



Lesson Plan

Sports Turf SAE

Created: 05/2019 by the National FFA Organization

SAE Video Summary: Follow Michael as he walks us through his supervised agricultural experience (SAE) program in sports turf management. Michael learns to manage and maintain the turf to ensure a proper playing field for game days.

STUDENT LEARNING OBJECTIVES:

After completing these activities, students will ...

1. Describe a sports turf SAE.
2. Evaluate an athletic turf.
3. Develop recommendations for improvement for a sports turf field.

TIME REQUIRED: 120 minutes

RESOURCES:

1. "Michael Netherton – SAE – Sports Turf Management," <https://vimeo.com/313687256>

EQUIPMENT AND SUPPLIES NEEDED:

1. A copy of the "Sports Turf" worksheet for each student
2. A copy of the "Home Turf" worksheet for each student
3. Internet access to play the video in real time or embed it in a PowerPoint ahead of time

THIS QUICK LESSON PLAN WOULD WORK WELL AS PART OF:

1. An SAE lesson/unit.
2. A plant science lesson.
3. A turf science lesson.

STUDENT ACTIVITY SHEETS:

Direct access to student activity sheets without lesson plan or answer key for easy upload to learning management systems or printing for classwork.

<https://ffa.box.com/s/ade2wrzstefasd3lm9w2nhig0cperof1> (Word)

<https://ffa.box.com/s/qperxl2w659vyfmg6iignvr9rrxojokf> (PDF)

THESE ACTIVITIES ARE ALIGNED TO THE FOLLOWING STANDARDS:

AFNR Performance Element

- CS.05: Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources career pathways.

FFA Precept

- FFA.PL-A.Action: Assume responsibility and take the necessary steps to achieve the desired results, no matter what the goal or task at hand.
- FFA.PL-C.Vision: Visualize the future and how to get there.
- FFA.PL-E.Awareness: Understand personal vision, mission and goals.
- FFA.PL-F.Continuous Improvement: Accept responsibility for learning and personal growth.
- FFA.PG-I.Professional Growth: Assume responsibility for attaining and improving upon the skills needed for career success.
- FFA.PG-J.Mental Growth: Embrace cognitive and intellectual development relative to reasoning, thinking and coping.
- FFA.CS-M.Communication: Effectively interact with others in personal and professional settings.

- FFA.CS-N.Decision Making: Analyze a situation and execute an appropriate course of action.

Common Career Technical Core

- AG5: Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources Career Pathways.

Common Core – Reading: Informational Text

- CCSS.ELA-Literacy.RI.9-10.4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).

Common Core – Writing

- CCSS.ELA-Literacy.W.9-10.1: Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- CCSS.ELA-Literacy.W.9-10.2: Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

Common Core – Speaking and Listening

- CCSS.ELA-Literacy.SL.9-10.2: Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.

Common Core – Science & Technical Subjects

- CCSS.ELA-Literacy.RST.9.10.9: By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

Common Core – Math Practices

- CCSS.MP1: Make sense of problems and persevere in solving them.
- CCSS.MP5: Use appropriate tools strategically.
- CCSS.MP6: Attend to precision.

Next Generation Science

- HS-ETS1-3: Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

AFNR Career Ready Practices

- CRP.02: Apply appropriate academic and technical skills. Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive.
- CRP.04: Communicate clearly, effectively, and with reason. Career-ready individuals communicate thoughts, ideas and action plans with clarity, whether using written, verbal and/or visual methods.
- CRP.06: Demonstrate creativity and innovation. Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization.
- CRP.07: Employ valid and reliable research strategies. Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies.
- CRP.08: Utilize critical thinking to make sense of problems and persevere in solving them. Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem.

Partnership for 21st Century Skills

- Communication
- Critical Thinking and Problem Solving
- Flexibility and Adaptability
- Initiative and Self-Direction
- Leadership and Responsibility
- Think Creatively

LESSON PLAN:

1. ***Bell Ringer:*** On your own paper, describe the role of the surface (Ex. Grass) you play on in sports, such as football or baseball. Why does it matter?
2. ***Introduction:*** *Athletics and the turf industry play a large role in agriculture. Careers in this focus area are booming! Today, we will learn about a turf-related SAE and then have the opportunity to examine the turf at our own school.*
3. ***Activity:***
 - a. Each student needs a copy of the worksheet "Sports Turf." Have students watch the video "Michael Netherton – SAE – Sports Turf Management" (<https://vimeo.com/313687256>) and answer the accompanying questions. After watching the video, students will research six college or professional sports stadiums. They need to find and list three that have natural grass turf and three that have artificial turf. Next, using their research skills, students need to describe why a school or professional association would select one type of turf over another (artificial vs. natural grass) and give two specific examples. Example can

include anything related to weather: artificial turf gets very hot in the summer while grass turf can be more likely to flood and be destroyed with repetitive use.

