Game Theory for Elementary School

BRAVE games, including JAMs, are a Game Theory application called “repeated games” that explore the role trust plays in conflict and cooperation.

With JAMs, students use skilled reading to layer viewpoints, detect bias, diagnose and transform working dilemmas. Groups of 4 can use these 30-minute activities as prequels or sequels to BRAVE board game learning, or as stand-alone fun.

Each booklet in this series presents a unique schema designed to support students as they play through its correlating JAM.

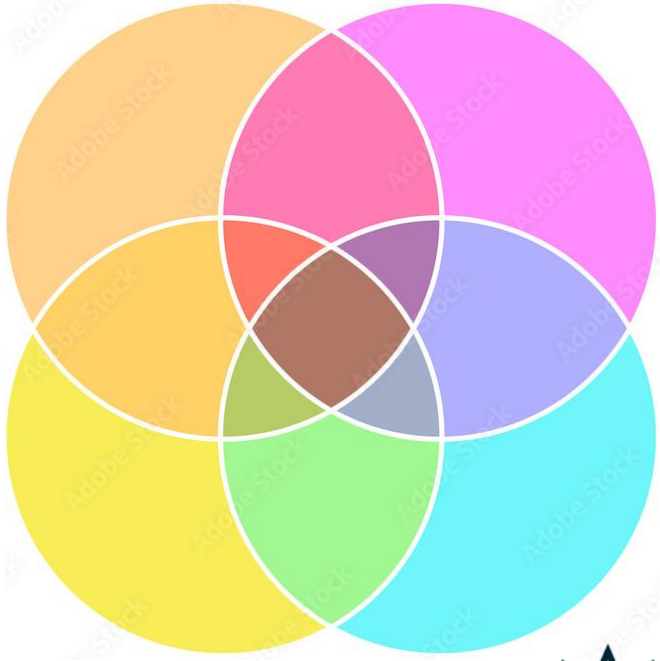
Explore one schema, or try them all:

Game Theory
context
perspective
change
conflict
rights
cooperation
connection
trust
creativity

Taken together, students build tools needed to navigate any social studies class with discerning minds.

BRAVE COURSE
Gamifying U.S. History

Connection



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For parents & teachers: Welcome!

BRAVE games, including JAMs, are consistent with Science of Reading instructional guidelines. Tightly-scoped, this inquiry-led method puts knowledge in the foreground to cut across a range of K4-5 standards, meeting all learners where they are to get everyone in the game!

We take learning seriously. *And for fun.*

JAMs break from typical programming insofar as they're consistent with cognitive science. First, human connection sparks intrinsic motivation, incentivizing skilled reading. The beauty of this method is that players *want* to grapple with embedded vocabulary, engage in healthy discussion, and solve group problems. It's fun. This means students embrace the thrill of collaborating, reasoning with facts, sequencing, and testing truths.

Writing extensions provide explicit instructions to support students as they process, integrate, and store new knowledge. This last step is key because, according to Cognitive Load Theory, it effectively clears one's working memory, laying a foundation of knowledge to excel in equivalent classes at higher grades.

Messy? R&D revealed students thrive with this inquiry-led approach because it's intriguing. At that rate, they're positioned to soar beyond our wildest dreams.

VOCABULARY

accountable responsible for having done; doing; obliged; charged with

bridge connecting, transitional, or intermediate route or phase between two adjacent elements or activities

community a social group of any size

compatible capable of existing or living together in harmony

dynamic characterized by energy or effective action

interdependent correlative; mutual; reciprocal

linear system output is directly proportional to the input; predictable; controllable; i.e.; laws, monetary policy

non-linear system complex system whereby output does not equal input, and therefore can exhibit multiple equilibria, even chaos; i.e., weather; emotions; trust

reciprocate to make a return, as for something given

schema an abstract model that describes how data is organized

system combination of things or parts forming a complex or unitary whole

transparent easily seen through, recognized, or detected

variable capable of being varied or changed; alterable

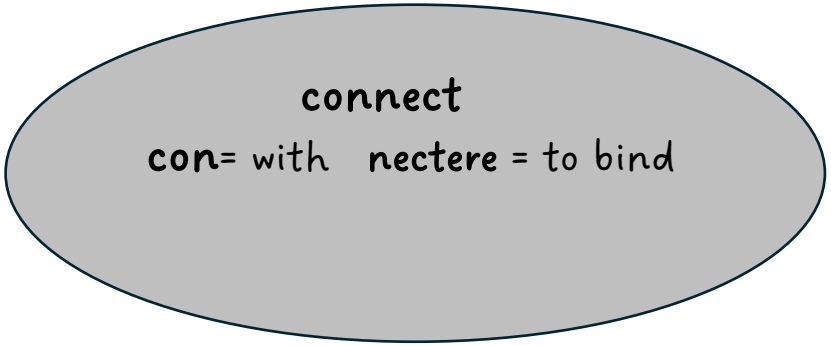
4. SUMMARY

Connections make our lives better, stronger, and richer—*but they're not easy!* They tie us and bind us to our communities, gently reminding us to hold ourselves accountable to ourselves and each other. *How so?* By understanding and responding to our **interdependen**t nature. The ways different systems drive each other.

