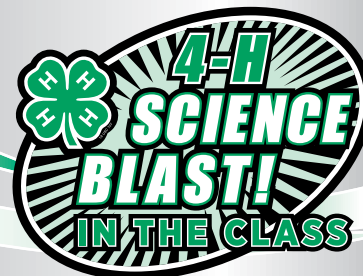


# Contents



## Introduction .....Page 1

- ▶ Contents
- ▶ Michigan State University Extension 4-H Youth Development
- ▶ Using 4-H Science Blast in the Class
- ▶ Assessment
- ▶ Acknowledgments

## Lesson Plans

### Science Process .....Page 7

Science Process: Exploring How We Do Science	All grades
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### Animal Science .....Page 11

What Genes Do	Grades 1-7
Got Immunity	Grades 4-7
Animal Sense Stations	Grades 5-7

### Environmental Science .....Page 23

Walk in a Bag	Grades 1-3
Go Fish	Grades 1-6
Biofuel Blast	Grades 1-7
Fashion a Michigan Fish	Grades 1-7
Fins, Tails and Scales: Identifying Great Lakes Fish	Grades 3-7
Water Quality Experiment	Grades 4-7

### Plant Science .....Page 51

Build a Salad with Plant Parts	Grade 3
Best Lettuce Experiment	Grades 3-7
Photosynthesis	Grades 9-12

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## Extension

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## MSU Extension 4-H Youth Development

**M**ichigan State University Extension (MSUE) 4-H Youth Development is delivered locally and operated at the state and national levels through a partnership between county governments, Michigan State University and the U.S. Department of Agriculture. This partnership ensures that what 4-H pledges in outcomes for young people is backed by the research and knowledge base of the nation's premier land-grant universities and the support of county, state and federal governments. The activities in which youth participate are all based on child development research so that youth are involved in age appropriate learning experiences. 4-H programs use experiential learning and reflective thinking to create meaningful experiences leading to the development of critical life skills.

4-H programs engage youth aged 5 to 19. Adults are encouraged to become 4-H volunteers who share their knowledge and experiences with youth. In 2010, nearly 190,000 Michigan youth participated in 4-H with the support of about 20,000 adult volunteers, making it the largest youth development organization in the state. Approximately 53,000 youth pursued hands-on learning opportunities in environmental education and earth sciences through 4-H in 2010; 20,300 participated in science and technology activities and about 100,000 participated in plant and animal science activities. These numbers reflect the commitment Michigan 4-H has to engaging youth in science learning and the pursuit of careers in science-related fields.

Research has demonstrated that youth who participate in 4-H get better grades; are more likely to go to college; are more likely to pursue science courses and careers; are less likely to use drugs, cigarettes or alcohol; and are more likely to give back to their communities. 4-H'ers may be learning photography, building their own robot, growing a garden, writing and performing a song, or raising an animal, but more importantly they are learning to be leaders,

\* Lerner, R. M., & Lerner, J. V. (2011). *Waves of the future – 2009: Report of the findings from the first six years of the 4-H Study of Positive Youth Development*. Medford, MA: Institute for Applied Research in Youth Development, Tufts University.

building self-confidence, growing in their awareness of good citizenship, creating their own futures and raising their expectations of themselves.\*

Michigan 4-H Youth Development operates under a set of guiding principles for positive youth development. The guiding principles serve as the foundation for all of our programs. The seven principles are:

- ▶ Youth develop positive relationships with adults and peers.
- ▶ Youth are physically and emotionally safe.
- ▶ Youth are actively engaged in their own development.
- ▶ Youth are considered participants rather than recipients in the learning process.
- ▶ Youth develop skills that help them succeed.
- ▶ Youth recognize, understand and appreciate multiculturalism.
- ▶ Youth grow and contribute as active citizens through service and leadership.

