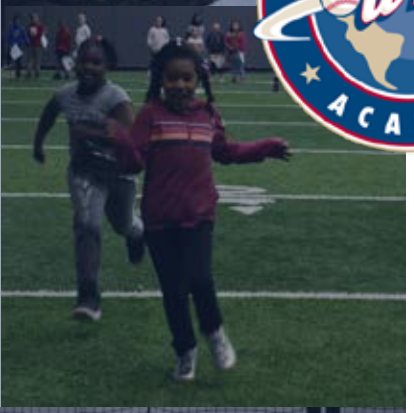
STEM EDUCATION



The Bigger Vision

"Everywhere we go in this world we see the need for young leaders to emerge who care about the needs of others."

– Caleb Kimmel, CEO of World Baseball Academy

OUR MISSION

The mission of World Baseball Academy is to use the platform of baseball to exemplify excellence and leadership beyond the game.

OUR VISION

The vision of World Baseball Academy is to develop leaders who positively impact our world.

WHY STEM?

World Baseball Academy STEM initiative is an innovative way to connect with ALL kids through the science, technology, engineering, and mathematics of the game of baseball. Our fun, hands on "learning by doing" curriculum allows staff and volunteers to build relationships with young people while helping them become aware of future career paths and WBA core character traits. Science, Technology, Engineering and Math are integral to baseball. Applications of geometry, aerodynamics, balance, gravity, velocity, transfer of energy, and math measure every movement of every player, creating endless statistical models that track progress and determine the elite. Baseball players excel when they understand what the numbers reveal and how the laws of physics apply to skill development and game strategy. STEM subjects therefore come easily to WBA's baseball instructors, but that is not why World Baseball Academy includes STEM education in its programs. WBA uses STEM to ignite a desire for knowledge, a core character leadership trait.

STEM EDUCATION PARTNERS

EACS
EAST ALLEN COUNTY SCHOOLS

BOYS & GIRLS CLUBS
OF FORT WAYNE

WBA
INTERNSHIP
PROGRAM

FWCS
WE ARE YOUR SCHOOLS

NISTEM
EDUCATION RESOURCE CENTER
science • technology • engineering • math

DoD STARBASE
A Department of Defense Youth Program

Developing Future Leaders

Great STEM education inspires exploration and discovery and increases awareness of career opportunities that align with a young person's passion. Making STEM subjects relevant to average boys and girls is a vital need, according to the National Science Foundation and National Education Association. Both value informal STEM learning's critical role in opening minds to STEM subjects and opportunities, with NEA stating, "Research stresses the importance of this hands-on learning as an important way to spark interest in critical and fast-growing STEM fields. But little about science instruction in today's classrooms matches that ideal."

Across the country, teaching science through sports hits a home run for impact. At Columbus, Ohio's Center of Science and Industry, the professional Blue Jackets hockey team is an "Official Science Sponsor." Hockey is the focus in one of a series of COSI's Science of Sports videos. San Francisco's Exploratorium, a public learning laboratory, hosts a Science of Baseball web page devoted to baseball and STEM topics. The national Cal Ripken, Sr. Foundation sees STEM education as an opportunity to apply lessons from sports—teamwork, respect, communication, and resilience—to the classroom, and has developed curriculum for interactive afterschool STEM lessons.

WBA envisions adding this kind of value to the STEM educational experience of boys and girls in greater Fort Wayne when they visit the WBA Baseball Lab with the HitTraxTM simulator. Our StarBase partners are excited about this opportunity, as instructor Victoria Wilson explains: "Starbase values innovative, hands-on activities to expose at-risk youth to STEM topics. The HitTraxTM system is a new and exciting way to do just that, especially as presented with WBA's proven ability to make baseball a fun learning experience."

WBA invites others in the community to team with us to target the sweet spot for optimal energy transfer. In other words, together we can hit one out of the park for STEM education in Fort Wayne.

