' selective attention (i.e., what they paid attention to) as demonstrated through their written reflections (Rosenblatt, 1994). While the

GRAD Framework integrates a variety of features and concepts related to video gameplay, the

primary purpose of this study was to investigate how students can engage in analyses of video

games as multimodal and interactive texts. More specifically, this study examined middle-school

students' written reflections about how they interpret video gameplay experiences with an

emphasis on learning and decision-making processes. In alignment with these goals the

following research question guided the study: How do participants interpret multimodal symbols

during video gameplay and make decisions based upon their interpretations?

Methodology

Research Setting and Data Collection

We communicated with the three middle-school teachers of a nearby private laboratory

school to arrange this research study, which focused on having students analyze video games as

multimodal and interactive texts. Fourteen sixth-graders (9 female, 5 male) and seventeen

seventh-graders (10 female, 7 male) participated in the study. A qualitative approach (Merriam

& Tisdale, 2016) was used to understand the experiences and perceptions of participants. More

specifically, this descriptive case study (Baxter & Jack, 2008) examined the authentic context of

an educational unit in a middle school as a bounded system in which the participating students

engaged in multimodal analyses of video games.

The data collection for this study took place Monday through Thursday during the

morning block. The primary expectations for participants were that they would play video games

for 30 minutes and would then spend 30 minutes engaged in reflective writing based on their

video gameplay experiences. The middle-school teachers formed student groups, ensuring that

each group included both male and female students from both the sixth- and seventh-grade

classes, as the students regularly engage in mixed-grade learning at the school. The teachers

created a total of four groups (each with either seven or eight members). Group membership

remained constant over the four days of data collection.

One Xbox console was connected to a smart board in the social studies classroom, while

a second Xbox was connected to a smart board in the science/math classroom. The classrooms

are situated side-by-side. This set-up allowed the researcher to monitor both rooms and allowed a

teacher to be present in each classroom. The Xbox in the science/math classroom had four

wireless controllers connected; video game titles available for students to select from in this

room included *Minecraft* and *Zoo Tycoon: Ultimate Animal Collection*. The Xbox in the social

studies classroom had two wireless controllers connected; video game titles available for

students to select from in this room included *Minecraft: Story Mode – Season 2* and *LEGO*

Worlds. These games were chosen as they are family- and teacher-friendly and incorporate a

variety of multimodal symbols for students to analyze and interact with. As there were two

Xboxes but four groups, two of the groups went first (while the other two groups worked on

other class assignments), then the groups switched after 30 minutes. The schedule is presented

below:

9:00 - 9:30 am: Groups 1 and 2 play while Groups 3 and 4 work on other activities.

9:30 - 10:00 am: Groups 3 and 4 play while Groups 1 and 2 work on other activities.

10:00 - 10:30 am: All groups write their video game reflections.

(Note: Groups 1 and 2 played in the first slot the first two days and then switched to the

second time block for the last two days, which resulted in all groups playing first for two days

and second for the other two days).

Additionally, each group spent two days playing video games in the science classroom

and two days playing video games in the social studies classroom, which gave them access to

different games. In the science classroom, each group during each session all four days chose to

play *Minecraft*. No group ever chose to play *Zoo Tycoon*. In the social studies classroom, both

Minecraft: Story Mode – Season 2 and *LEGO Worlds* were selected throughout the week. Since

each group had seven to eight members, students were responsible for allocating their time to

ensure that all members were able to participate. Students engaged in both single-player and

multiplayer experiences, in which some group members actively played the game while others

watched the screen and often provided commentary and suggestions.

Researcher-created writing prompts were provided to students each of the four days. On

the second day, prior to video gameplay, a researcher presented the GRAD Framework to

students and engaged the group in a discussion of multimodal symbols and decision making in

video games. All students received a visual representation of the GRAD Framework and a table

listing multimodal symbols that they could refer to while completing their writing prompts for

the remainder of the week. The researchers incorporated different prompts across data collection

days to keep the prompts fresh for the participants as well as to gather data on different topics. A

sample of the writing prompts are as follows:

- Describe what these multimodal symbols told you or helped you know while you played.

  What did you learn about the game and game world through these symbols? What is the

  game world like?

- How did these informative symbols influence your decisions during gameplay? What did

  you see, hear, or read that influenced your decisions in the game? Consider the things you

  did, strategies you chose, places you visited, and items you chose while playing.

- What did you learn through your decisions? Did you learn that some things were

  possible, while other things were not possible? Did you learn that some strategies and

approaches were effective for progressing in the game while others were not? Please

describe anything that you learned from today's game-play.

