EDUCATOR'S GUIDE

ZOO IN YOU AND BUILDING BUDDIES

EDUCATOR RESOURCES

FIELD TRIP ACTIVITIES:
BEFORE AND DURING

CURRICULUM
STANDARDS

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About

This guide is a resource to enrich your and your students' experience before and during your visit to Discovery Lab.

Main Hall: Zoo in You

Zoo in You is a 2,000 square foot, bilingual (English and Spanish) exhibit that explores the fascinating and complex world inside each of us. With over ten interactive stations, visitors will engage with their microbiomes — a dynamic, adaptable, and delicately balanced ecosystem much like any other found in nature.

Discover the vibrant world of our inner microorganisms through engaging, larger-than-life, interactive exhibits. Zoom down to the microscopic level, see your life-sized microbial reflection, sequence DNA, create a virus model, and more! *Zoo in You* combines science, technology, and health to fully immerse visitors in the world of microbes.

Featured Hall: *Building Buddies*

Building Buddies is an interactive, engineering-based exhibit centered on planning, repairing, renovating, and building. The exhibit is comprised of different stations where you can take on different roles, including designer, painter, and brick layer. The objective of *Building Buddies* is to promote creativity, collaboration, and problem solving in a way that fosters community and allows children the opportunity to be independent or work as members of a community.

Process Skills Framework

These process skills are adapted from Institute of Museum & Library Services 21st Century Skills. Discovery Lab's original exhibits and educational curriculum are based on these six areas—giving children skills for life-long learning in addition to content knowledge.

CRITICAL THINKING and PROBLEM SOLVING

- Ask questions
- Reason effectively
- Test ideas and hunches
- Gather more precise information
- Link actions and effects
- Work out possible solutions
- Draw conclusions

COLLABORATION and COMMUNICATION

- Share objects and ideas
- Work toward a common goal
- Stay on task
- Listen and talk
- Build on the work of others

CREATIVITY and INNOVATION

- Imagine
- Generate ideas
- Make unusual connections
- Try another approach
- Apply information to new situations
- Experience materials/ objects in varied ways

Connecting with the Classroom

Build background knowledge with your students before your trip to Discovery Lab.

PRE-TRIP ACTIVITIES

Activate your students' prior knowledge by asking them the following questions and reviewing the vocabulary words.

Zoo in You

DISCUSSION QUESTIONS

- What do microbes look like?
- Do we need microbes?
- Do all viruses make us sick?
- Would you brush your teeth with someone else's toothbrush? Why or why not?
- Your favorite cookie drops on the floor; do you pick it up and eat it?

VOCABULARY

Low	Medium	High
Cell	Digestion	Archaea
Disease	Microbione	Fungi
Microbe	Bacteria	Pathogen
Immune	Virus	DNA
System		

HELPFUL LINKS

Microbiology for Kids
https://www.amnh.org/explore/ology/microbiology

American Society for Microbiology
https://www.asm.org/Browse-By-Audience/Educator

Rader's Biology4Kids
http://www.biology4kids.com/files/micro_main.html

Building Buddies

DISCUSSION QUESTIONS

- What do you know about people who build houses?
- How hard do you think it would be to lay bricks and build a structure? Why?
- Can you think about the steps it takes to build something?
- What kind of jobs/careers are needed to build your school?

VOCABULARY

Low	Medium	High
Wheelbarrow	Scaffolding	Geometric
Design	Engineering	Conveyor Belt
Construction		

HELPFUL LINKS

OETA's Building Big
http://www.pbs.org/wgbh/buildingbig/

Engineering, Go For It!
http://students.egfi-k12.org/

Architecture Adventure: Crash Course Kids #47.2
https://www.youtube.com/watch?v=DkJLbCCI6Zs

Zoo in You Content Knowledge

Developed and produced by the Oregon Museum of Science and Industry (OMSI), *Zoo in You* offers a fully-immersive, interactive exhibit where visitors learn all about the trillions of microbes that live in the human body. Experience both the sense of wonder and the thrill of the gross and yucky! Encounter the good microbes that aid digestion or crowd out less friendly freeloaders, and also the bad ones that may trigger disease.

Microbes

What are these trillions of microbes that reside on and in you and where do they all live? Our bodies are rich and vibrant ecosystems, composed of many distinct microhabitats. Microbes are tiny organisms that live in and on our bodies. Some microbes help us digest food and maintain our healthy skin, and some microbes can cause us to get sick. Come face-to-face with the four major types of microbes – bacteria, archaea, fungi, and viruses – and discover interesting facts about these creatures, as well as what parts of your body they inhabit. Zoom down to the microscopic level and explore how much smaller our microbe companions are than our own human cells!