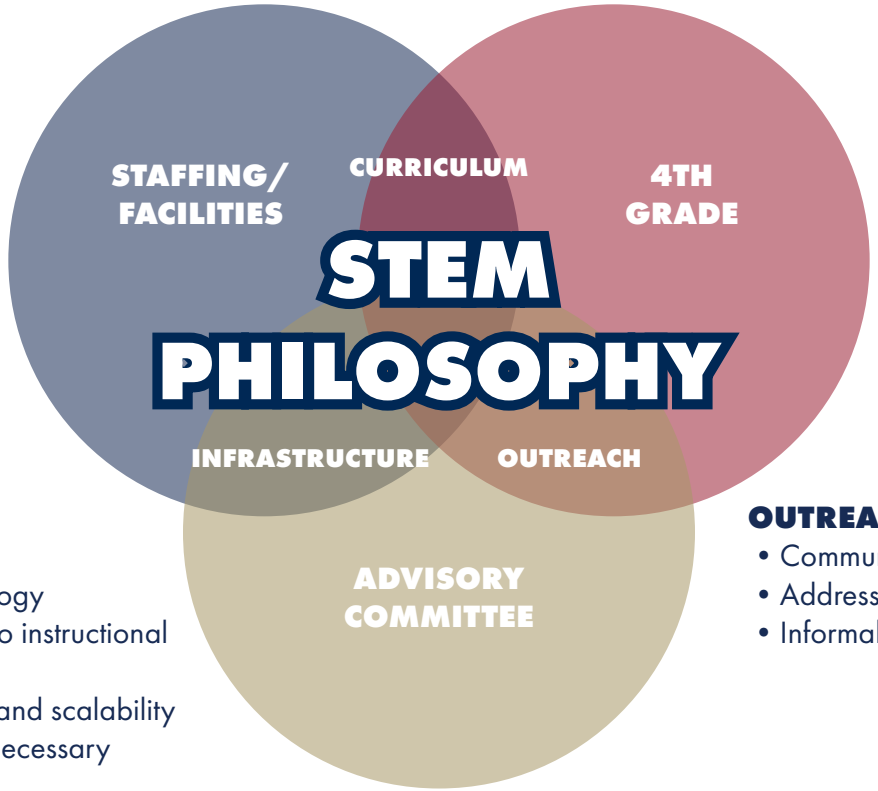
Conducting informal STEM education, particularly in Title 1 schools, is also a recruitment tool for WBA's On Deck initiative. On Deck programs, including summer camps and year 'round mentoring, are offered at no charge to at-risk boys and girls thanks to the generosity of donors. WBA's STEM presentations help spread the word about On Deck opportunities.

STEM Program-Development Model

CURRICULUM
- Fun/interactive/hands-on learning
- Standards integration
- Project/problem-based
- 21st Century skills and WBA core character traits

STAFFING/FACILITIES
- Qualified teachers and coaches
- First class field trip destination
- Engage young leaders through WBA internship program

4th GRADE
- Target 4th Grade
- Build STEM excitement for STARBASE 5th Grade Program



INFRASTRUCTURE
- State of the art equipment
- Portable baseball technology
- Embedded technology into instructional programs
- Demonstrate replicability and scalability
- Resources and materials necessary

OUTREACH
- Community education
- Address needs of underserved groups
- Informal STEM program

ADVISORY COMMITTEE
- Engage leaders from each sector:
  - Science
  - Technology
  - Engineering
  - Arts
  - Mathematics/Finance
  - Education
  - Business