Data consisted primarily of students' written responses to the prompts. Each of the 31

students completed four reflections (one per day) for a total of 124 reflections. While responses

to prompts on the first day tended to fill just over half a sheet of paper, responses for days two

through four averaged between one and two pages of notebook paper.

Data Analysis

The writing prompts for each day were paired with students' handwritten responses on

notebook paper. After making digital copies of all the reflections, the researchers individually

coded the data for each student, starting with day one and continuing through day four for the

first student, before moving on to the next student. In this approach, each researcher was able to

focus on the experiences of a single student across the four days of data collection.

The researchers utilized template analysis (King, 2012) to interpret the participants'

written responses to the writing prompts. The template analysis began by both researchers

completing an initial review of the data to develop an understanding of the overall data set and

participants' written responses. Next, a variety of a priori codes inspired by the GRAD

Framework were developed into a template to guide the coding process using key concepts that

were present in the initial review and aligned with the research question (Brooks, McClusky,

Turley, & King, 2015). Two primary types of codes were included in the coding template:

descriptive and process (Saldaña, 2016). Given this study's emphasis on multimodality,

descriptive codes, which summarize key aspects of a passage, were used to identify how

participants recognized various multimodal symbols within their gameplay experiences. To this

end, the researchers utilized the following a priori descriptive codes, which align with the GRAD

Framework (von Gillern, 2016a), to illustrate the multimodal aspects of video gameplay that

participants explored.

Dynamic = Dynamic Visuals (e.g., visuals that shift as one explores a 3D game world)

Still = Still images (e.g., still maps and pictures)

Audio = Audio (e.g., sound effects and music)

Oral = Oral Language (e.g., character dialogue and narration)

Written = Written Language (e.g., written directions, explanations, and character dialogue)

Abstract = Abstract Symbols (e.g., symbols that represent health and important items)

Tactile = Tactile Experiences (e.g., vibrating controllers that signify an event)

Furthermore, the researchers utilized process codes, which aligned with the GRAD

Framework and highlighted instances of participants engaging in processes and actions related to

the research question. Two a priori process codes were utilized:

I = Interpreting

DM = Decision Making

After each researcher independently coded the 124 participant reflections, they examined

their collaborator's coding document to determine differences and identify any disagreements.

When disagreements were found, the researchers discussed their rationale and agreed on a

particular course of action in terms of interpreting the codes. For example, one researcher

identified maps within the game as still images while the other identified maps as dynamic

visuals. After deliberating, the researchers decided to code the maps in these games as dynamic

visuals as the information on the map changed frequently.

After these initial coding processes, the coded data were further analyzed by identifying

patterns of how particular types of multimodal symbols influenced participants' interpretation

and decision-making processes, which is central to the results presented below. For example,

participants recognized hearts, which illustrate player health in the game and were coded as

abstract symbols; the hearts influenced decision-making processes in that when a player had a

low heart count, he/she sought to escape dangerous situations to avoid dying.

Ultimately, this overall approach to coding and data analysis was guided by the research

question and illuminated how participants identified, interpreted, and made decisions based on

multimodal symbols present while they played video games. The results below illustrate how

multimodal symbols convey important aspects of video gameplay and are central to players'

interpretations and decision-making processes as they comprehend and engage with video games

as interactive texts.

Results

Given the emphasis of the prompts and analysis on multimodality in video gameplay,

particularly as relates to interpreting multimodal information to learn about and make decisions

during gameplay, different types of multimodal elements and their relevance to participant

learning and decision making is the focus of the results below. Each section illustrates the types

of information students identified from various communicative modes and the relevance of that

information to their learning and decision-making processes.

Dynamic Visuals

In their written reflections, students indicated various occurrences of the impact of

dynamic visuals on their game interpretation and decisions-making processes. Several students,

for example, noted *Minecraft*'s use of dynamic visuals to indicate time of day/night (such as

noting the sun's position in the sky or the brightness of the sun's light) and reflected upon the

ways that this information impacted their thinking and decision-making processes during

gameplay. Sophie (all student names are pseudonyms), a sixth-grade student, wrote that "The sky told me whether I should stay inside or explore. If it was at night, I would be in the house to avoid monsters and during the day I could explore because there weren't monsters." Allison, another sixth-grader, wrote "When it got dark outside you had to build a house to stay safe from the zombies," which illustrates the impact of dynamic visuals related to the sun and their influence on her decision-making. Students actively analyzed and interpreted information presented by dynamic visuals in the game, such as those representing time of day, and reflected on the impact of such information on their video gameplay decision-making processes.

