

Time Needed: 2 class periods

Grade Levels: 8th-12th

Supplies:

- [PBS Calling the Shots](#) [53 minutes]
- [CDC Flu website](#)
- Student access to Twitter using computer, mobile devices, or other devices
- Duke TIP [Vaccination Debate Preparation handout](#)
- Duke TIP [Vaccination Debate Rubric](#)
- Teacher access to Twitter and organization tool for Tweets, such as [Tweetdeck](#)

See the end of this lesson for science standards correspondence.

Content Objectives: Students will know:

- The definition of herd immunity
- The theory of vaccination and how it works to protect against disease
- Primary arguments surrounding the vaccination debate, including benefits and risks of vaccination
- The features and conventions of communication using the social media platform Twitter

Skill Objectives: Students will be able to:

- identify two academically credible sources that describe benefits, risks, incidence of adverse effects, statistics, and/or ethical issues related to vaccinations.
- analyze issues surrounding vaccination as they relate to scientific evidence, free will, and balance of risks and benefits.
- develop arguments for and against mandated vaccinations supported by evidence.
- demonstrate digital citizenship and appropriate debate etiquette in online forum.
- demonstrate effective use of Twitter conventions

Essential Understandings: Students will understand:

- Vaccination is a treatment that exposes individuals to live, weakened, and/or other forms of a pathogen so that they develop immunity to that pathogen.
- Herd immunity describes the resistance to the spread of contagious disease throughout a population if the majority of the population is vaccinated against that disease.

- There are benefits and risks for vaccination; officials make recommendations if the benefits for vaccination are greater than the risks of getting vaccinated.

Essential Questions: Students will explore:

- How can we prevent the spread of disease using common methods, including vaccination and hygienic practices?
- How does vaccination protect individuals from pathogens?
- How does herd immunity work to protect susceptible individuals who are unable to be vaccinated?
- What are common arguments for and against mandatory vaccination?
- How can we balance the benefits and risks of vaccination to prevent the spread of contagious disease?
- How do we conduct ethical debates respectfully and intellectually in a social media platform?
- How can Twitter conventions enhance dialogue and strengthen positions during ethical debates?

Notes for the Teacher

- Assign students a specific position to take during the debate (pro-vaccination and anti-vaccination) to ensure a robust, thought-provoking discussion.
- You may also assign some students may also take an impartial questioner role, in which they challenge both sides of the debate and hold them accountable for their ideas.
- You may set minimum standards for participation in the debate, such as a minimum of 3 original posts, 2 responses, and 1 re-tweet/like.
- At the time of this posting, Twitter's [Terms of Service](#) dictates that users must be at least 13 years of age or older to use the platform. Depending on the policies of your school and district, you may need to obtain additional permissions from parents, administrators, and/or instructional technology coordinators.
- Consider maintaining a professional account for this and other activities that is separate from your personal account. Students should also use a school-associated account.
- Explain to students what, when, and how this platform should be used for course-related activities. If you are only using Twitter for this activity, you may remind students of the best ways to submit work or communicate with their instructor. If you will be frequently using the platform to post updates or answer questions, you may encourage student engagement. Consult your school's digital citizenship standards or agreements as necessary.

- Consider advising students and families on options to protect privacy and data while using the platform. For students who elect to keep their tweets private, they must allow all of their peers and their instructor to follow them. For students who elect to keep their tweets public, you should stipulate that they do not respond or engage with members outside of the community regarding the vaccination debate. Be prepared in the case that this happens to respond immediately as needed.
- Ask students not to share information that may jeopardize their privacy, including their full name, age, school, address, phone number, and personal picture.
- To collect class tweets and to facilitate grading, ask students to include your (the instructor's) handle and a specific, unique #hashtag in all tweets. If you have multiple sections completing this activity, the #hashtag should be unique to each section. For example, if you teach two sections of biology class, you might use two hashtags: #bio1vaxdebate and #bio2vaxdebate.
- You can use [Tweetdeck](#) or a similar tool to create an organized view of student contributions. You may consider including a column for your handle (@Mentions) and another including the #hashtag that you require.

Activities

Preparing Your Students

Prior to participating in the debate, students should be familiar with communicating on Twitter, including creating, reading, responding, retweeting, and liking tweets. It is also helpful for them to understand some of the constraints of tweeting, such as a maximum limit of 280 characters.

You may consider including incorporating some Twitter-specific communication skills in warm-ups or other brief activities leading up to the debate. Some objectives related to preparation include:

- Students should demonstrate appropriate use of #hashtag to categorize tweets and @user-handle to direct a tweet.
- Students should also demonstrate understanding of the purpose and action of liking, retweeting, or replying to a tweet.
- Students demonstrate strategies to accommodate for limitations of posts, including the use of shortened URLs from bit.ly or owl.ly.
- Prior to starting the debate, students should also understand the theories behind vaccination and herd immunity. Some helpful resources include the following:
 - The handout “Vaccination Debate, Student Preparation Handout”
 - [PBS Documentary: Calling the Shots](#) [53 minutes]
 - [Centers for Disease Control and Prevention Flu](#)
 - [The History of Vaccines: Herd Immunity](#)

Vaccination Twitter Debate

- vaccines.gov
- [Jenny McCarthy: “We’re not an anti-vaccine movement... We’re pro-safe vaccine”](#)
- [The Long History of America’s Anti-vaccination Movement](#)

Students should come prepared to the debate with at least two academically credible, web-based resources pertaining to the debate on vaccination, mandatory vaccinations, evidence for/against vaccination, and statistics related to the effectiveness of flu vaccination.

