

A Systems View of Growing and Developing for Young Children

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Created by Greg Reid

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System Dynamics Project
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Grade Level: Primary

CFSD Curriculum: Science/Child Development

Lesson

- Objectives:**
- Students will identify that they are growing and changing physically and in their learning skills.
 - Students will make predictions of future changes in their body and reading abilities.
 - Students will discuss and evaluate the need to exercise, sleep, and eat properly in the assisting of developing their body and learning skills.

Activities at a Glance:

Students will examine the fact that their bodies have changed since birth and will continue to change. Through the use of Behavior Over Time Graphs, students will make the connection that body size and skill mastery is usually dependent upon age. In addition, students will discuss practices that will help their bodies and minds to grow as they become older.

Time Allotment: Two, forty five minute sessions.

Materials Needed for Lesson: Butcher paper for BOTGs and T-chart, marker

Preparation: Suggested that teacher use BOTG methodology several times prior to this lesson.

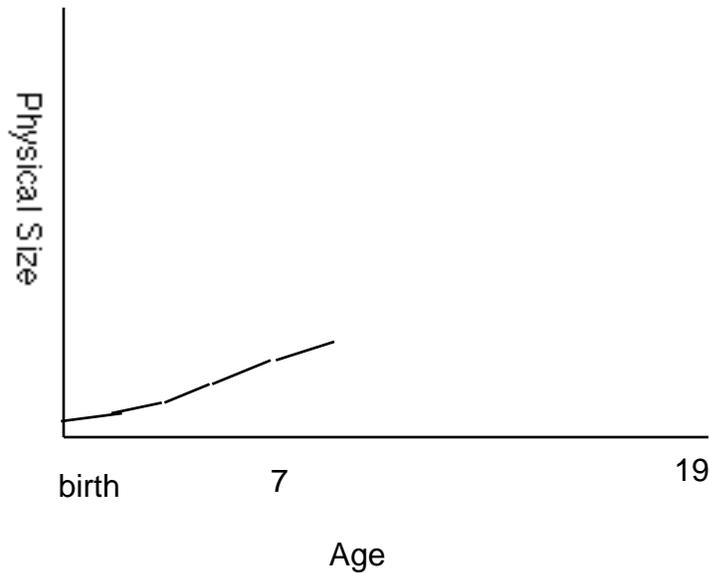
Background Information: Teacher and student will need prior knowledge of the use of Behavior Over Time Graphs. See attached Tips for BOTGs.

Activities:

[set] Ask students to think about how they are similar and different from students who are three years older than themselves and three years younger than themselves. Focus mainly on sizes and differentiation of abilities with the older students.

As a class, construct a BOTG that models physical size for students up to the current age of the students. Have students justify their remarks:

- Why is it lower in the beginning and higher later on?
- Is this true for everyone or is this just a typical pattern, etc.

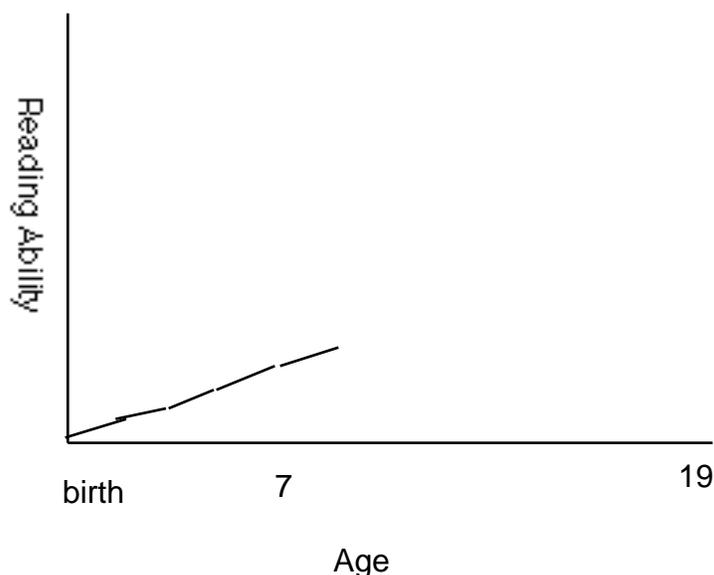


At this time, review the general trend of growth for an average {7} year old. Ask them to predict how the graph will look in 3 years, 5 years, and at age 19. Discuss their findings. Ask them:

- Is this trend a certainty or an educated guess?
- What could happen to change this trend?
- Would you expect the graph to always to show growth? Why?
- When might a body stop growing? Why?
- Is this the same age for everyone? Are boys and girls the same, typically in this pattern?