Students also used dynamic visuals when playing *LEGO Worlds* (see Figure 2). Sixth-grader Hailey wrote that "Sometimes things would glow, which made me want to check them out. One time, there was a glowing treasure chest, so we looked in it and got some money." Hailey interpreted an affordance of the glowing chest (i.e., that it can be opened and likely contained valuables) and decided to open the chest and see what was inside. Austin, a sixth-grade boy, wrote "The tutorial cutscenes helped you to tell how the game works." (Cutscenes are essentially short videos that occur in video games to convey story elements or other useful information for the gamer.) Such instances highlighted by the students demonstrate how they interpreted visuals in the game world and how games emphasize certain information visually to develop the player's knowledge and guide decisions.

Figure 2. Screenshot of *LEGO: Worlds*

Dynamic visuals were often interpreted in conjunction with other symbols to inform the player about the game world and events within. Julee, a seventh-grader who played *Minecraft: Story Mode - Season 2* wrote in depth about characters, conversations, and her personal meaning making and decision-making processes that were influenced by dynamic visuals (e.g., character expressions) along with oral language (e.g., character dialogue), which was also represented with written language as subtitles. Julee wrote:

> The characters in [*Minecraft: Story Mode - Season 2*] told me a lot about everything that
>
> was going on. I could tell by the tone of their voice or facial expressions if they were
>
> mad, happy, etc. When Petra started to talk about Stella I could tell that she didn't like
>
> her by the tone of her voice. For Stella, I could tell that she didn't like Petra or Jesse
>
> because she was so fake towards them. I learned who I could trust and who I couldn't. I
>
> also learned who was nice and who wasn't. When I found out Stella isn't trustworthy I

wouldn't give her what she wanted. When Petra was in need of help during the race

fighting off spiders, I helped her because she was kind and would do the same for me.

This quote highlights this student's personal connection with the characters, which relates

with reader response theory in that the student's unique interpretations drove her connections and

decisions. Additionally, the student's experience is obviously relevant to English language arts

(ELA) education in terms of making text connections, recognizing character traits, etc. This

student actively made meaning of the characters, their relationship with one another, and her

relationship with each of them, all of which was influenced by both character expressions (e.g.,

visuals) and dialogue represented by both oral language and written text. While forming

connections to characters in other forms of media, such as books or movies, the audience serves

as an observer who cannot directly interact with the characters. However, as this student noted,

in video gameplay, the gamer is an interactive participant who made decisions based on her

interpretations of the characters, interpretations that, according to reader response theory

(Rosenblatt, 1994), differ from gamer to gamer. She chose to not help Stella because she

identified Stella as untrustworthy, but she did help Petra as she believed Petra would have done

the same for her. These complex meaning-making and decision-making processes are common

in video gameplay, and this student explicitly reflected on these processes.

Still Images

While still images are present in many video games, often in the form of static maps,

photos, or other artifacts for the player to view in the pause menu, there were no clear references

by the students to their use of still images during this project. This is likely because the games

available for the students to play simply do not include many still images, even though plenty of

other games do.

Audio

Participants referenced audio, which was categorically distinct from oral language and includes sound effects and music, in ways that informed their understanding and decisions in the game. A noticeable pattern related to audio emerged from students who reflected on *Minecraft*. Several students noted that the creatures (e.g., animals and monsters) in the game made sounds when they were near. Animals are important in *Minecraft* because they can be harvested for their meat, a valuable affordance. Students noticed that particular sound effects indicated the presence of animals, which can even be heard when the animals are not visually displayed on the screen. Seventh-grader Madelyn wrote: "When there were animals, they made sounds that let you know when they are close." Austin shared that *Minecraft* "also used sound effects to help you understand exactly what animal or monster you were looking at." By using sounds to indicate presence and type of animals (and monsters)*, Minecraft* allows players to locate and distinguish valuable resources and make decisions accordingly.

While animals are a valuable resource in *Minecraft*, monsters in the game are one of the top threats to players. Monsters can damage and even kill the player, which can result in losing hard-earned resources the player has collected in his/her game. Thus, knowing where monsters are and if they are near is important for the players. Cora, a seventh-grade student, wrote about such experiences: "Sometimes you can hear a monster coming and that alerts you." Becoming aware of the presence of nearby monsters is critical in *Minecraft*, and sound effects are a primary way (in addition to seeing them visually) that players learn that monsters are nearby. Becoming aware of the presence of monsters informed decisions made by the participants. Austin reflected on decision-making processes during gameplay and wrote: "if you had a decision to choose a

path, we would choose the one that didn't have groaning monsters we could here [sic]," and

Madelyn wrote that "sounds let me know when I should fight."

Students often interpreted sound effects in conjunction with visuals to help them

understand events and make decisions during gameplay. Sixth-grader Wyatt wrote: "I used my

health bar and heard when I got hit to not get killed." It can sometimes be difficult in the heat of

battle to know when you are taking damage and how much of your life remains, and this student

used multiple modes of communication (visual and audio) to understand the battle and make

decisions accordingly.