STEM Programs

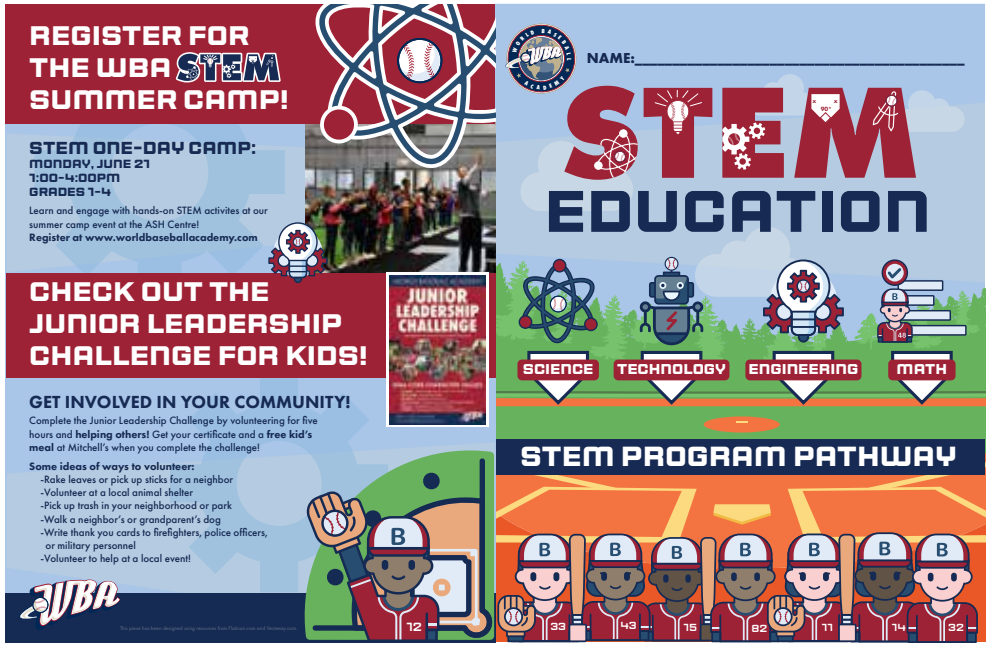
CLASSROOM SESSIONS

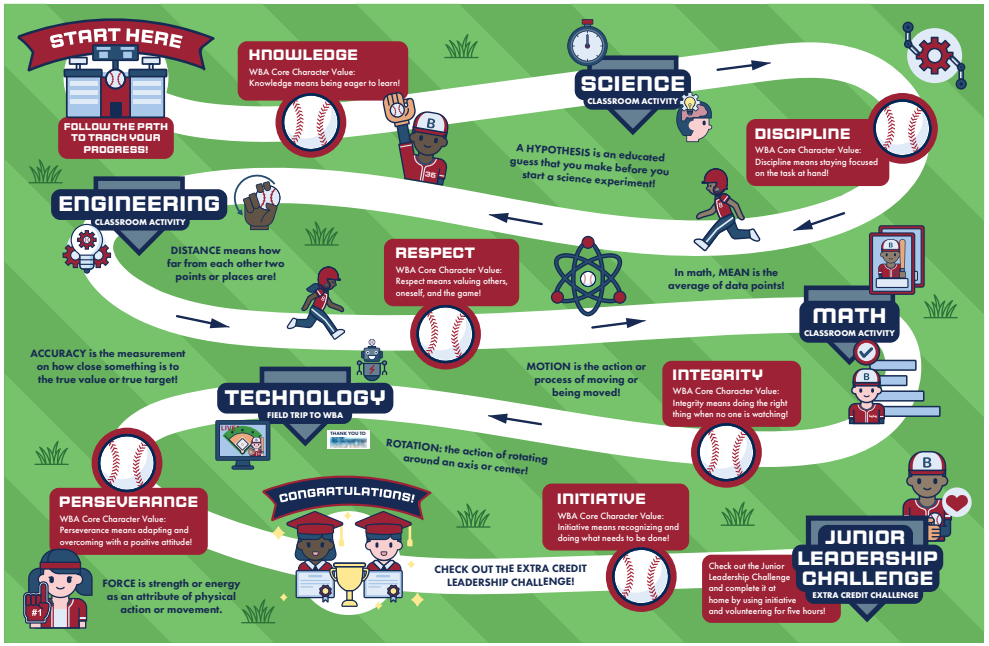
FIELD TRIPS

SUMMER CAMP

GRADUATION SPEECHES

STEM Path To Leadership





Fourth Grade Program

Day 1	Day 2	Day 3	Day 4
Classroom Lesson: Science	Classroom Lesson: Engineering	Classroom Lesson: Mathematics	Field Trip: Technology

Example Classroom Lesson

WELCOME!

World Baseball Academy is excited to have you participating in a STEM Program!

A unique educational experience to get elementary school students EXCITED about learning! Students will learn how the concept of SCIENCE, TECHNOLOGY, ENGINEERING and MATH can be found in everyday experiences, even FUN experiences like sports!

Engineering & Leadership:

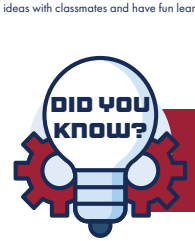
Did you know that learning leadership skills is important in engineering? One of WBA core leadership traits is respect. Engineers have to work in a group setting. To support the team effort, a great engineer must be respectful to the ideas and opinions of others in the group. In this lesson, you will get to work on both your engineering and leadership skills!

