

Lesson 2: Playground Ups and Downs

Overview

Students explore a simulation showing how playing with particular friends might change over time. Students can change elements such as how much they want to play with friends and how quickly they get tired of playing with the same person.

Learning goals:

- Represent and interpret data on a line graph.
- Input data to produce a particular pattern of friendship.
- Compare/contrast interactions with different friends.
- Identify and show different types of interactions among friends.
- Tell the story of one friendship loop.

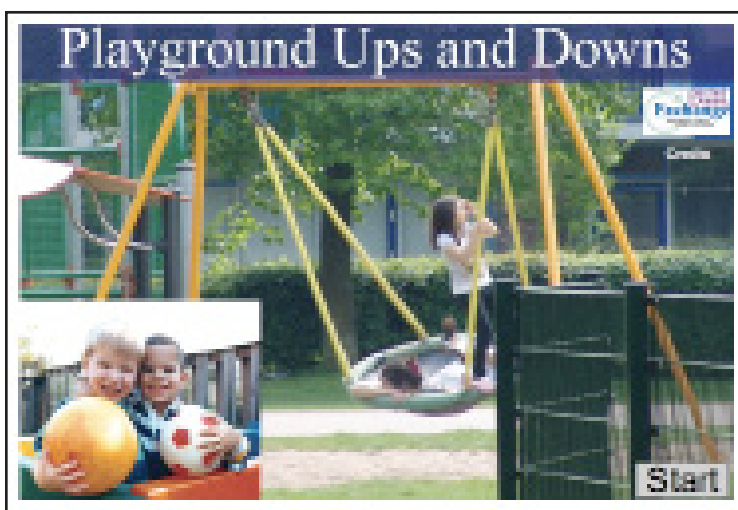


Figure 1: Title Screen

Student Challenge

After creating different types of friendship patterns (one that grows, one that declines, and one that goes up and down), assess what contributes to having strong friendships over time and what causes ups and downs.

Lesson 2 – Level A – Ages 5+

Time:

Two 45-minute sessions

Materials:

- One computer for every 2-3 students
- Simulation online at http://www.clexchange.org/curriculum/complexsystems/oscillation/Oscillation_RelationshipsA.asp
- Handouts (pages 4-12)

Curricular Connections:

- Describe how characters in a story respond to major events and challenges.*
- Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.*

*Common Core Standards

Key system dynamics concepts and insights:

- Dynamics between people can seem similar to the movement of a physical object.
- A graph tells a story through its shape.
- Soft variables and ideas, such as love, can be modeled over time.

Lesson Details

Preparation:

1. Create groups of two to three students each.
2. Copy included handouts for each student or student group as preferred.
3. Check computers to make sure you can access the simulation.

Session 1

1. Brainstorm ideas about how friends get along or don't get along from day to day and week to week. Why do friends get along? Why don't they get along? Optional: as ideas are mentioned, show on the stock/flow template how they add to or take away from wanting to play. (See attached handout on page 4, and example of a completed handout in Figure 2.)
2. Optional: Read one or more stories about friendship.
3. Show students the simulation in the classroom, read the introduction together (Figure 3), and go over the "Get Started" section (Figure 4).
4. Using the handouts, have students work in their small groups to "Make Decisions" (Figure 5).
5. Have students continue to "See What Happens," recording data on the handout after the simulation run is