In addition to providing critical information about the game world, such as the presence

of important creatures, students recognized that the games also used audio to help construct a

more realistic and immersive game world. Lily, a sixth-grader, wrote that "the audio

representations also made the world more realistic." For example, as seventh-grader Lucas noted,

the "game used a clacking noise to indicate that you were placing or removing bricks," and

"there were clacking noises that indicated to me that I was successfully building something."

Overall, audio and sound effects contributed to the gameplay experience by increasing the

realism of game worlds and providing valuable information to players that they could use to

make decisions and pursue their goals during gameplay.

Oral Language

Oral language in video gameplay occurs when characters speak to one another in the

game (i.e., dialogue) as well as narration, which often occurs during cutscenes. The role of oral

language within the video games was mentioned by students who played *Minecraft: Story Mode

– Season 2* and *LEGO Worlds*. Dialogue in the game often provides additional insight regarding

characters and serves to forward the narrative. In *Minecraft: Story Mode – Season 2*, characters

converse with one another; in some instances, the dialogue displayed on-screen includes a

decision for the gamer regarding what to have a character say in response (see Figure 3). Lily

wrote that while playing *Minecraft: Story Mode – Season 2*, "The tone and expressions helped

[me] decide what to make Jessie [the character] say in order to keep everyone else from getting

too mad and escalating the situation." Also, as mentioned in the above discussion of dynamic

visuals, students used both facial expressions and oral language to make connections with

characters in the game and to make decisions as part of gameplay.

Figure 3. Screenshot of dialogue options from *Minecraft: Story Mode - Season 2*

Beyond the role of oral language in helping gamers interpret a character's mood or tone,

oral language also provides guidance to the gamer. As Madelyn wrote, "The people that were

talking in the game really helped the gamer to know what was going on." Addison echoed this

idea and wrote "Information is presented through the people talking to you because they give

you a sense of what to do." These students relied on oral language to understand affordances

within the game and comprehend game mechanics. They also interpreted oral language within

the game to make decisions. Students noted that oral language helped them navigate a game and

provided a layer of authenticity. As Lily mentioned, "The oral language helped me enjoy the

game more because I could look around at the surroundings and feel more into games if I didn't

have to look at the subtitles the entire time." Harper additionally wrote that "The oral language

told us the backstory and described a few details."

Several students wrote about the ways that oral language in the game provided them with

background information, particularly while playing *LEGO Worlds*. Sophie wrote, "Instead of us

having to figure out on our own how to use the different tools, the game's [narrator] told us how

to use them." Lily noticed that "When you interacted with people [in the game] they would tell

you what to do," while Austin reflected that "Sometimes a certain character you meet (an NPC)

[i.e., non-player character] would tell you a [game] mechanic and how to use it." Through

reflections such as these, students focused on information conveyed through oral language in the

game to learn both about the game world and options for actions to take in the game. In terms of

cutscene narration, a character within the game might convey information to the player. For

example, a sixth-grade boy, Nolan, wrote, "At the start [of *Minecraft: Story Mode – Season 2*]

there was a cutscene that told us what had happened last time…The characters also talked and

they referenced past, future, or present happenings." In such instances, gamers can better

comprehend the goals of a game by relying on oral language in the game; in many cases, the oral

language is presented in tandem with dynamic visuals or other multimodal symbols to provide

the gamer with information.

Written Language

Written language during video gameplay primarily consisted of on-screen commands and

directions as well as written dialogue. In terms of game instructions, written language provided

guidance for students regarding what to do and how to advance; as male seventh-grader Bryson

wrote, "words that would come across the screen…would tell you what to do when the time

came." Allison noticed, "When I approached an item that the game wanted me to pick up it

would flash the letter (B) and I would know that I needed to press the letter B [on the controller]

to collect that item." The flashing letter (B) revealed an affordance of an in-game object (i.e., that

it could be collected). Male sixth-grader Jace wrote "I saw a tip pop up. It said that you can

double-jump. I pressed [the A button] twice, and jumped higher." Each of these students relied

on written language within the game to learn game commands. Austin wrote that "The game

constantly had controls on your screen telling you which button to press and if you come across a

mob or block you hadn't seen then a box would appear in the top right corner of your screen and

it would tell you what it is." In such instances, written language paired with abstract symbols

provided information to the gamer regarding game commands and missions.