It's helpful to understand the range and underlying details of the systems that comprise connections. Some systems, like linear systems, keep social systems connected by ensuring transparency, such as political and monetary systems. Other systems, non-linear systems, may have so many different moving parts that we can't always taste, touch, see or hear them. Think biological systems such as photosynthesis, or cognitive systems that guide thoughts. Plus, social systems often hinge on invisible inputs, too, such as kindness, honesty, patience, and love.

The purpose of understanding the nature of each system, as well as how different systems overlap, is to help us set expectations. If so, we can adjust or manage our inputs to achieve desired outputs. This, versus thinking we can simply control or mandate unreasonable change. *The goal?* Using connections to fulfill the roles we play to insure we keep systems healthy and running.

TABLE OF CONTENTS



What are you waiting for?! Dig in!

1. PLUGGED IN

Humans connect with each other to survive, grow, and thrive. Family connections aim to keep us safe, secure, and loved. Connecting with friends reminds us we must **reciprocate** kindness, or exchange energy on a mutual basis. Connecting with frenemies reminds us that it's possible to increase common ground. Connecting with healthy adults outside our immediate circle is valuable because they model **accountability**, being responsible for doing things society needs done and therefore demonstrating maturity in day-to-day living.

How do connections start? Humans connect through eye contact, smiling, shaking hands, as well as listening, being patient, and sharing. These acts make others feel valued, prompting them to return kindness. At that rate, a **bridge**, a connector extends between two people appears, joining different people and even viewpoints.

Maintaining connections feeds our well-being and makes life more meaningful because when we open ourselves to connection—whether by sharing a laugh, a meal, time to listen—we create circumstances and memories that bind us to others.

ACCOUNTABILITY

GUIDING QUESTIONS CLASS DISCUSSION

1. **RE-TELL** If we organize systems into two different schemas, or models, name the two different kinds of systems.

2. **REVIEW** To systems run smoothly, every part of every system must hold itself **accountable** to fulfilling their designated or chosen role. Explain the different systems that comprise:
    a. family dinner
    b. keeping your classroom clean
    c. schools
    d. ecosystem
    e. human body

3. REVIEW If friendship is a human connection categorized as a non-linear system, name the *invisible* variables that help people hold themselves accountable to each other.

3. ACCOUNTABILITY 

All systems running! *Are they?* Are you sure? How sure?

Understanding different systems is key—what, where, how and how they're connected to other systems—because that helps us set expectations. We might use two different **schemas**, abstract models, to organize different systems: linear and non-linear. First, **linear systems** work directly, whereby input is directly related to output. Second, **non-linear systems** map complex systems with infinite and/or invisible inputs or variables.

For example, if a driver spends $15 to fill their car with gas, they can expect to receive about 5 gallons of gas, fueling their car to go about 100 miles. In this sense, money, the cornerstone of our economic system, simplifies expectations, whereby, "you get what you pay for."

On the other hand, non-linear systems have *infinite* and/or invisible inputs, or **variables**, things that change and therefore are difficult to map. For example, carbon dioxide drives photosynthesis, but that process is largely invisible. In terms of human systems, trust drives love but you can't see it either. This is important because no matter how many toys a parent buys a child, nothing compares to how much they love trust their child, trusting them to become their true self.

PLUGGED IN

GUIDING QUESTIONS CLASS DISCUSSION

1. **RE-TELL** List concrete steps we use to connect, "plug in" or "build" bridges towards others.

2. **REVIEW** Explain how connections make our lives more meaningful.

3. **REASON** Infer how connections help us become accountable.

2. SYSTEMS THINKING

Making connections with family, friends, and special places is one thing; maintaining them is another. Monitoring our connections to ensure they're **compatible**, capable of existing or living in harmony is crucial! This starts with understanding the **dynamic** nature, the ever changing reality of our day-to-day connections so we can make necessary adjustments to keep things running smoothly.

One way to keep track of the many different connections that keep our lives running to understand and organize connections by **systems.** A system is a combination of things or parts that form a complex or unitary whole. For example, our ability to wake up energized and arrive to school ready to learn depends on many systems: a complete breakfast, a strong body, a way to get to school, and a positive outlook. A deeper look reveals these things rely on agricultural systems, medical systems, park and recreation systems, transportation systems, and more!

As another example, connection to special places such as parks means knowing how open space and public land is preserved. Who keeps parks clean, safe, and protected for our grandchildren's grandchildren? We rely on different systems for funding, staffing, policing, cleaning and preserving open spaces. In turn, parks clean our air and provide critical habitat for animals, and humans, too!

SYSTEMS THINKING

GUIDING QUESTIONS CLASS DISCUSSION

1. **RE-TELL** What's a system? How many different kinds of systems exist?

2. **REVIEW** Name the "systems" responsible for
   a. ... helping us becoming educated
   b. ... arriving to school/work on time
   c. ... the Earth's revolution around the Sun
   d. ... curing physical illnesses & injuries
   e. ... breathing
   f. ... breathing clean air

3. **REVIEW** Explain how systems keep us connected to ourselves and each other. Infer how systems could be dangerous.