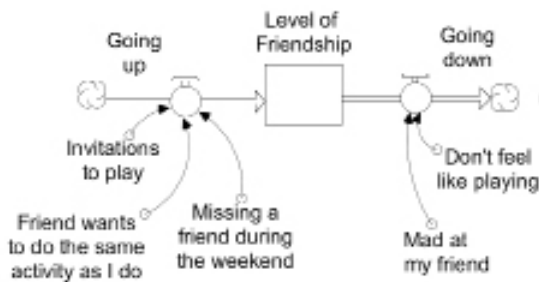


Figure 2: Completed Example

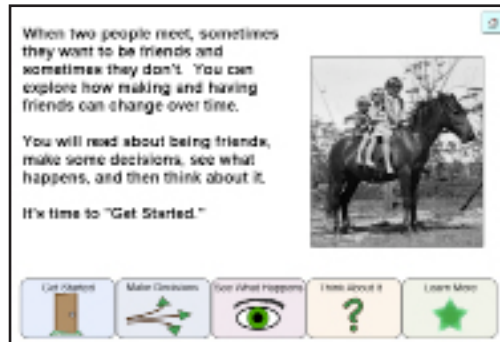


Figure 3: Introduction

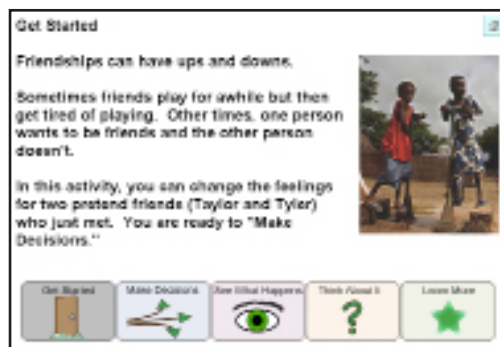


Figure 4: Get Started



Figure 5: Make Decisions

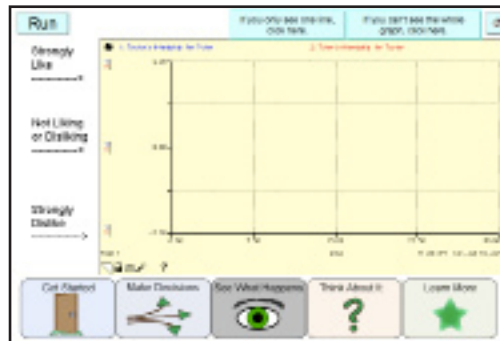


Figure 6: See What Happens

Lesson Details

complete (Figure 6). Students can run the simulation multiple times and record their data on the simulation handout for each one. Note that the graph for each run will always start at a value of 1, showing that two children meet and want to be friends initially.

Session 2:

1. If needed, have students complete the simulation within their small groups.
2. After running the simulation multiple times, students can continue to the “Think About It” section (Figure 7). Depending on student age and reading levels, students may need guidance with this section.
3. Debrief the simulation experience using ideas for bringing the lesson home and assessment. You can also explore additional models described in the “Learn More” section (Figure 8).



Figure 7: Think About It



Figure 8: Learn More

Bringing the Lesson Home:

Run some experiments back in the classroom. Ask students to give you settings for classmates who

- have a lot of ups and downs
- have a strong friendship
- don't get along
- are not friends

Discuss:

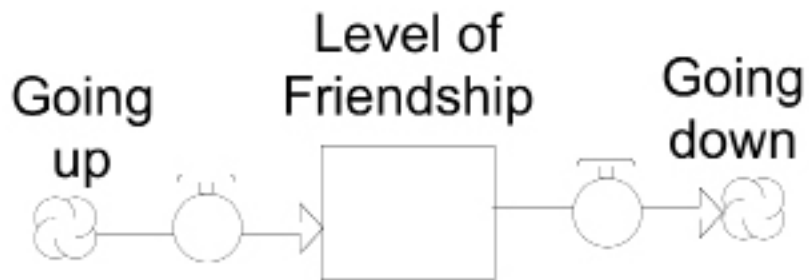
How are ups and downs with friends in the simulation similar to and different from real situations with friends?

Assessment Ideas:

- Tell the story of the graph over time.
- Complete one or more pages of the assessment section of the handout (pages 10-12).
- Create a picture of friends playing well together. What helps? What hurts?

Classroom Introduction Activity:

Brainstorm ideas about how friends get along or don't get along from day to day and week to week. Why do friends want to play together? Why don't they want to play? Show ideas below.



