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What's the skinny? Evaluating the effects of instituting a 'fat tax' in America

Parents, media, and peers inundate high school students with concerns about health and weight. Schools also make considerable efforts to offer healthier alternatives for lunch and advocate prevention methods, and parents enrol their kids in after school activities for the purpose of physical exercise; yet, despite these attempts, obesity rates among adolescents in America have more than tripled since the 1980s and 32% of children and teens are considered overweight or obese (Ogden et al., 2012). Countries around the world face similar dilemmas and have approached the growing problem in a variety of ways. In 2011, Denmark introduced the first 'fat tax,' a levy imposed on excessively fattening foods. The country's fat tax added \$2.70 per kilogram of saturated fats in a product and was levied on everything containing saturated fats (ie. butter, milk, and prepared foods like pizza). However, only a year later, Denmark pulled the plug on the fat tax, claiming that the administrative costs and loss of jobs were not worth the effort (Khazan, 2011). Despite the failed attempt of the fat tax in Denmark, other countries such as France and Hungary are considering similar approaches to combating obesity. In New York City, the trans-fat ban implemented in 2006, though recently ruled unconstitutional, did reduce trans-fat consumption significantly, according to a 2009 study that found that the percentage of restaurants using trans-fats had decreased from 50 percent to less than 2 percent (Angell et al., 2009).

Do high school students, enrolled in a health course, think a fat tax would help US citizens

fight the battle of the bulge?

Student debate

In this argumentation-based inquiry, students debate the effects of instituting a nationwide fat tax in America and collectively explore and articulate varying viewpoints based on evidence while honing important 21st-century skills such as gathering and assessing information, thinking critically, and communicating among multiple perspectives. The following four-day project for high school students culminates in a classroom debate whereby students are assigned and must defend their position with regard to the effectiveness of a proposed fat tax using evidence-based argumentation. I have used this project many times at the end of the units on food energy, so students enter into the project with an understanding that caloric needs differ among individuals, that foods contain varying amounts of saturated and unsaturated fats which are stored and utilized differently by our bodies, and that metabolic rate can be affected by exercise and proper nutrition. Students can then apply their understanding of food for balanced health and nutrition to considering societal values and the governments' role regarding consumption of fatty foods. As with other socio-scientific issues, allowing students to evaluate programmes targeting health through dialogue, discussion, and debate within a social and ethical context encourages both motivation and ownership of learning to the students. The intent is that such issues are personally meaningful and engaging to students, require the use of evidence-based reasoning, and provide a context for understanding and applying scientific

Table 1. Curricular Connections

National Health Education Standards

Health Education Standard 1 – Students will comprehend concepts related to health promotion and disease prevention to enhance health.

1.12.7. compare and contrast the benefits of and barriers to practicing a variety of healthy behaviors.

Health Education Standard 2 – Students will analyze the influence of family, peers, culture, media, technology and other factors on health behaviors.

2.12.10. analyze how public health policies and government regulations can influence health promotion and disease prevention.

Health Education Standard 5 – Students will demonstrate the ability to use decision-making skills to enhance health.

5.12.7. evaluate the effectiveness of health-related decisions.

information (see Table 1 below for curricular connections).

Activities and Strategies

To begin the classroom investigation on the feasibility of a fat tax in the United States, students are first introduced to the history of the fat tax in Denmark. While watching a short YouTube video “Denmark’s failed fat tax experiment” (Canadian Taxpayers Federation, 2013) about the failure of the fat tax, students should make a T-chart* that lists pros and cons of the fat tax. This beginning activity will help frame the sociopolitical and socioeconomic complexities of instituting such a tax. Informal class discussion about the points listed on their T-charts will help students summarize the issue and begin to pose questions and/or articulate viewpoints on the issue. Next, students read the article, ‘Denmark’s Failed Fat Tax,’ (Khazan, 2011) to help them consider what other countries, such as the United States, are proposing to help combat the increasingly alarming obesity rates. Teachers should prompt students to reflect by writing on the back of their T-charts their perspectives on whether a fat tax would be feasible in the United States. At the end of Day 1, this formative assessment prompt should be collected and reviewed by the teacher in an effort to begin a dialogue between the teacher and each student that probes their thinking (i.e. Have you considered...? What might be an alternative perception to this view? Who might hold an alternative perception and why?). Formative feedback should be returned to students at the start of Day 2. Note: As weight can be an extremely sensitive topic, teachers should pay close attention to verbiage used and claims made by students in formative assessment prompts and class discussions to address any concerns regarding lack of

sensitivity. Teachers should also be explicit with students that the ‘fat tax’ is a tax on foods, not on people.