- b. Each student needs a copy of the worksheet "Home Turf." Students will now have the opportunity to analyze an athletic field at their own school.
 - i. First, students need to select a sports field and identify if it has a natural grass turf or an artificial turf.
 1. If students do not have specific stadiums they want to research, a Google search for "stadiums with artificial turf" and "stadiums with natural grass" will return a lot of results. None of the results are from highly reliable sources, but Lawnstarter.com does have some well-researched blog posts without having any inappropriate or annoying ads.
 - a. Two potential articles to point students toward if you want to avoid blind Google searches:
 - i. <https://www.lawnstarter.com/blog/sports-turf/nfl-mlb-teams-artificial-turf-2019/>
 - ii. <https://www.lawnstarter.com/blog/lawn-care-2/turf-at-nfl-stadiums/>
 - ii. Next, students will brainstorm all the pros and cons of the turf they currently have. These responses should begin to reflect some of the points they have already researched, as well as incorporating some of their personal experiences (if they have any).
 - iii. Lastly, students will write a letter to the school board. Students have two options: if they are satisfied with the turf they currently have, they will write a thank you letter including all of the reasons why they enjoy the facility and the benefit the facility has to their school. (This should still refer back to their research.) The second option is to write a persuasive letter advocating for why they feel the need for a turf change at their school.
4. *Follow-up:* Have students share these letters with administrators in their school and consider making a formal presentation at the next school board meeting.
5. *Leveling Up:* Have students take soil samples to determine the types of soil (can be next to the field if there is artificial turf), identify the materials used in their turf (ex. synthetic materials or grass variety) and research the specific maintenance required just for their field.
6. *Exit Ticket:* What kinds of careers are available for those interested in turf science?

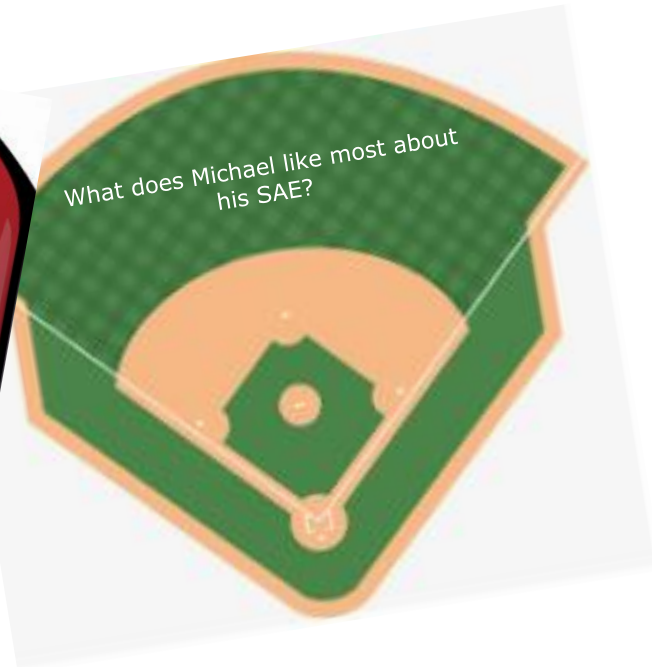
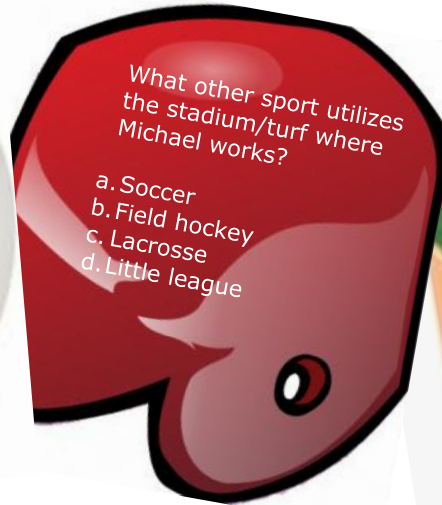
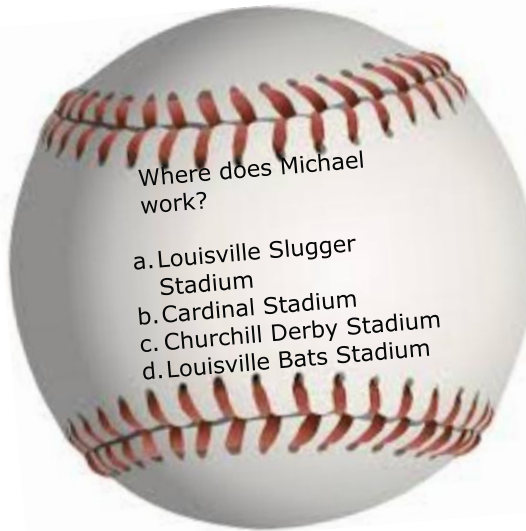
NAME: _____