“Playground Dynamics” Simulation

Friend Situation #1 – Set the computer as shown below.

Decision 1: Responding

Taylor’s Reaction



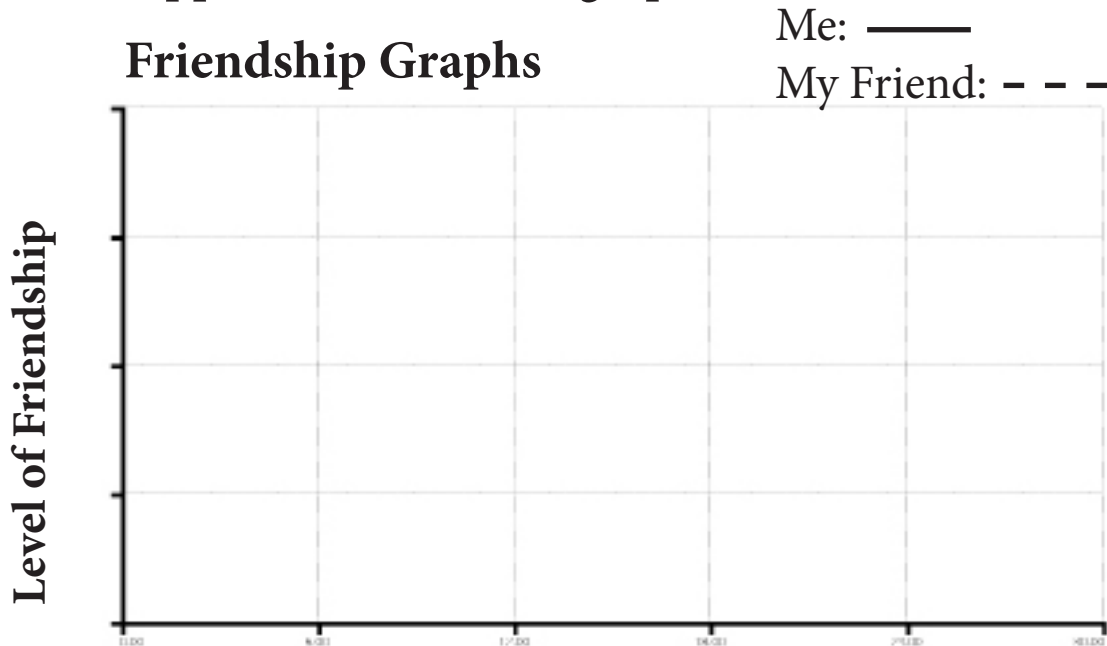
Tyler’s Reaction



Decision 2: Getting Tired



What happened? Draw the graph for each friend.



Tell the story of what happened to the friendship.

“Playground Dynamics” Simulation

Friend Situation #2 – Set the computer as shown below.