On Day 2, teachers should assign each student a role ‘for’ or ‘against’ the resolution #1 or #2 (see Figure 1 at end). Students are also assigned a role to assume within their argumentation (see Table 2 below). Homework for students is to read *Would a Fat Tax Save Lives?* (Silverman, 2013) so that prior to embarking on the debate students will have received the same background information on the fat tax. The article also contains several links to research the science of fat cells and metabolism should students should be encouraged to draw upon this information in their research. An additional resource that students should read to ensure their consideration of the differential economic impact on people is *Big Brother declares war on consumption: How the move to mandate healthier foods inadvertently hurts the poor* (Hoffer et al., 2013). This editorial will probe students’ thinking about the equity of such a tax on food, which should also be addressed in their debates.

Preparation for the debate begins with background research, for which all students should have access to the Internet. Depending on their assigned role within the debate, they will be exploring different types of websites. For example, if they are assigned a citizen perspective within the debate, they could research recent student protests over exclusively healthier food options in their school cafeteria. Teachers should guide their students to a variety of resources and probe them to consider the agenda and credibility of the site. Some students may need additional time preparing arguments based on their

* A T-chart is used mostly to compare things like pros and cons. It is called a T-chart because to make it, a line is drawn across the page and another down the middle and looks like the letter T. Pros and cons are then listed in each column either side of the line.

Table 2. The four debate roles

Scientist	Citizen	Business Person	Government Official
“Scientist” is a broad term and may include a basic scientist (e.g., dietician), applied scientist (e.g., doctor or health consultant), or expert science teacher	Any person who is not formally trained in the natural sciences; Note: do not assume that just because this person is not a scientist that they are uneducated	A person from any sector of business who may have a vested interest in the outcome of the debate—what types of businesses might be affected by a fat tax?	Think more broadly than just mayor, state representative, or governor. A government official could also include a city/county officer, or someone who works for the Department of Health

individual research, so teachers should allow time enough time for formative feedback after research is conducted in the classroom. To do this, teachers can request students submit a brief outline of their resources and conclusions prior to the debate.

Day 3 and 4 are classroom debate days. With a group of 30 students, 15 will debate the first resolution and 15 will debate the second resolution. Those not debating will be conducting peer reviews and ultimately determining which of the opposing sides won the debate. The student instructions (see Figure 1 at end) outline helpful tips for preparing the debate that will yield maximum points on the teacher and peer rubrics (see Figure 2 at end). Teachers should review specific instructions and rubric with students prior to the debate days to resolve any questions.

Assessment Technique: Students will be assessed in teams by both their instructor and peers. The instructor assessment will gauge all three performance indicators of NHES as well as assess the use of evidence in and organization of their argument. The peer assessment will gauge argumentation effectiveness.

Conclusion

In this inquiry, students are challenged to explore the controversy of a fat tax, which is informed by the science of food energy and integrates social aspects (moral, ethical, economic, etc...) to develop a position based upon their research (Klosterman et al., 2010; Tanner, 2009). I am always struck by the engagement with which students prepare their debates and excitedly work with their peers to formulate strong arguments. The challenge to win the debate brings forth (often from students from whom I would least expect) dynamic debate styles, with students assuming the roles of a variety of actors and creating background stories for their chosen personas. With this, however, some students get so excited about the preparation of their debate and developing their character that they neglect to connect the content and evidence they have researched in their arguments. We have seen in research on debates surrounding socio-scientific issues that students' privilege faulty reasoning, hasty generalizations, and extreme examples to evoke

affective responses (Walker & Zeidler, 2007). For this reason, teachers should thoughtfully utilize the formative assessment opportunities as mentioned above to prompt students to ensure they are referencing appropriate data-based evidence on which to base their arguments. At the end of the debate, a class discussion about which team won the debates can lead to a focus on what constitutes persuasive argumentation. Students can reflect on what aspects of the debate persuaded them most.

Through this lesson, students must pay close attention to the intersection of science and complex societal concerns, and teachers will find that this activity engages students in learning to make and articulate to others well-informed decisions about socio-scientific issues.

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Figure 1. **Class Debate Instructions**

Goals of the activity:

- Conduct research to gain understanding about the impacts of obesity for those affected and in our society
- Communicate, persuasively, the impacts of obesity both for individual and society
- Evaluate the quality of evidence articulated in arguments

What is a resolution?