Students also mentioned a variety of other instances of written language and how the

written language supported interpretation and decision making. In *LEGO Worlds*, for instance,

sixth-grader Ellie wrote that "There was a rocket and it had always said 0/3 or 1/3 or 2/3 so I

knew to get to another world you would have to put the bricks in the rocket." In this case, written

language helped the student interpret progress in the game and make decisions related to ways to

advance in the game. As evident in this student's reflection, written language serves to support

the gamer's comprehension of items in the game and actions that are plausible; in many cases,

the written dialogue may appear alongside visual images or in conjunction with abstract symbols.

Gamers interpret these multimodal symbols to comprehend the scope of gameplay, to understand

game mechanics, and to make decisions regarding their own actions within the game.

In their reflections, many students noted that written communication in the games

informed students and influenced their decision-making during video gameplay. Students often

wrote about the written dialogue displayed on the screen in *Minecraft: Story Mode – Season 2*

that they used to make decisions regarding how to respond to characters in the game. Wyatt

wrote that "There was an ongoing script and I learned the responses of each set of dialogue

options." Students chose from the dialogue options based on their personal thoughts, goals, and

experiences, representing a reader/gamer response process. In *LEGO Worlds*, written language

also was present during interactions with characters which provided information and influenced

decision making. As Austin mentioned in his reflection:

> The game had bubbles showing people's text and they would tell you what to do. The
>
> game highly encouraged you to collect some items which made the game much more fun.
>
> Sometimes, I would do exactly the opposite of what it said to do, and would find a hidden
>
> mechanic it didn't tell you about. In a cutscene it showed a pirate ship, so I decided to
>
> read [about that].

Interestingly, Austin, who self-identified in a gamer in one of his reflections, decided to do

"exactly the opposite of what [the game] said to do." This is likely because gamers understand

that there are obvious paths and actions in games as well as those that are more hidden or

obscure. Thus, to discover more about the game, gamers often look for hidden paths and tactics.

In this situation, Austin's identity as a gamer influenced his interpretation and decision-making

processes, aligning with Reader Response Theory (Rosenblatt, 1994).

Overall, written language, often paired with other multimodal symbols, served to inform students about the actions they could take within the game and provided on-demand information about game commands. Additionally, students used written language to help them comprehend within the game space and then to make decisions as part of video gameplay.

Abstract Symbols

Abstract symbols were represented visually and conveyed a variety of types of information to players, which informed their understanding of the state of the game and how they learned and made decisions during gameplay. Two primary types of abstract symbols emerged as particularly important and relevant for the students' gameplay experiences: 1) symbols related to health, wealth, and hunger, and 2) symbols related to controller buttons and their functions within particular contexts.

The first type of symbols, which were referenced by many students, related to health. For example, in *Minecraft*, symbols of hearts are presented on the screen to inform players of their current health status, which is important as when one runs out of health (i.e., hearts), the player dies and can lose valuable resources they have collected (see Figure 4). Similarly, *Minecraft* displays "chicken wings" on the screen to inform players about their character's hunger level. Participants were highly aware of their health meter (and hunger level), which are common in video games. Sixth- grader Mia wrote "When you [sic] hearts run low, you knew you were close to losing your items and dying. If your chicken wings disappeared, you'd become slow and would eventually die."

Figure 4. Screenshot of *Minecraft*

Students regularly monitored their health meters to inform their decisions. Seventh-grader Gracie reflected, "The informative symbols, like the hearts, helped us decide if we should try to fight the people or protect our character." Madelyn explained her strategy for gameplay: "I noticed that I had hearts, and would die if I ran out. When I found my craft table, I began to collect things. I began to make a sword so I could defend myself." These students recognized the information communicated through abstract symbols, such as hearts, and developed strategies (e.g., fighting, avoiding combat, or building a structure to defend oneself) to reduce the likelihood of their characters losing all their hearts (i.e., dying) and potentially losing valuable resources they collected during gameplay.

The second main use of abstract symbols that were presented in the game related to game controller buttons, which were often presented in conjunction with written language to explain the functions of different buttons. Raquel described this and wrote that "The game sometimes

shows icons that resemble controller buttons with words that explain their function, so you know

what different controls will do...The button explanations helped me know what to press to

achieve my goal." Raquel further wrote that "The game showed icons of the different controller

buttons and linked them to specific functions." These reflections represent a primary way that

video games communicate directions and possibilities for interaction with game objects and

characters. By displaying a symbol that corresponds to a button on the controller, games help the

players understand affordances within the game and when they can or should press a button.

Such symbols are often presented with a written message that explains what a particular button

will do in a given situation, such as entering a vehicle, opening a door, or using a new tool. The

students' reflections demonstrated their awareness of how such symbols, which often occur in

conjunction with written language, convey important information to players that guide both

learning and decision-making processes.