Decision 1: Responding

Taylor’s Reaction

Uninterested ●————○ Excited

Tyler’s Reaction

Uninterested ●————○ Excited

Decision 2: Getting Tired

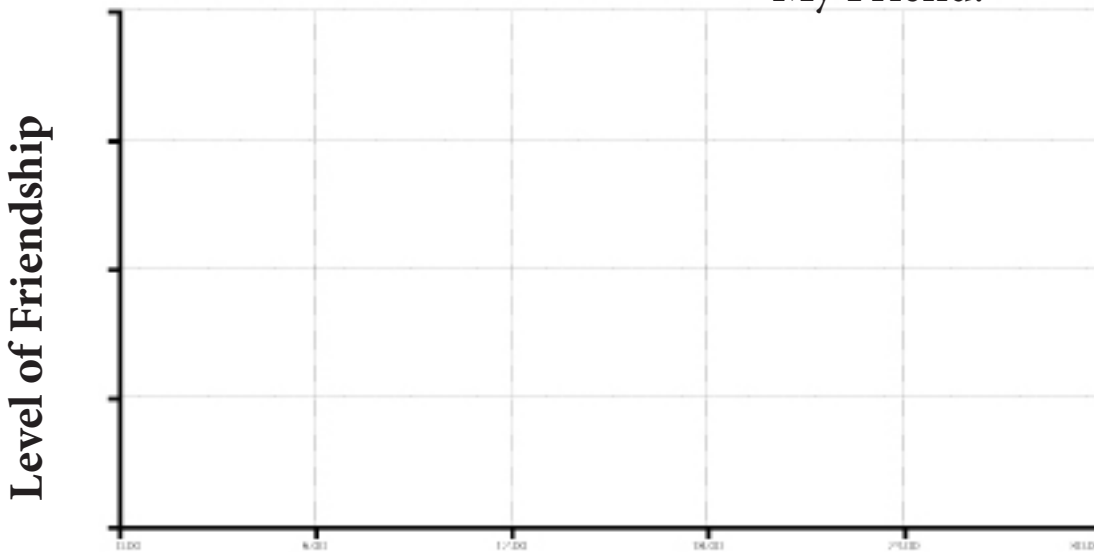
Not Tired ●————○ Very Tired

What happened? Draw the graph for each friend.

Friendship Graphs

Me: ———

My Friend: - - -



Tell the story of what happened to the friendship.

“Playground Dynamics” Simulation

Friend Situation #3 – Set the computer as shown below.

Decision 1: Responding

Taylor’s Reaction

Uninterested ○ ————— ● Excited

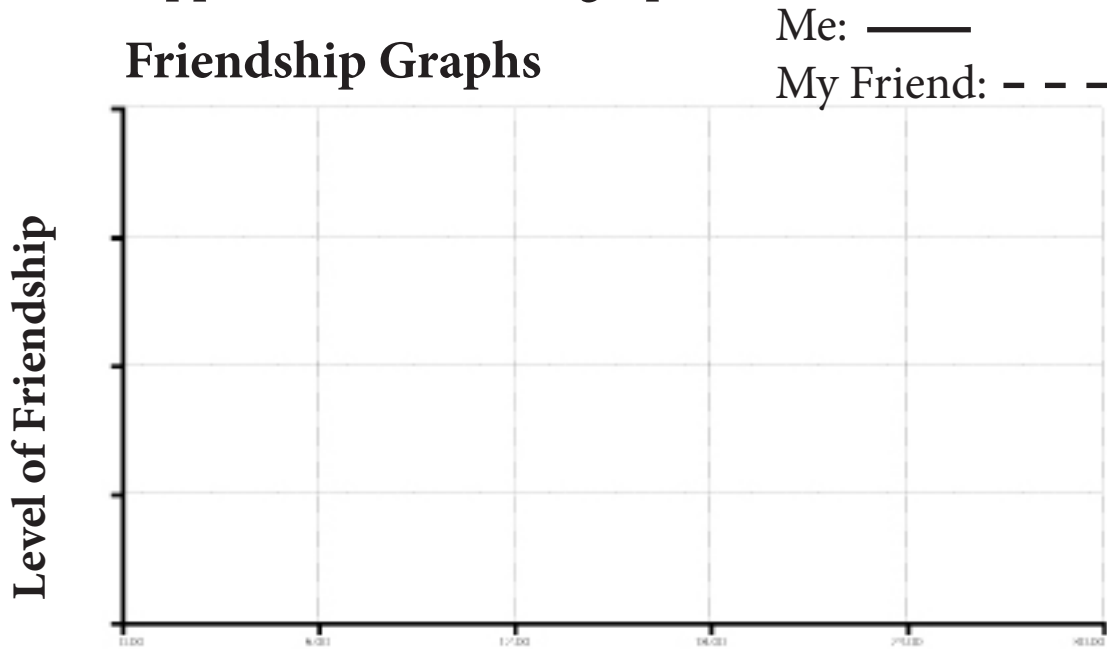
Tyler’s Reaction

Uninterested ● ————— ○ Excited

Decision 2: Getting Tired

Not Tired ● ————— ○ Very Tired

What happened? Draw the graph for each friend.



