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EVALUATING INFORMATION: THE CORNERSTONE OF CIVIC ONLINE REASONING

EXECUTIVE SUMMARY STANFORD HISTORY EDUCATION GROUP PRODUCED WITH THE SUPPORT OF THE ROBERT R. McCORMICK FOUNDATION

William Muschennena s rrangome Residence Burns and Occupants Are Placed in Peril.

SERVANTS SAVED BY OWNER

He Arrives Home Just in Time to Sound Alarm and Rescue Those Whose Lives Were Threatened.

William Muschenheim's home, at Fort Washington avenue and 195th street, one of the show places along the Hudson, was destroyed by fire early this morning. The occupants narrowly escaped with their lives. Mr. Muschenheim carried two servants down a ladder from the third story window.

Mr. Muschenheim returned home about one o'clock. It was his custom to have his carriage meet him at the end of the elevated road. Just as he opened the door

he heard Mrs. Muschenheim, who

The pictures show the steering apparatus in f position of the operator. The body only of their pre shown. In the flight of Thursday the machine was

Attempt to Rob Came

Two Men Intercept Messenger Poy with sack Residence of Daughter of Sir Rode Two Men with Tickets Arres

In the arrest and imprisonment at Police Headquarters last night of two men there was brought to light the story of a daring attempt to rob the city house of Roderick McLeod Cameron, a son of Sir Roder ck Cameron, at No. 185 Madison avenue.

Two men followed a messenger boy up the stoop of the house to the front door, him to give to them

SHEG.STANFORD.EDU

away. The poll There, it is all

In the meantir aroused Mrs. S keeper. She rec rled and then it is

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Over the last year and a half, the Stanford History Education Group has prototyped, field tested, and validated a bank of assessments that tap *civic online reasoning*—the ability to judge the credibility of information that floods young people's smartphones, tablets, and computers.

Between January 2015 and June 2016, we administered 56 tasks to students across 12 states. In total, we collected and analyzed 7,804 student responses. Our sites for field-testing included under-resourced, inner-city schools in Los Angeles and well-resourced schools in suburbs outside of Minneapolis. Our college assessments, which focused on open web searches, were administered online at six different universities that ranged from Stanford, an institution that rejects 94% of its applicants, to large state universities that admit the majority of students who apply.

In what follows, we provide an overview of what we learned and sketch paths our future work might take. We end by providing samples of our assessments of civic online reasoning.



EXECUTIVE SUMMARY

Evaluating Information: The Cornerstone of Civic Online Reasoning November 22, 2016

THE BIG PICTURE

When thousands of students respond to dozens of tasks there are endless variations. That was certainly the case in our experience. However, at each level—middle school, high school, and college—these variations paled in comparison to a stunning and dismaying consistency. Overall, young people's ability to reason about the information on the Internet can be summed up in one word: bleak.

Our "digital natives" may be able to flit between Facebook and Twitter while simultaneously uploading a selfie to Instagram and texting a friend. But when it comes to evaluating information that flows through social media channels, they are easily duped. We did not design our exercises to shake out a grade or make hairsplitting distinctions between a "good" and a "better" answer. Rather, we sought to establish a reasonable bar, a level of performance we hoped was within reach of most middle school, high school, and college students. For example, we

would hope that middle school students could distinguish an ad from a news story. By high school, we would hope that students reading about gun laws would notice that a chart came from a gun owners' political action committee. And, in 2016, we would hope college students, who spend hours each day online, would look beyond a .org URL and ask who's behind a site that presents only one side of a contentious issue. But in every case and at every level, we were taken aback by students' lack of preparation.

For every challenge facing this nation, there are scores of websites pretending to be something they are not. Ordinary people once relied on publishers, editors, and subject matter experts to vet the information they consumed. But on the unregulated Internet, all bets are off. Michael Lynch, a philosopher who studies technological change, observed that the Internet is "both the world's best factchecker and the world's best bias confirmer—

often at the same time." Never have we had so much information at our fingertips. Whether this bounty will make us smarter and better informed or more ignorant and narrow-minded will depend on our awareness of this problem and our educational response to it. At present, we worry that democracy is threatened by the ease at which disinformation about civic issues is allowed to spread and flourish.