### Want to know more?

- ▶ To find a down-loadable version of this and other online resources to support “4-H Science Blast in the Class,” visit **[4h.msu.edu/4h/science\\_blast](http://4h.msu.edu/4h/science_blast)**.
- ▶ To learn more about MSU Extension's children and youth programs, including Michigan 4-H Youth Development, visit **[msue.msu.edu](http://msue.msu.edu)**.
- ▶ To learn about the educational activities of Michigan 4-H Youth Development, visit **[4h.msue.msu.edu](http://4h.msue.msu.edu)**.
- ▶ To connect with your local 4-H program, visit the MSU Extension staff search database at **[people.msue.msu.edu](http://people.msue.msu.edu)** or call toll-free **1-888-678-3464**.



# Using 4-H Science Blast in the Class



## Our purpose

**Michigan State University (MSU) Extension is committed to sharing resources with our community partners in youth science education. As Michigan looks to create a new generation of leaders, science must be at the forefront. This curriculum was developed as part of MSU Extension's "I Know MI Numbers" initiative to enhance science literacy and serve as a "go to" resource both inside and outside the traditional classroom. It offers educators the opportunity to connect in-school learning with real-world experiences.**

## Using this resource

This curriculum includes a variety of hands-on lesson plans, including experiments for first grade through high school. Lessons are grouped by grade level within content areas.

We recommend that for maximum retention, teachers/leaders should ensure that every child is active 80 to 100 percent of the time. This can be accomplished by providing everyone with a piece of equipment or a goal to be working on at the same time, and by decreasing the time spent standing in line time waiting for a turn whenever possible. Materials can be used in a variety of formal and informal environments.

### IN THE CLASSROOM:

As a teacher in a classroom setting, you will note that each of the lessons contained in this resource are benchmarked according to the latest Michigan High School Content Expectations and/or Grade Level Content Expectations, as appropriate. While suggested grade levels are included, many lessons are appropriate for teaching or re-teaching concepts to older or younger youth. The curriculum is not listed in any particular order; instead, teachers are encouraged to select the lessons that are most appropriate in meeting their students' needs and complementing their classroom studies. This curriculum will serve as an excellent hands-on supplement to the text books and other resources available in the classroom.

### IN AN AFTER-SCHOOL SETTING:

Paid or volunteer staff working in an after-school setting may also be interested in reviewing how these lessons meet state educational standards and benchmarks (see "In the Classroom," above). The instructions are written for use by adults and older teens who do not necessarily have a science background; you don't need to be a teacher to understand or use the lessons effectively. The activities are designed to help youth learn for themselves, and many of the activities have opportunities for youth to work cooperatively in small groups. This curriculum can serve as an excellent addition to your program plan. You might even consider building a science camp around the lessons.

### IN A RECREATION PROGRAM OR CLUB SETTING:

Volunteers programming with youth will find these lessons easy to use as they guide young people in exploring a variety of science-based

## Additional resources

MSU Extension has created a webpage with additional science resources which can be found at:

[4h.msue.msu.edu/4h/science\\_blast](http://4h.msue.msu.edu/4h/science_blast)

The site includes black and white versions of all of the student handouts making the materials more useful for those who wish to print copies. The site also contains additional science resources and links to other helpful websites.

activities. Leaders can look for opportunities to build these activities into club meetings, perhaps dedicating one session/meeting per month to these lessons. We believe that growing science knowledge is best accomplished through hands-on learning activities that demystify science as it happens in the world around us and engages the attention of youth who may or may not have a passion for the topic.

## Assessment

Assessment is an essential component of the learning process. We have included some general questions in the check for understanding section within most lessons. Here is some additional information on assessment and ways to check that learners are achieving the objectives in each activity.

(The following information was written by Dr. Jennifer E. Rivera, Asst. Professor; Department of Community, Agriculture, Recreation and Resource Studies, Michigan State University. For more information on authentic assessment visit the **Authentic Assessment Toolbox** at: <http://jfmuller.faculty.noctrl.edu/toolbox/index.htm>)

### What is Assessment?

Assessment is the systematic collection of information about student learning, using the time, knowledge, expertise, and resources available, in order to make decisions about how to inform and improve student learning.