Aligned to the following standards:
CS.05; FFA.PL-A; FFA.PL-C; FFA.PL-E; FFA.PL-F; FFA.I; FFA.PG-J; FFA.CS-M;
FFA.CS-N; AG5; CCSS.ELA.RI.9-10.4; CCSS.ELA.W.9-10.1; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.2; CCSS.ELA.RST.9.10.9; MP1; MP5; MP6; HS-ETS1-3; CRP.02; CRP.04; CRP.06; CRP.07; CRP.08

Sports Turf

DIRECTIONS:

Read over and answer the questions below while you watch the video "Michael Netherton – SAE – Sports Turf Management," available at <https://vimeo.com/313687256>.



DIRECTIONS:

The turf science industry is a large component of agriculture. Using your resources, find three college or professional stadiums that use either natural grass turf or artificial turf.

Natural Grass Stadiums

1. _____
2. _____
3. _____

Artificial Turf Stadiums

1. _____
2. _____
3. _____



Using your research skills, describe why a school or professional association would select one type of turf over another (artificial vs natural grass)? Give two specific examples.

Home Turf

Aligned to the following standards:

CS.05; FFA.PL-A; FFA.PL-C; FFA.PL-E; FFA.PL-F; FFA.I; FFA.PG-J; FFA.CS-M; FFA.CS-N; AG5; CCSS.ELA.RI.9-10.4; CCSS.ELA.W.9-10.1; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.2; CCSS.ELA.RST.9.10.9; MP1; MP5; MP6; HS-ETS1-3; CRP.02; CRP.04; CRP.06; CRP.07; CRP.08

DIRECTIONS:

With turf being such a crucial component to so many sports, including baseball, let's take some time to look at the fields at your school!

Step 1: Identify the field and turf type present.

Which athletic field are you going to focus on?

What type of turf does your selected field have? Circle the correct response.

Artificial

Grass

Step 2: Research and Analysis: What are the pros and cons to your selected field? Items to consider (there could be more):

- Maintenance of the turf (ex. cleaning and care)
- Usage ability (consider weather, seasons, etc.)

Pros

Cons

Step 3: Write a letter to the school board about what you feel the best option is for the athletic field that you analyzed. The letter should be persuasive so the school board will consider a turf-type change. If you think the turf the field has is the most appropriate, write a thank you letter explaining the positive attributes and benefits provided by the current turf. Questions to include and consider in your letter:

- (1) Would you change the type of turf you currently have? Why or why not?
- (2) What are the benefits to staying with or changing the field turf?
- (3) What would be/are the benefits of having this type of field available to students at your school?
- (4) Anything else you feel is important to share.

Use the template on the next page to compose your letter.

Give two examples of specific colleges/universities that offer turf science programs.