SEQUENCE OF ACTIVITIES

Our work went through three phases during the 18 months of this project.

Prototyping assessments. Our development process borrows elements of "design thinking" from the world of product design, in which a new idea follows a sequence of prototyping, user testing, and revision in a cycle of continuous improvement.² For assessment development, this process is crucial, as it is impossible to know whether an exercise designed by adults will be interpreted similarly by a group of 13-year-olds.

In designing our assessments, we directly measured what students could and could not do. For example, one of our tasks sent high school and college students to MinimumWage.com, ostensibly a fair broker for information on the relationship between minimum wage policy and employment rates. The site links to reputable sources like the New York Times and calls itself a project of the Employment Policies Institute, a nonprofit organization that describes itself as sponsoring nonpartisan research. In open web searches, only nine percent of high school students in an Advanced Placement history course were able to see through MinimumWage.com's language to determine that it was a front group for a D.C. lobbyist, or as Salon's headline put it, "Industry PR

Firm Poses as Think Tank."³ Among college students the results were actually worse: Ninety-three percent of students were snared. The simple act of Googling "Employment Policies Institute" and the word "funding" turns up the *Salon* article along with a host of other exposés. Most students never moved beyond the site itself.⁴

Validation. To ensure that our exercises tapped what they were supposed to (rather than measuring reading level or test taking ability), we engaged in extensive piloting, sometimes tweaking and revising our exercises up to a half-dozen times. Furthermore, we asked groups of students to verbalize their thinking as they completed our tasks. This allowed us to consider what is known as cognitive validity, the relationship between what an assessment seeks to measure and what it actually does.⁵

Field Testing. We drew on our extensive teacher networks for field-testing. The Stanford History Education Group's online Reading Like a Historian curriculum⁶ is used all over the country and has been adopted by Los Angeles Unified School District,⁷ the second largest school district in the U.S. With help from teachers in L.A. and elsewhere, we collected thousands of responses and consulted with teachers about the appropriateness of the exercises. Together with the findings from the cognitive validity interviews, we are confident that our assessments reflect key competencies that students should possess.

OVERVIEW OF THE EXERCISES

We designed, piloted, and validated fifteen assessments, five each at middle school, high school, and college levels. At the middle school level, where online assessment is in its infancy, we designed paper-and-pencil

measures using digital content. We used screen shots of Slate's landing page to assess students' ability to distinguish between a news item and an ad. Similarly, we used screen shots of tweets, Facebook posts, and a reproduction of CNN's website in crafting other exercises. We are mindful of the criticism of using paper-and-pencil measures to assess students' ability to judge online sources. At the same time, there is evidence from the OECD that important abilities for evaluating online sources can be measured offline.8 Even more crucial in our decision, however, was the hope that our assessments would be used in underresourced schools where online assessment often remains a remote possibility. Our middle school assessments provide easy-to-use measures that teachers and others can use to gauge students' basic skills. At the high school level, we designed more complex tasks that asked students to reason about multiple sources; at the college level, the exercises were administered online. When students are working at advanced levels, there is nothing to prevent the high school exercises from being used with middle school students, or the college exercises from being used with high school students.

Summaries of each of our exercises are below. The exercises in bold appear in the following pages.

Middle School

- News on Twitter: Students consider tweets and determine which is the most trustworthy.
- Article Analysis: Students read a sponsored post and explain why it might not be reliable.
- 3) Comment Section: Students examine a post from a newspaper comment section and explain whether they would use it in a research report.

- 4) News Search: Students distinguish between a news article and an opinion column.
- 5) Home Page Analysis: Students identify advertisements on a news website.

High School

- Argument Analysis: Students compare and evaluate two posts from a newspaper's comment section.
- 2) News on Facebook: Students identify the blue checkmark that distinguishes a verified Facebook account from a fake one.
- 3) Facebook Argument: Students consider the relative strength of evidence that two users present in a Facebook exchange.
- 4) Evaluating Evidence: Students decide whether to trust a photograph posted on a photo-sharing website.
- 5) Comparing Articles: Students determine whether a news story or a sponsored post is more reliable.