Tell the story of what happened to the friendship.

“Playground Dynamics” Simulation

Friend Situation #4 – Set the computer as shown below.

Decision 1: Responding

Taylor’s Reaction



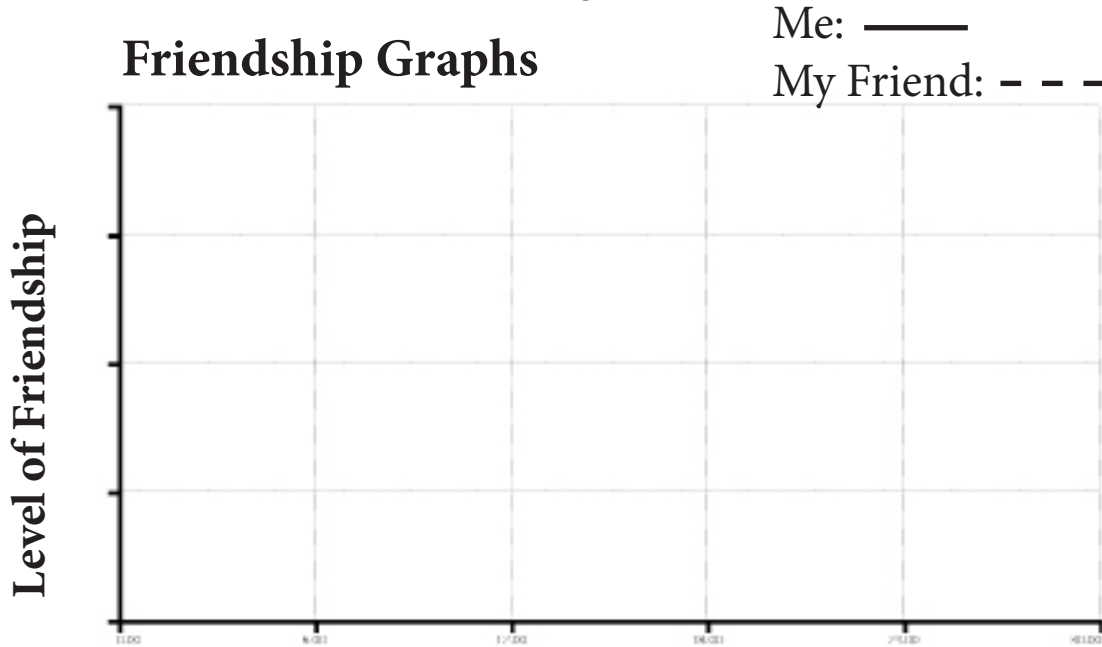
Tyler’s Reaction



Decision 2: Getting Tired



What happened? Draw the graph for each friend.



Tell the story of what happened to the friendship.

“Playground Dynamics” Simulation

Friend Situation #5 – Create your own situation.