1. _____
2. _____

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

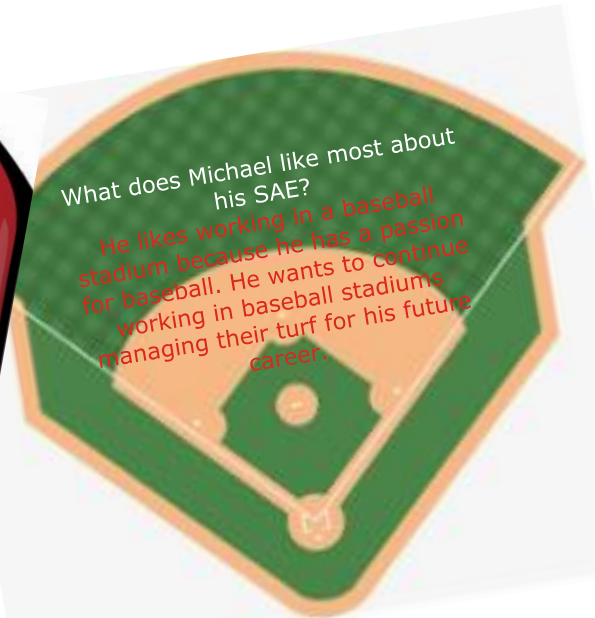
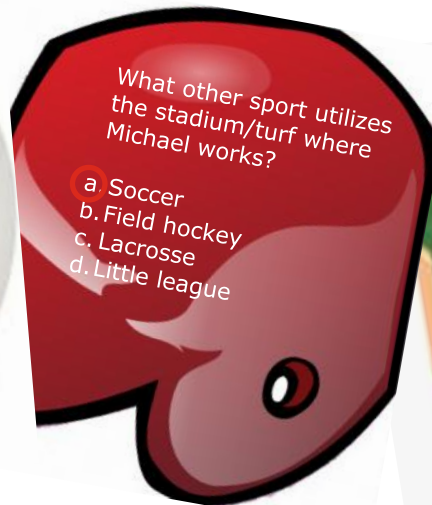
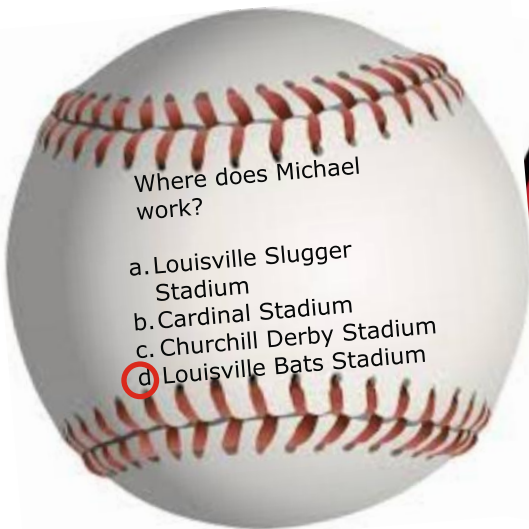
KEY: Sports Turf

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DIRECTIONS:

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DIRECTIONS:

The turf science industry is a large component of agriculture. Using your resources, find three college or professional stadiums that use either natural grass turf or artificial turf.

Natural Grass Stadiums
Answers will vary.

1. _____
2. _____
3. _____

Artificial Turf Stadiums
Answers will vary.

1. _____
2. _____
3. _____



Using your research skills, describe why a school or professional association would select one type of turf over another (artificial vs natural grass)? Give two specific examples. Answers will vary.

Letter Rubric

Aligned to the following standards:
 CS.05; FFA.PL-A; FFA.PL-C; FFA.PL-E; FFA.PL-F; FFA.I; FFA.PG-J; FFA.CS-M;
 FFA.CS-N; AG5; CCSS.ELA.RI.9-10.4; CCSS.ELA.W.9-10.1; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.2; CCSS.ELA.RST.9.10.9; MP1; MP5; MP6; HS-ETS1-3; CRP.02; CRP.04; CRP.06; CRP.07; CRP.08

Indicator	Very Strong Evidence of Skill (5–4 points)	Moderate Evidence of Skill (3–2 points)	Weak Evidence of Skill (1–0 points)	Points Earned
Format	The document was directed to the appropriate person with an appropriate salutation. The level of formality was appropriate for the type of correspondence.	The document was directed to the appropriate person with a salutation with minor errors. The level of formality was generally appropriate for the type of correspondence.	The document was not directed to the appropriate person. The level of formality was not appropriate.	
Content	Effectively expressed appreciation or persuasion and appropriately reiterated their points; expressed benefits completely	Attempted to express appreciation or persuasion and generally reiterated points; generally expressed benefits	Did not attempt to express appreciation or persuasion appropriately; did not attempt to express benefits	
Grammar/ Punctuation/ Spelling	Spelling, grammar and punctuation are extremely high quality with two or less errors in the document.	Spelling, grammar and punctuation are adequate with three to five errors in the document.	Spelling, grammar and punctuation are less than adequate with six or more errors in the document.	
Overall Impression	Writing was legible, and length was appropriate.	Writing was difficult to read, and length was generally appropriate.	Writing was illegible, and length was inappropriate.	