DNA – Deoxyribonucleic Acid

DNA stands for deoxyribonucleic acid. DNA is made up of molecules called nucleotides, and acts like a blueprint or a recipe for living things. DNA tells amino acids how to line up and form themselves into the perfect protein shapes. Proteins and chemicals combine to form living cells. Every living thing, including microbes, has a unique nucleotide pattern in their DNA. We can use DNA computer sequencing to investigate the diversity of life inside us and identify our microbes.

Microbiology

Microbiology is the study of all living organisms that are too small to be visible with the naked eye. The existence of microorganisms was predicted many centuries before they were first observed. The first recorded microscope observation was of mold on fruit in 1666! While fear is attached to microbes due to the association of some microbes with disease, many microbes are responsible for numerous beneficial processes, including fermentation and antibiotic production. In *Zoo In You,* peer into an authentic microscope to examine and compare genuine preserved microbe specimens, or assemble your own version of a virus. Will it be helpful or harmful?

Building Buddies Content Knowledge

This exhibit was designed and built by the Oklahoma Museum Network, and contains everything needed to get your students working together to complete fun, construction-based projects. These projects include many every-day tasks that allow students to use their imagination and creativity.

Design

In this exhibit, design is an arrangement of lines or shapes created to form a pattern or decoration. Creating and observing patterns can help children learn sequencing, make predictions which leads to mathematical skills, learn logic structure in algebra, and establish order in life. Some components of this exhibit simply ask students to design something using specific materials. For example, in one area, a garden path needs to be laid using different colored squares. Another asks guests to tile a floor using different shapes. These components are creativity-based, as there is no right or wrong way to do them; however, it can be beneficial to point out any patterns made either intentionally or by accident. As there is a less specific goal, these exhibit pieces may require further prompting. Examples of these include laying the garden path to spell out your initials or making a pattern with the tiles on the floor.

Engineer

Engineering is the branch of science that deals with designing, building, and using various objects. In Building Buddies, engineering concepts can be found everywhere. There are two components that require guests to gather bricks and build a structure. These structures can be free-standing or attached to another structure or scaffolding. When preparing for these tasks, students should create a plan, determine the needed supplies, and then start building. Help students think through this process as needed and ensure they have plenty of friends to help! Some extension activities for these components may include only using one size brick, timing how quickly a task can be completed, or testing the sturdiness of the structure.

Materials

Building Buddies has different materials to be used in the different areas. For example, the roofing for the dog house cannot also be used as siding on the house. While this may cause some frustration for younger guests, it is important for children to learn limits and structure. By only allowing the current materials to be placed in the project, you can help your students understand these limits and structure. To go back to the earlier example, the siding for the house is magnetic, while the roofing materials are not. Helping students understand why some materials are better suited for some projects will help build a foundation for them to make decisions as they grow.

Curriculum Standards

Zoo in You

Grade	Science	Mathematics	ELA	Health
Pre-K	PK1.1	, PK.GM.2.3	PK.1.R.2	1.2.1
Kinder	K-LS1-1	K.A.1.1	K.1.R.3	1.2.3
1st	1-LS1-1	1.GM.2.1	1.1.R.3	1..2.3
2nd	2-LS4-1	2.A.1.1	2.1.R.2	7.2.1
3rd	3-LS4-3	3.N.1.1	3.6.R.3	1.5.1
4th	4-LS1-1	4.GM.1.3	4.1.R.3	5.5.4
5th	5-LS1-2	5.N.1.4	5.7.R.1	7.5.2
6th	MS-LS1-3	6.N.3.1	6.7.R.1	7.8.2

Building Buddies

Grade	Science	Mathematics	ELA	Computer Science
Pre-K		PK.N.2	PK.1.R.4	
Kinder	K-PS2-1	K.N.1.2	K.1.R.4	K.DA.IM.01
1st		1.GM.1.2	1.1.R.2	
2nd	2-PS1-2	2.A.1.2	2.1.R.2	
3rd	3-PS2-1	3.GM.1.1	3.6.R.3	
4th	4-ESS3-2	4.GM.1.1	4.1.R.2	
5th	5-PS1-3	5.GM.1	5.1.R.2	
6th	MS-PS3-1	6.GM.2.1		