Introduction (10 minutes)

- Review the Vaccination Debate Rubric that evaluates students on their comprehension of the central themes surrounding the vaccination debate, their proficiency at crafting an argument, and their proficiency at debating their position on Twitter.
- After establishing norms and ensuring that all students have working technology, announce that the legislature of your town is in session and that they will be voting on a bill regarding mandatory vaccinations for all students from grades K-12.

Here is some sample wording:

The town of ____ will require annual influenza vaccination for all K-12 students and staff within the public school system. The intention of this bill is to protect all parties from the influenza virus, which has the potential to cause prolonged illness and/or death for parties who contract the disease. Exemptions will be granted from this requirement for individuals who are immunocompromised, have a history of allergic reaction to the flu vaccine, and/or who have religious or cultural objections to the requirement.

This bill will also benefit the families of students and staff who are at risk of secondary exposure to the virus. Secondary exposures can lead to contraction of the disease, prolonged illness, death, and/or losses to the economy.

- Ask students to craft an initial Twitter post stating their position on the proposed bill and/or what questions they have regarding the bill. Encourage them to read and respond to peer posts, using Twitter communication features. This can be done verbally and by posting on Twitter.

Facilitation of the Debate (40 minutes)

- Facilitate the debate by answering questions regarding the bill, monitoring student activity on Twitter, driving the flow of the debate by announcing “updates” from the legislature regarding their negotiations. Ask students to comment on legislature updates with support, feelings of opposition, supportive or opposing evidence, and/or hypotheses about central arguments in the rooms.

Vaccination Twitter Debate

Some updates may include:

Councilman/woman X is at the podium urging members of the legislature to reconsider their support for the bill. She cites health risks and infringement of individuals' rights.

Councilman/woman X invites local mother whose 4-year-old son was diagnosed with autism following a series of vaccinations. Mother pleads with the legislature to consider the risks of vaccination, especially to the youngest of school children.

Update on the vaccination bill: Councilman/woman Y is speaking on the benefits of vaccination and cites scientific evidence that points to the effectiveness of vaccinations in preventing epidemics.

Dr. Z, a local pediatrician, addresses the legislature about childhood vaccinations and his/her advice for parents.

- Encourage students to utilize Twitter tools, including retweeting, liking, replying directly to a peer, incorporating hashtags, and shortened URLs. Students should include evidence from their sources to support their original arguments and to respond to their peers.
- You may also consider encouraging students to generate unique hashtags related to the debate that can be utilized by all classmates who support their stance on the vaccination policy.
- You can also form a group of students who assist with pushing the thinking of debaters (they might be called Questioners) who prepare a list of questions to prod either side of the debate to think more deeply. Ask these students to generate questions.
 - Here are some sample questions that you might coach students to develop, or that you may use yourself during the debate:
 - How might this bill affect families and students who are required to get the vaccine?
 - What are some of the benefits of this vaccination policy?
 - What are some challenges of implementing this policy?
 - Will this policy achieve herd immunity for the town?
 - What real evidence, or appropriate anecdotal evidence, exists for the effectiveness of the flu shot in preventing the flu?
 - What real evidence, or appropriate anecdotal evidence, exists for the effectiveness of mandatory vaccination policies?

Next Step [Students take a position] (10 minutes)

Provide an update from the legislature that states that members of the House are ready to vote on the proposed bill. Ask students to take a final position on the bill and to include their best evidence.

After a full day of arguments from both sides of the aisle, members of the legislature are preparing to vote on the proposed bill to require mandatory, annual influenza vaccinations for all K-12 students and staff within the public school system.

Announce a verdict from the legislature and allow students to respond on Twitter.

The votes are in! The town of _____ will require all K-12 students and staff within the public school system to have an annual influenza vaccination. The law will take effect for the 20__-20__ school year. All students and staff will be asked to show proof of vaccination by October 31st, 20__, except where exemptions apply.

Homework (20 minutes)

- Ask students to identify at least three different perspectives in the debate and analyze their rationale for or against vaccinations. Use the rubric to celebrate those whose tweets met most if not all areas of rubric expectations.
- As a class, compile a list or create a concept map that describes the multifactorial debate surrounding vaccinations.
 - What were the central arguments in support and in opposition of the vaccination bill?
 - What was the best evidence included in the debate to support these arguments?
 - What other information was included in the debate to complement this evidence support the central arguments?

Student Models

The screenshot shows a Twitter thread. The top tweet is from a user with a yellow smiley face profile picture. The text reads: "The government of Phanatomia is in session for a bill that may require all children to be vaccinated. Thoughts? #ap1 #wk6 #phanatomia". Below this tweet are icons for replies (6), retweets, likes, and direct messages. The second tweet is also from a user with a yellow smiley face profile picture. The text reads: "#ap1 #wk6 #phanatomia goo.gl/dCDPzd I agree. Exempt: children with allergies, rare type of epilepsy, or personal/religious reasons". Below this tweet is a video player for a PBS NOVA video titled "Vaccines — Calling the Shots". The video player includes a play button icon and a URL: "http://www.pbs.org/specials/depth-vaccines/ Examine the science behind vaccinations, the return of preventable diseases, and the risks of opting out." Below the video player is the text "youtube.com". At the bottom of the tweet, it says "1:27 PM - 20 Jul 2017". Below the tweet is a "1 Like" section with a small profile picture of the user who liked it. At the very bottom of the tweet are icons for replies, retweets, likes (1), and a share icon.



Science Standards Correlation

[Common Core ELA Science Standards](#), Grades 11-12

Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

Vaccination Twitter Debate

Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.

Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.