### So what is Authentic Assessment?

When students are asked to perform real-world tasks that demonstrate meaningful application of essential knowledge and skill, they are providing authentic assessment.

### What is the development process for Authentic Assessment?



#### Developing Standards:

What should the students know and be able to do? The list of knowledge and skills become your standards. A three-step process is recommended for writing standards **(1) REFLECT**, **(2) REVIEW**, and **(3) WRITE**.

#### Learning Outcomes:

**KNOWLEDGE** = What do I want my students to **KNOW** as a result of this educational experience?

**SKILLS** = What do I want my students to be able to **DO** as a result of this educational experience?

**PERFORMANCE** = How are my students going to **APPLY** what this have learned in here...out there?

### Select an Authentic Task

Ask yourself- "What indicates that I have met these standards/learning objectives?" This will help you develop a set of relevant tasks.

Traditional.....Authentic  
Selecting a response.....Performing a task  
Contrived .....Real Life  
Recall/Recognition ..... Construction/Application  
Teacher-structured .....Learner-structured  
Indirect evidence.....Direct evidence

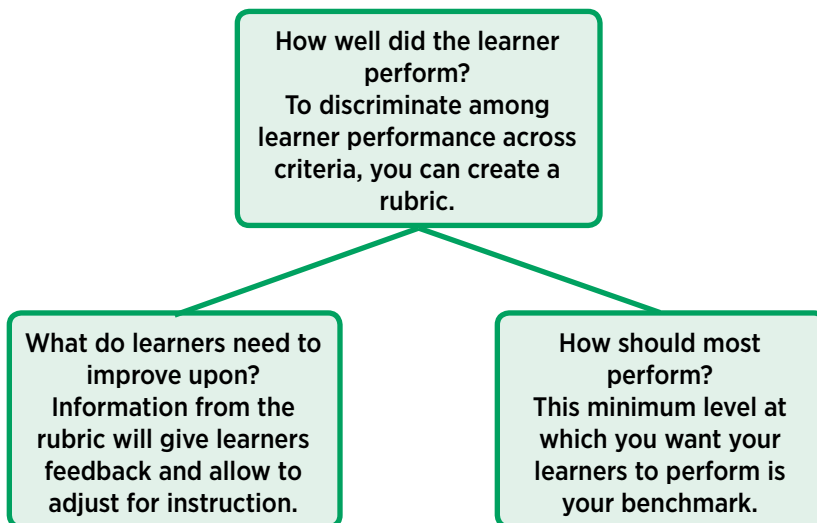
### Types of Assessment Methods

- ▶ Portfolio- Digital/electronic/ web-basedSpecial projects/ capstones
- ▶ Journals/learning-logs/digital learning records
- ▶ Conferences/interviews
- ▶ Oral examinations
- ▶ Self-/peer-assessment
- ▶ Collaborative projects
- ▶ Performances
- ▶ Experiments/research studies/ visuals
- ▶ Case study
- ▶ Service learning
- ▶ Internships- logs/journals/ reflections

### Criteria

- ▶ What does good performance on this task look like?
- ▶ So, what does a good criterion look like? It should be clearly stated; brief; observable, statement of behavior, written in language students understands.
- ▶ Guidelines:
  - Limit the number of criteria; keep it to the essential elements of the tasks.
  - You do not have to assess everything on every task.
  - Smaller, less significant tasks usually require fewer criteria.

### Rubrics



### References

Waldvoord, B. E. (2004). *Assessment clear and simple*. San Francisco: Jossey-Bass.

Mueller, J. (2011). *Authentic assessment toolbox*. Retrieved June 28, 2011 from <http://jfmuller.faculty.noctrl.edu/toolbox/index.htm>

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### Project coordinators:

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- ▶ **Theresa Silm**, educator, 4-H Youth Development, MSUE

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