Objective:

Using a baseball STEM engineering lesson, students will design a paper baseball, utilize the core value of respect in a group setting and evaluate the impact their design has on accuracy and distance. Students will be using the game of baseball, throwing and engineering to make a hypothesis, collect data and use the data to draw conclusions.

Instructions:

World Baseball Academy STEM host will explain to the class the paper baseball engineering lesson. Students will be asked to use their materials and design a paper baseball. The design of the paper baseball will include working in a group setting and testing each design by throwing the paper baseball at a target. Each student will design and build their paper baseball with accuracy and distance in mind in order to hit the target. Be respectful as you share ideas with classmates and have fun learning!



Did you know? There are thirty Major League Baseball (MLB) Teams. Each MLB team needs engineers to design the equipment, the playing field as well as the entire baseball stadium. If you like engineering and baseball there might be a job just waiting for you!

PAPER BASEBALL DESIGN

PART 1: Analyze & Predict

STEP #1: **Compare.** The first thing you need to compare is the two distances from which the group will be throwing a paper baseball. Distance A will be 5 ft from the target. Distance B will be 15 ft away.

STEP #2: **Predict.** Make a prediction on how many thrown paper baseballs from the entire group will hit the target from each distance.

Prediction #1: The group will have _____ paper baseballs hit the target at 5 feet away.

Prediction #2: The group will have _____ paper baseballs hit the target at 15 feet away.

Prediction #3: Prediction #1 will be **<** **=** **>** prediction #2.
(circle answer)

HYPOTHESIS:
What distance do you think will have the highest score? **Why?** _____

_____

PART 2: Engineering, Design, & Respect

In small groups, students will design their own paper baseball using the materials provided by the WBA STEM host. Students are encouraged to **respectfully** share their ideas in their small group while designing a paper baseball with **accuracy** and **distance** in mind.

ACCURACY
Measurement on how close something is to the true value or true target.

DISTANCE
How far from each other two points or places are.

RESPECT
WBA Core Character Value: Respect means valuing others, oneself, and the game.

PAPER BASEBALL DESIGN

PART 3: Test & Solve

STEP #3: **Test.** In small groups, we will have you throw your paper baseball and try to hit the target at each distance. Count the number of paper baseballs that hit the target from the entire group at each distance.

Actual #1: _____ paper baseballs hit the target at 5 feet away.

Actual #2: _____ paper baseballs hit the target at 15 feet away.

STEP #4: **Solve.** How many **more** paper baseballs hit the target at 5 ft compared to 15 ft?

Answer: _____ **Why** do you think this outcome occured?

_____

_____

_____

STEP #5: **Conclusion.** How did sharing your ideas in a repectful way help you better engineer your paper baseball?

_____

_____

_____

STEM EDUCATION

STEM Field Trip

WBA Baseball Lab Features:

- Two batting cages
- Hit Trax Technology
- Interactive video monitors
- Batting tees
- Pitching machine
- Pitching mound
- Touch screen teaching monitors
- Bright Sign video monitors

COMING SOON:

- Rapsodo Technology

STEM- Key Personnel

AUSTEN RIGELMAN
STEM Director-WBA
Master's Degree in Education

CALEB KIMMEL
Chief Executive Officer (CEO)-WBA
Master's Degree in Business

WBA STEM COMMITTEE

Jeff Nowak- Ph.D. Professor of STEAM Education at PFW University

Justin Libey- VP at Old National Bank

Craig Dyer- Professor of Sports Management at Indiana Tech

Rob Hale- High School Teacher at Snider High School

Kimberly Fifer- Assistant Superintendent at Greater Clark County Schools

STEM SUPPORT STAFF

Tim Petersen- WBA On Deck Director

Melinda Petersen- WBA On Deck Administrator

Andy McManama- WBA Director of Operations

Linda Buskirk- WBA Development Officer

Josette Grames- WBA Visual Communications

Caleb Stayton- WBA Baseball Mentor

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WORLD BASEBALL ACADEMY

SCIENCE • TECHNOLOGY • ENGINEERING • MATHEMATICS