A resolution, when in context of law, is a written motion to be presented, debated, and adopted by a deliberative body. Half of the class will debate one resolution; while the other half will debate the other:

1. Be it resolved that the community will instigate extra fees for what is deemed to be excessively fatty foods.
2. Be it resolved that the community will offer tax incentives for consumers choosing what is deemed to be healthy food.

Presenting the debate:

Students should determine the order with which they wish to present in the debate, with the 'for' group presenting before the 'against' group. Each person will have 2 minutes to present an argument and 1 Minute to present their rebuttal. Be sure to practice speech/argument before presenting it to the class. This cannot be emphasized enough. Even the most compelling information may not come across effectively if pacing and tone are unpolished. Students may choose to bring a notecard of bulleted points to the podium, but should avoid reading from the card.

Preparing for the debate:

Rather than attempting to rattle off facts about the fat tax, select a specific thread to make an argument. For example, if the debate were about global warming and a student is in the role of scientist, that student may choose to focus on the related human health aspects rather than trying to cover everything about global warming.

Visuals can be very helpful in persuasive arguments, but only if they are related to and enhance the argument. However, the most important aspect of the prepared argument is that it is grounded in scientific evidence. Utilize original research articles from peer-reviewed journals and information from government websites. Students may use other sources for background information or as springboards to identifying specific sub-topics, but using original scientific research is required.

Students should be sure to listen to the opposing side and make notes of points that they could use in their rebuttals. Students will have 1 minute each for a rebuttal, and their teams will have 10 minutes to prepare rebuttals. Students should remember they are presenting as a "for" group and an "against" group. While it is not necessary to work together in preparing arguments, it does make sense to coordinate sub-topics and ensure no overlap of points.

Students should submit:

- A reference list of the sources used to prepare arguments
- Notes, note cards, etc. used during your presentation
- A peer-evaluation of other group's presentation

Figure 2.
Debate Rubric & Peer Evaluation

Team Rubric

Criteria	5	3	1
Content <i>1.12.7. compare and contrast the benefits of and barriers to practicing a variety of healthy behaviors.</i>	All information presented was clear, accurate, & thorough	Most information presented was clear and accurate, but not always thorough	Information had some major inaccuracies or was not clear
Content <i>2.12.10. analyze how public health policies and government regulations can influence health promotion and disease prevention.</i>	All information presented was clear, accurate, & thorough	Most information presented was clear and accurate, but not always thorough	Information had some major inaccuracies or was not clear
Content <i>5.12.7. evaluate the effectiveness of health-related decisions.</i>	All information presented was clear, accurate, & thorough	Most information presented was clear and accurate, but not always thorough	Information had some major inaccuracies or was not clear
Rebuttal	All counter-arguments were accurate, relevant, and effective	Most counter-arguments were accurate and relevant, but several were weak	Counter-arguments were not accurate and/or relevant
Use of Data	Every major point was well supported with relevant data and examples	Every major point was supported by data, but the relevance or accuracy of some was questionable	Every major point was not supported by data
Organization	Team's arguments were clearly organized to connect to central premise	All arguments were tied to a central premise, but the organization was sometimes unclear	Arguments were not tied to a central premise
Understanding of Issue	Team clearly understood the topic in-depth and information was conveyed persuasively	Team seemed to understand the main points of the topic, but were not thorough	Team did not show an adequate understanding of the issue
Presentation Style	Team consistently used gestures, eye contact, tone of voice, and a level of enthusiasm that kept the attention of the audience	Team sometimes used gestures, eye contact, tone of voice, and a level of enthusiasm that kept the attention of the audience	Team's presentation style did not keep the attention of the audience
			TOTAL:

Peer Evaluation

Criteria	Rating (1-10)	Comments
Opening Statement: Clear, factual, relevant, & well organized		
1 st Debater (Name:): Argument was stated clearly, relevant, & well informed		
1 st Debater's Rebuttal: Rebuttal was informed & effective		
2 nd Debater (Name:): Argument was stated clearly, relevant, & well informed		
2 nd Debater's Rebuttal: Rebuttal was informed & effective		
3 rd Debater (Name:): Argument was stated clearly, relevant, & well informed		
3 rd Debater's Rebuttal: Rebuttal was informed & effective		
4 th Debater (Name:): Argument was stated clearly, relevant, & well informed		
4 th Debater's Rebuttal: Rebuttal was informed & effective		
Overall preparedness, effectiveness, & professionalism in the debate		
Which team won the debate and why?		