College

- 1) Article Evaluation: In an open web search, students decide if a website can be trusted.
- 2) Research a Claim: Students search online to verify a claim about a controversial topic.
- 3) Website Reliability: Students determine whether a partisan site is trustworthy.
- 4) Social Media Video: Students watch an online video and identify its strengths and weaknesses.
- 5) Claims on Social Media: Students read a tweet and explain why it might or might not be a useful source of information.

NEXT STEPS

We envision several next steps that build on what we have accomplished. These include:

Assessment for Learning. Although our tasks could be used in a variety of ways, we think they are powerful tools for classroom instruction. Rather than simply serving as assessments of learning, they can also be assessments for learning, or what are known as "formative assessments." Teachers can use our tasks to track student understanding and to adjust instruction accordingly. Similarly, teachers can use these exercises as the basis for broader lessons about the skills these tasks measure. We also hope to create accompanying materials that help teachers incorporate these tasks into the flow of classroom instruction.

Curriculum development. Teachers also need curriculum focused on developing students' civic online reasoning. Drawing on our experience in developing the *Reading Like a Historian* curriculum, we have begun to pilot lesson plans that can be used in conjunction with our assessments. In the coming months, we will be working closely with teachers to refine these materials and to implement them in classrooms.

Awareness of the Problem. When we began our work we had little sense of the depth of the problem. We even found ourselves rejecting ideas for tasks because we thought they would be too easy. Our first round of piloting shocked us into reality. Many assume that because young people are fluent in social media they are equally savvy about what they find there. Our work shows the opposite. We hope to produce a series of high-quality web videos to showcase the depth of the problem revealed by students' performance on our tasks and

demonstrate the link between digital literacy and citizenship. By drawing attention to this connection, a series of videos could help to mobilize educators, policymakers, and others to address this threat to democracy.

¹ Michael P. Lynch, "Googling is Believing: Trumping the Informed Citizen," *New York Times*, March 9, 2016. Retrieved from http://opinionator.blogs.nytimes.com/2016/03/09/googling-is-believing-trumping-the-informed-citizen/

² Tim Brown, "Design Thinking," *Harvard Business Review* 86, no. 6 (2008): 84-95.

³Lisa Graves, "Corporate America's New Scam: Industry P.R. Firm Poses as Think Tank!" *Salon*, November 2013. Retrieved from http://www.salon.com/2013/11/13/corporate_americas_new_scam_industry_p_r_firm_poses_as_think_tank/

⁴ We recommended that students spend about ten minutes on this task, but there was nothing that prevented them from spending more, as the exercise was self-administered. We can say with some assurance that the issue here was not one of running out of time.

⁵ James W. Pellegrino, Naomi Chudowsky, and Robert Glaser, eds., Knowing What Students Know: The Science and Design of Educational Assessment. (Washington: National Academies Press, 2001).

⁶ http://sheg.stanford.edu

⁷ achieve.lausd.net/page/5965

⁸ Organisation for Economic Cooperation and Development, *Students, Computers and Learning: Making the Connection* (Paris: OECD Publishing, 2015).

HOME PAGE ANALYSIS

i. This is / is not (cheic one) an
advertisement because
2. This is / is not (circle one) an
advertisement because
advertisement because
3. This is / is not (circle one) an
advertisement because

1 This is / is not (circle one) an

Here is the home page of Slate.com. Some of the things that appear on Slate.com are news stories, and others are advertisements.



We know you've got a story.

SAVE \$20 USE CODE: SAVE 20 USE CODE:





SPONSORED CONTENT

The Real Reasons
Women Don't Go
Into Tech

When Is Cheryl's Birthday?

A simple chart that explains the logic problem that spread around the world.

By Laura Bradley and Marie Lindemann





MOST RECENT

SEE ALL >

24M AGO - JORDAN WEISSMAN - 1M TO READ

Forget Steak and Seafood: Here's How Welfare Recipients Actually Spend Their Money

30M AGO - BEN MATHIS-LILLEY

Buckingham Palace Guard Falls Over (Video)

45M AGO - L. BRADLEY & A.M. LINDEMANN - 2M TO READ

When is Cheryl's Birthday? Solving a Logic Problem That Quickly Spread Around the World.