Tactile Experiences

Tactile experiences are a common component of playing video games. Any time a person

pushes a button on the controller or feels the controller vibrate, that is considered a tactile

experience. Furthermore, tactile experiences can signify different types of information to the

gamer, such as when something important is happening, which helps to emphasize the situation

and can focus the player's attention. Sophie described this and wrote that while playing

Minecraft "the controllers would vibrate when something important happened." Another

common purpose of tactile feedback during video gameplay is to alert players that their character

is being hurt. Seventh-grader Owen reflected on this and how it influenced his learning and

decision-making during gameplay. He wrote:

The game also used a type of multimodal symbol called tactile experience? to display

information to me. In this particular case, the controller vibrated, telling me that I was

taking damage and was losing lives (hearts). I was engulfed in lava, so that made sense.

When I was in the lava and my controller vibrated and the screen turned red, I knew that I

wasn't going to be able to do much in the game. I wasn't going to be able to build there,

move around, or do anything. This influenced my gameplay.

Tactile experiences are typically interpreted in conjunction with other communicative modes

(such as the dynamic visuals highlighted in the quote above). The vibration of the controller

helps gamers pay attention to what is happening on screen and within the game, which affects

their learning and decision-making experiences.

Discussion

The middle-school children who participated in this study demonstrated their ability to

identify and interpret multimodal symbols present in video gameplay through written reflections.

All students identified a variety of types of multimodal information within the video games they

played, including dynamic visuals, audio, written language, oral language, abstract symbols, and

tactile feedback. The various symbols and ideas they reflected on demonstrate textual features

they focused on and thus, their selective attention (Rosenblatt, 1994). Given the importance of

multimodal interpretation skills in the modern world (Kalantzis et al., 2016; Serafini, 2015), the

skills and processes demonstrated by the students are relevant and valuable in the landscape of

digital literacies (Alvermann & Kaminski Sanders, 2019; Apperley & Beavis, 2013).

Participants identified various communicative modes (e.g., dynamic visuals, audio, oral

language, written language, abstract symbols, and tactile feedback) that they used to understand

the game, identify affordances, and make decisions within the game world (von Gillern, 2016a;

Gibson, 1977). Interestingly, participants focused more on some communicative modes than

others. For example, students spent more time reflecting on dynamic visuals and written

language than they did audio or tactile experiences, which was influenced by their selective

attention and what they noticed and felt was important to their overall experience as they

reflected.

Overall, students engaged in video game literacy practices and used video games as texts

for multimodal analysis (Gee, 2015; Squire, 2014). Aligning with reader response theory

(Rosenblatt, 1994) the students interacted with the video games in ways that were unique to each

gamer, and each student focused on different ideas and combinations of ideas that represented

their selective attention while engaged with video games as texts. While students each had their

own interpretations and reflections, the video gameplay occurred in a socially vibrant

environment that included both single-player and multiplayer gaming and spectating peers who

provided suggestions and commentary. While the social interactions amongst participants was

not the focus of this study, future research would benefit from examining how video gaming in

ELA contexts can support literacy practices and community building (Bailey, 2016).

This study contributes to our understanding of the ways youth can reflect upon their

interpretations of multimodal symbols and their decision-making related to such symbols. In the

case of video games specifically, students can reflect on video games as texts similarly to how

they may reflect on other texts in ELA environments (e.g., graphic novels, prose, poetry, etc.).

By reflecting on the multimodal content within video games and how this content influenced

their interpretations and decisions in response, students were able to engage in critical thinking

processes to support their comprehension. These processes of interpreting multimodal symbols

and making informed decisions are key aspects of video game literacies and illustrate the

interactive nature of video games as texts (Squire, 2014).

While many youths are familiar with multimodal messages, producing and/or consuming

multimodal content outside of school, not all youth have extensive familiarity with

multimodality within video game spaces, and students who are familiar with multimodal input

may not automatically reflect upon the ways that they use such information to

interpret/comprehend content and to make decisions. Given the prominence of multimodality in

the modern world (Cope & Kalantzis, 2016), it is valuable to help students consciously and

analytically reflect on how multimodality occurs in games and other multimodal texts to develop

their understanding of how such texts communicate and structure information, aligning with

common goals and processes of ELA classrooms. Notably, not all students have equitable access

to digital technologies including video games and gaming platforms, which reflects the broader

digital divide (van Dijk, 2020), and this may have influenced participants reflections as they

drew from their own backgrounds and experiences, aligning with reader response theory

(Rosenblatt, 1994) and the GRAD Framework (von Gillern, 2016a).

Our study builds upon prior work using video games in ELA classrooms (Gerber et al,

2014; Harvey, 2018). Furthermore, we address a gap in the literature by providing evidence of

ways that students' interpretations of multimodal information support their comprehension and

decision-making in video game spaces; such evidence provides insight related to students'

engagement with interactive multimodal texts (e.g., video games) as part of classroom learning.