Decision 1: Responding

Taylor’s Reaction

Uninterested ○ ————— ○ Excited

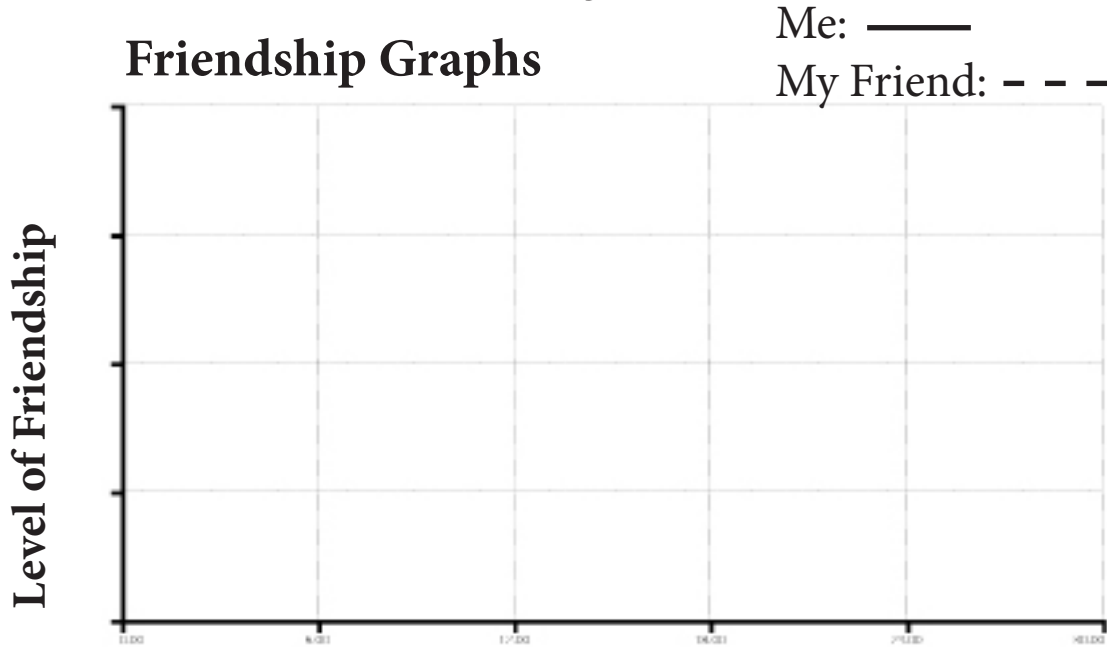
Tyler’s Reaction

Uninterested ○ ————— ○ Excited

Decision 2: Getting Tired

Not Tired ○ ————— ○ Very Tired

What happened? Draw the graph for each friend.



Tell the story of what happened to the friendship.

Assessment – Comparing Friend Situations

Choose the graphs for two sets of friends.

I choose Friend Situation # _____ and # _____.

How are the situations different?

Why do you think this?

How are the situations similar?

Why do you think this?

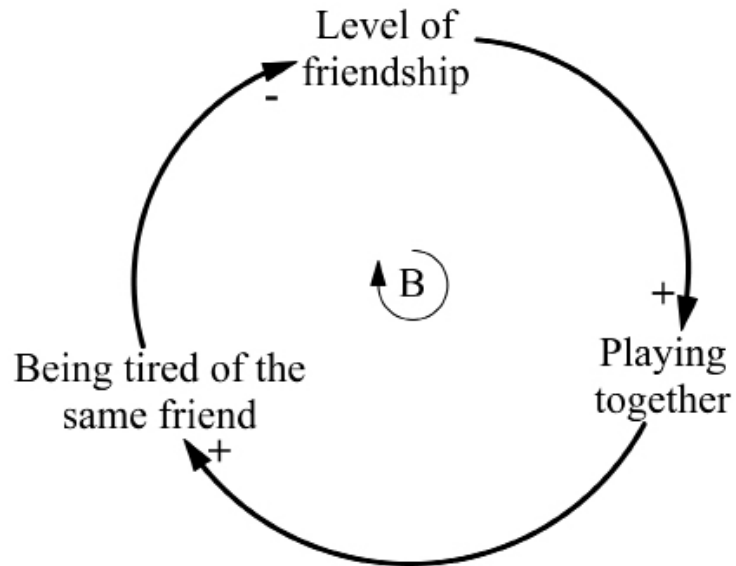
Assessment – Best Friends

Draw two pictures below.

When I get along with my friends, it looks like this.

When I'm not getting along with my friends, it looks like this.

Assessment – Story Loop



Tell the story of the loop and then draw a picture below that shows how this works.

Acknowledgements:

Lesson 2 – Level A

Playground Ups and Downs

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This model with accompanying lesson is one in a series that explore the characteristics of complex systems.

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