OVERVIEW

Many news organizations have turned to *native advertising* as a source of revenue. By definition, native advertising tries to sell or promote a product in the guise of a news story. Native advertising makes it difficult for unsuspecting readers to know if and when there is an ulterior motive behind the information they encounter.

In this assessment, students are presented with the home page of *Slate* magazine's website, which includes both news items and advertisements. The task assesses students' ability to distinguish between an article and an advertisement. Students must evaluate three different sections of the web page—a traditional advertisement, a news story, and a native advertisement—and determine the nature of each. Successful students understand the different forms that advertising can take and identify both traditional and native advertising. They are also able to explain the features that distinguish a news story from an ad.

We piloted several drafts of this task with 350 middle school students. We completed final piloting with 203 middle school students. Results indicated that students were able to identify traditional news stories and traditional advertisements: more than three-quarters of the students correctly identified the traditional advertisement and the news story. Unfortunately, native advertising proved vexing for the vast majority of students. More than 80% of students believed that the native advertisement, identified by the words "sponsored content," was a real news story. Some students even mentioned that it was sponsored content but still believed that it was a news article. This suggests that many students have no idea what "sponsored content" means and that this is something that must be explicitly taught as early as elementary school.

RUBRIC

MASTERY	Student correctly identifies the item as an ad or non-ad and provides coherent reasoning.
EMERGING	Student correctly identifies the item as an ad or non-ad but provides limited or incoherent reasoning.
BEGINNING	Student incorrectly identifies the item as an ad or non-ad.

SAMPLE RESPONSES

TRADITIONAL AD: GOTHAM WRITERS

MASTERY

These students correctly categorized this as an ad based on several of its features.

It has the "Ad Choices" and "Stop Seeing this Ad" buttons
in the top right corner.

It has a coupon clode, a big company logo, and has the words
"limited time offer."

In the left side there is something that says save \$20, and usually money is involved if people are selling something.

EMERGING

This student engages in circular reasoning.

It is an advertisement because it advertises something.

This student chooses an irrelevant factor: how "useful" the content seems as a reason it is an advertisement.

It is an advertisement because there's no "really useful" thing on it.

NEWS ARTICLE: CALIFORNIA ALMONDS

MASTERY

Student correctly identifies this story as an article and identifies several features of the article that helped her categorize it as an article.

There is no little blue x, it has an author of the article, and it doesn't say it is sponsored content.

EMERGING

Student identifies a feature that may or may not indicate its status as an ad.

It is not an advertisement because it does not have a blue button on top.

BEGINNING

This student argues that the story is an advertisement.

people that almonds aren't bad and that you should buy them.

NATIVE AD: WOMEN IN TECH

MASTERY

This student explains that the words "sponsored content" signify that the story is an advertisement.

Despite that the advertisement takes the form of an article, it is an ad as it states "Sponsored Content," meaning the content is created by a company who paid money to the publication.

EMERGING

This student correctly identifies the story but offers an inaccurate idea about what being "sponsored" means.

It is being sponsored by the website to promote their company.