Notably, students in this study did not passively accept their multimodal video game experiences

but rather, they actively reflected upon, interpreted, and made decisions in response to

multimodal information. Students engaged in complex processes as they considered the

information presented to them through a variety of multimodal symbols during gameplay. While

in some instances a student may have focused on one type of multimodal input, such as when

reading words on a screen as part of a dialogue tree in *Minecraft: Story Mod*e and making a

decision in response, in many instances students navigated complex analytic and evaluative

processes, often synthesizing information from several types of multimodal symbols to arrive at

a decision. As evidenced through the students' written reflections, video gameplay as a literacy

practice involves complex meaning-making and decision-making processes with video games as

digital, multimodal, interactive texts (Squire, 2014; Steinkuehler, 2007; von Gillern, 2021).

Students attend to numerous aspects of the text itself, in addition to multimodal input, all of

which takes place in an interactive nature in which multimodal and text-specific features adapt in

response to player decisions in the game; in this sense, the gamer serves not only as a reader of

the text but also as a writer (Alberti, 2008). Further adding to the complexity of these processes

are the students' analyses and written reflections related to gameplay. In ELA classrooms,

teachers encourage students to actively read, reflect upon, and engage with texts to promote

comprehension; our study builds upon prior work related to image-text interactions as part of

multimodal meaning-making (Unsworth & Cléirigh, 2011) and provides support for the use of

video games as texts that allow students to engage in processes that are at the core of reading

comprehension. In the same way that "reading" traditional texts involves a great deal of thinking,

"reading" a video game involves complex thought processes that are intertwined with numerous

in-game decisions.

Overall, this research demonstrates that through experiencing, identifying, and making

decisions based upon multimodal symbols, the students engaged in video game literacy practices

and analyzed video games as multimodal texts, which builds upon the limited work in this field

(Harvey, 2018). Students utilized and reflected upon multimodal symbols to develop their understanding of the game world and how it functions in ways that influenced their decision-making processes, which aligns with the work of Bezemer & Kress (2015) who recognize the complex learning and meaning making processes mediated through people's interpretations of multimodal symbols. Furthermore, this study complements Steinkuehler's (2007) notion that video gameplay is a "constellation of literacy practices" (p. 297), and our work builds upon previous research such as the work of Gerber et al. (2014) who studied video games in a high-school literacy curriculum and found that the use of video games allows students to engage in a variety of cross-literate connections (Abrams & Gerber, 2014; Stufft, 2018) involving interactions among the students, teachers, multimodal texts, and traditional texts. Overall, our work builds upon prior scholarship centered on the use of video games in classroom settings to promote student learning (Thompson & von Gillern, 2020) and provides evidence of the ways that middle-school students can interpret and analyze multimodal information as part of meaning-making while engaging with video games as texts.

Classroom Implications

Playing video games requires people to interpret and learn from multimodal symbols. ELA teachers aim to develop students' ability to interpret various forms of media and the multimodal symbols within. This study demonstrates how middle-school students can analyze multimodal symbols within video games and how these symbols influence their learning and decision-making processes. Gee (2003) was right that video games have a lot to teach us about literacy and learning. Video games function as interactive texts designed to promote engagement and learning (Squire, 2014), and as this study demonstrates, these games can be used in ELA classrooms to engage students in literacy learning. Our study builds upon prior work using video

games as part of learning at home (Haas et al., 2021) and in classrooms (Harvey, 2018) and

incorporates video gameplay into instructional time, with the video games serving as texts, to

show ways in which students interpret, analyze, and comprehension video games similarly to the

ways in which they interpret, analyze, and comprehend other texts (Beavis, 2014).

In the same way that teachers use reader response logs with literature circles, teachers can

use reflective writing in response to students' video gameplay. As teachers consider textual

analysis and close reading, they can incorporate video games as a form of text for students to

analyze, evaluate, and interpret within the scope of comprehension instruction. Furthermore,

students' reflections of decision-making based on multimodal symbols can serve as a

springboard for discussions of text connections and understanding processes of monitoring

comprehension with digital and multimodal texts. This study demonstrates that video games can

be integrated into ELA classrooms in ways that support existing goals of literacy educators,

particularly with this study's emphasis on multimodality and analysis of video games as texts, a

process that was supported through reflective writing. Literacy educators routinely have students

analyze and reflectively write about a variety of forms of media, such as books, music, movies,

and blogs (Flood, Heath, & Lapp, 2005; Pigozzi, 2020), yet scholarly literature that investigates