With the BOTG on the board, brainstorm with the students, other possible changes that may occur due to the change in physical size. For example, if you begin to grow, what else may change due to this growth (foot size requires bigger shoes, body size requires bigger clothes, which equates to spending more money by parents to tend on ever changing bodies).

Now, broach the subject of abilities. Create another BOTG based on the ability to read (or any appropriate skill). Refer to the questions for the previous BOTG to help create a classroom understanding of the newly created BOTG.



Ask the students:

- Where do you think your reading ability will be in 3, 5, and 10 years?
- What do you need to do in order to make your graph increase with time?
- Do you have older brothers or sisters (parents even work in this example)?
- Do your older brothers and sisters seem to be better at reading, mathematics (higher levels), fun faster, jump higher, and better at sports.

Discuss the responses to these questions while referring to the graph above. Ask students to make a connection between physical size and ability level and age. Ask, what makes for a better student, more studying or less studying? Have older children had more time to study than yourself? Ask the same set of questions, but relate it to physical abilities.

After it has been established that as one grows older, one tends to become taller and better at skills, as a class, make a T-chart with the headings '*Helps*' and '*Hurts*.' Explain to the students that it would be beneficial if they were to think of ways that they could help their bodies to grow as they get older. In addition, it is also important to compare it to behaviors that could hurt the body in its process of growing and developing. Possible outcomes have been listed below.

Helps	Hurts
<ul style="list-style-type: none"> • practice sports • do homework • go to school • get sleep • eat properly • exercise • pay attention in class 	<ul style="list-style-type: none"> • watching TV all day • not practicing • eating lots of candy and drinking soda • smoking • drugs • alcohol

Some of these responses are more obvious and therefore do not need much probing, but other responses may require the use of examples to attain the necessary train of thought. For example, what outside substances could one take to hurt (or help) the body to grow? It is also important to express moderation. Too much of one thing can be dangerous. Lifting weights excessively can be very detrimental to growth during early development ages. A little candy is okay.

Debrief/Closure: Ask students to respond to the following questions.

What do you want to be when you grow-up and how can you help yourself now to attain this goal later in life.

Share responses.

Assessment: Check responses to check for students identifying the need to take care of themselves in order to better prepare them for what they wish to be in the future.

Extensions: This can be lead into later lessons on nutrition, personal hygiene, types of exercises, preventing illness, etc. It is recommended to keep the original BOTG in the classroom as a model of growth that the students would like to attain as they grow older.

Homework ideas:

Growing worksheet, page 14, Being Healthy Teacher's Resource Book, 1-3. Harcourt Brace and Company, 1994.

Balanced Meals worksheet, page 43, Being Healthy Teacher's Resource Book, 1-3. Harcourt Brace and Company, 1994.

Important Exercises and Types of Exercises, page 56 - 57, Being Healthy Teacher's Resource Book, 1-3. Harcourt Brace and Company, 1994.

Connection to Characteristics of Complex Systems Project

Lesson Title:

A Systems View of Growing and Developing for Young Children

Overview:

In this lesson students identify that they are growing and changing over time, both physically and in developing new skills. This lesson encourages students to view their own bodies as complex systems.

Related Characteristic(s) of Complex Systems:

- Cause and effect are not closely related in time or space.
- Conflicts arise between short-term and long-term goals.

Ideas and Examples for Connecting to the Characteristic:

Many of the ways in which we help or hurt our bodies play out over time. It takes time to acquire new skills and often we must endure failure along the way. Likewise, harmful effects of our present actions can be easy to dismiss because we sometimes do not experience the negative consequences for years or even decades.

This table (in the lesson) of activities and actions that help and hurt our development can be used as a basis for discussion about our bodies as complex systems. Some questions for discussion are below.

Helps	Hurts
<ul style="list-style-type: none">• practice sports• do homework• go to school• get sleep• eat properly• exercise• pay attention in class	<ul style="list-style-type: none">• watching TV all day• not practicing• eating lots of candy & drinking soda• smoking• drugs• alcohol

1. How do we know that we've gotten enough sleep? Not enough sleep? Watched too much TV? Didn't practice enough? What if you didn't feel any effects until you were an adult? Would you fix the bad behavior before then? Why or why not?
2. Why do you think some people smoke for forty years and then quit?
3. What are some goals associated with each of the helping behaviors? (We practice sports to become better players, etc.) What other activities compete with these helping behaviors (and therefore make it harder to reach our goals)?

Resource(s)

Healthy Behaviors 4 Life contains relevant information for all age levels

<https://hb4life.com/>

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