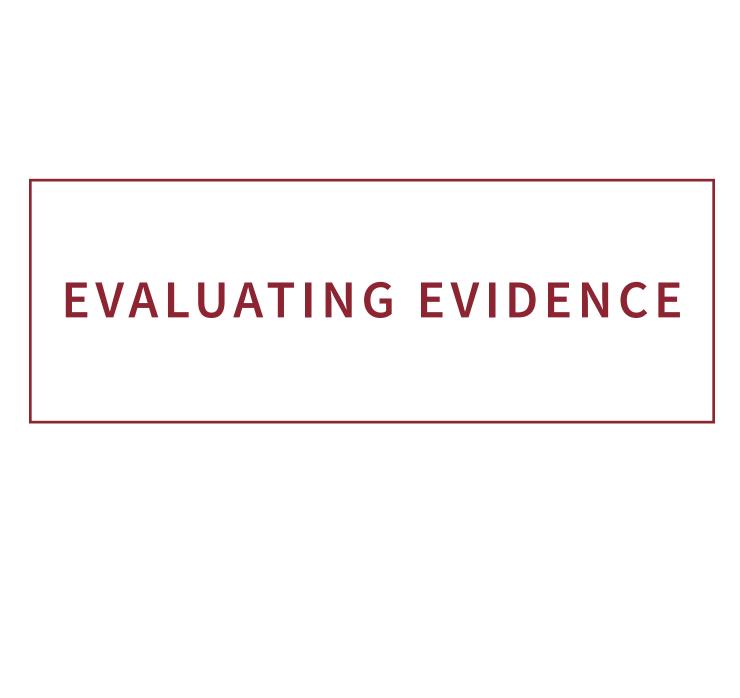
BEGINNING

This student argues that this story must be an article because it lacks traditional features of an ad.

There is nothing to suggest that something is sold. No money, deals, etc. It sounds like an article.

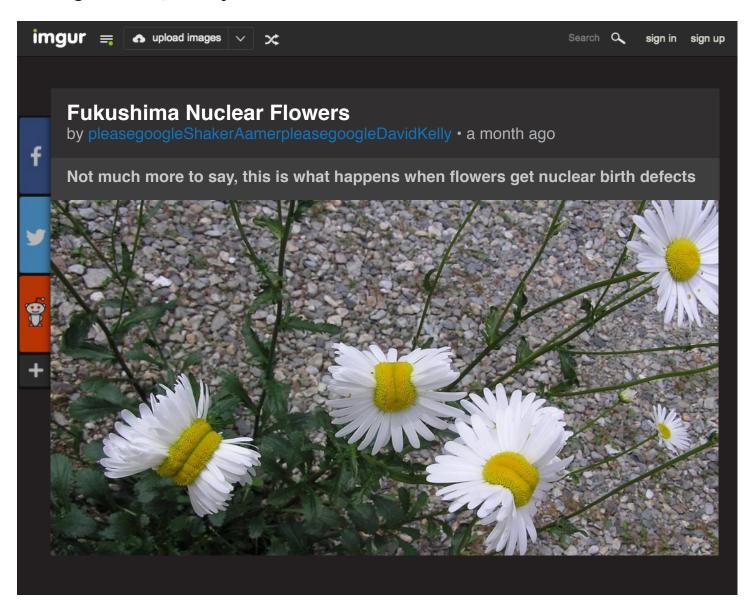
This student notices the words "sponsored content" but still argues that it is an article.

It is another article. Even if it's marked "sponsored content," it is another article.





On March 11, 2011, there was a large nuclear disaster at the Fukushima Daiichi Nuclear Power Plant in Japan. This image was posted on Imgur, a photo sharing website, in July 2015.



Does this post provide strong evidence about the conditions near the Fukushima Daiichi Power Plant? Explain your reasoning.

OVERVIEW

Given the vast amount of information available online, students need to be able to distinguish between legitimate and dubious sources. Students need to ask a basic question: Where did this document I'm looking at come from? This task assesses whether students will stop to ask this question when confronted with a vivid photograph. Students are presented with a post from *Imgur*, a photo sharing website, which includes a picture of daisies along with the claim that the flowers have "nuclear birth defects" from Japan's Fukushima Daiichi nuclear disaster.

Although the image is compelling and tempting to accept at face value, successful students will argue that the photograph does not provide strong evidence about conditions near the nuclear power plant. Students may question the source of the post, arguing that we know nothing about the credentials of the person who posted this photo (especially since it appears on a site where anyone can upload a photo). Alternatively, students may point out that the post provides no proof that the picture was taken near the power plant or that nuclear radiation caused the daisies' unusual growth.

Various drafts of this task were piloted with 454 high school students. The final version was given to 170 high school students. By and large, students across grade levels were captivated by the photograph and relied on it to evaluate the trustworthiness of the post. They ignored key details, such as the source of the photo. Less than 20% of students constructed "Mastery" responses, or responses that questioned the source of the post or the source of the photo. On the other hand, nearly 40% of students argued that the post provided strong evidence because it presented pictorial evidence about conditions near the power plant. A quarter of the students argued that the post did not provide strong evidence, but only because it showed flowers and not other plants or animals that may have been affected by the nuclear radiation.