how ELA students analyze and write about video games is nearly non-existent. Given the

immense popularity and cultural relevance of video games, which almost certainly applies to

many students who do not find the traditional ELA curriculum appealing, we believe video

games deserve inclusion as a legitimate form of media/text for engagement and analysis in ELA

classrooms. Ultimately, video game literacies (Squire, 2014) go beyond gaming as a literacy

practice in and of itself. Literacy educators and researchers can integrate video games into

educational environments as texts for discussion, analysis, and writing activities, processes that

can be scaffolded using the GRAD Framework (von Gillern, 2016a). Teachers can use video

game paratexts in the classroom, can create video game literature circles, and can have students

write video game critiques and reviews (von Gillern et al., 2021).

Limitations

While this study makes unique contributions to the literature, it is not without its

limitations. First, this case study worked with a single middle school, and similar procedures in a

different school, age group, or environment may produce different outcomes. However, we

believe such an approach to video game analysis in ELA classrooms is achievable, valuable, and

could unfold successfully with a variety of age groups and educational environments. Second,

this study examined students' engagement with and analysis of video games within the course of

a four-day period, and a longer and more intensive duration of study may have further

illuminated both opportunities and limitations of video game analysis in the classroom. Finally,

this research involved three primary video games (*Minecraft*, *Minecraft: Story Mode - Season 2*,

and *LEGO Worlds*), and while these are popular and entertaining games, examining different and

additional games, including those with more mature and complex stories, would provide a more

nuanced understanding of capabilities and difficulties of engaging students in multimodal

analyses of video game experiences.

Directions for Future Research

Given the nascent position of video game analysis in ELA classrooms, there are many

opportunities for research and instruction in this area to grow. Engaging diverse students from

various locations and backgrounds in video game analysis is essential. As students all have their

own unique background and experiences which influence how they interpret and interact with

media (von Gillern, 2016a; Rosenblatt, 1994), engaging students from diverse backgrounds in

video game analysis will provide an opportunity for researchers to understand how individuals

and groups use multimodal symbols to learn and make decisions during video gameplay. For

example, examining how diverse students from around world, ranging from novice to avid

gamers, interpret various games and can utilize, interpret, and reflect on video games in language

and literacy education contexts may illuminate how different individuals and groups draw upon

their own backgrounds as they engage with video games as interactive and multimodal texts.

Additionally, while this study focused on three family- (and teacher-) friendly video

games, there are countless other video games that deal with more mature and emotional content.

Understanding how young people interpret and interact with a variety of games and stories,

including those ranging from child-friendly to more mature, is a valuable goal that will

contribute to our understanding of how youth engage with one of the most popular forms of

media of our time, which is certainly applicable to ELA education.

Further research is needed to understand how young people engage with video games as

interactive multimodal texts (Harvey, 2018; Squire, 2014). Such processes may utilize the

GRAD Framework (Stufft & von Gillern, 2021; von Gillern, 2016a), as this framework was

useful for the participants in this study and can help educators, who have varying degrees of

knowledge related to video game literacies, scaffold analytical and learning experiences for their

students. Some teachers may want to focus on multimodal symbols in general, and others may

want to focus on story and dramatic elements of video games. Other educators may want to focus

on decision-making and learning processes. The GRAD Framework can serve as a useful tool to

help both teachers and students understand and analyze video game experiences.

Conclusion

Our perspective on the value of integrating video games and video game analysis into the classroom aligns with the work of multimodal theorists Bezemer & Kress (2015), who wrote:

> If (institutional) authority is blind to certain means for making meaning, they can be neither evaluated nor, therefore, valued. If (institutional) authority is blind to certain means for making meaning, then those who use these means are placed outside the domain of recognition (p. 5).

We believe that meaning making processes related to video games has been marginalized in ELA research and classrooms, and these processes, which connect to the lives of countless youth, have been "placed outside the domain of recognition."

Video games, for a variety of reasons, have had a limited role in many ELA classrooms. We believe, however, that the time has come for video game literacies to be thoughtfully integrated into ELA environments. Students from diverse backgrounds routinely play and appreciate video games, which are an important and culturally significant form of media for these children, many of whom are disillusioned and disengaged with traditional ELA curricula. This alone, we believe, warrants consideration for integrating video games and video game literacies into ELA classrooms. Furthermore, as this research demonstrates, children can engage in a variety of valuable literacy practices when analyzing video games as multimodal texts. They can identify, learn from, and make decisions based upon various multimodal symbols, and students can engage in productive and complex reflective writing processes to demonstrate their interpretations and justify their perspectives by citing multimodal textual evidence. We believe these are valuable literacy practices that deserve thoughtful inclusion in ELA classrooms.

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