RUBRIC

the source of the post) and/o		Student argues the post does not provide strong evidence and questions the source of the post (e.g., we don't know anything about the author of the post) and/or the source of the photograph (e.g., we don't know where the photo was taken).
	EMERGING	Student argues that the post does not provide strong evidence, but the explanation does not consider the source of the post or the source of the photograph, <i>or</i> the explanation is incomplete.
	BEGINNING	Student argues that the post provides strong evidence or uses incorrect or incoherent reasoning.

SAMPLE RESPONSES

MASTERY

This student questions the source of the photo, arguing that there is no way to know whether the photo was actually taken near the plant or if the mutations were a result of nuclear radiation.

No, it does not provide strong evidence about the conditions near the Fukushima Daiichi power plant. It does not provide strong evidence because it could just be a mutation in the plant. There also isn't evidence that this is near the Fukushima Daiichi power plant.

This student questions the source of the post, arguing that we know nothing about the poster's credentials or whether the evidence was doctored.

No, it does not really provide strong evidence. A photo posted by a stranger online has little credibility. This photo could very easily be Photoshopped or stolen from another completely different source; we have no idea given this information, which makes it an unreliable source.

EMERGING

This student begins to question both the photo and the source of the post but does not fully explain his thinking.

This post does not provide strong evidence about conditions near the power plant. They just put a picture of a flower. Plus the poster has a strange username.

This student critiques the evidence by arguing that it could have been digitally altered but does not offer any further explanation or critique of the evidence.

No, because this picture could be Photoshopped.

BEGINNING

This student accepts the evidence at face value, arguing that it provides visual proof of the effects of the nuclear disaster.

This post does provide strong evidence because it shows how the small and beautiful things were affected greatly, that they look and grow completely different than they are supposed to. Additionally, it suggests what such a disaster could do to humans.

Although this student argues that the post does not provide strong evidence, she still accepts the photo as evidence and simply wants more evidence about other damage caused by the radiation.

No, this photo does not provide strong evidence because it only shows a small portion of the damage and effects caused by the nuclear disaster.





The following tweet appears in your Twitter feed:

https://twitter.com/MoveOn/status/6 66772893846675456?lang=en

Why might this tweet be a useful source about NRA members' opinions on background checks? List any sources you used to make your decision.

Your answer

Why might this tweet not be a useful source about NRA members' opinions on background checks? List any sources you used to make your decision.

Your answer



Never submit passwords through Google Forms.

The assessment directs students to this webpage:



OVERVIEW

Twitter is filled with individuals and groups seeking to further their agendas. In order to navigate this sea of information, students need to be able to weigh the relative strengths and weaknesses of tweets as sources of information. Specifically, students need to consider the sources of tweets and the information contained in them.

This task presents students with a tweet from the liberal advocacy organization MoveOn.org that reads: "New polling shows the @NRA is out of touch with gun owners and their own members." The tweet includes a graphic that asserts, "Two out of three gun owners say they would be more likely to vote for a candidate who supported background checks." The tweet contains a link to a press release by the poll's sponsor, the Center for American Progress, another liberal advocacy organization. Both the news release and the tweet indicate that Public Policy Polling conducted the poll in November 2015. Students are asked why this tweet might and might not be a useful source of information. Strong responses will note that the tweet may provide useful information given that it is based on a poll conducted by a professional polling firm. At the same time, students must acknowledge how the political motivations of the Center for American Progress and MoveOn.org, both of which support stronger gun control measures, may have shaped the structure of the poll and how its results were publicized.

We piloted this task with 44 undergraduate students at three universities. Results indicated that students struggled to evaluate tweets. Only a few students noted that the tweet was based on a poll conducted by a professional polling firm and explained why this would make the tweet a stronger source of information. Similarly, less than a third of students fully explained how the political agendas of MoveOn.org and the Center for American Progress might influence the content of the tweet. Many students made broad statements about the limitations of polling or the dangers of social media content instead of investigating the particulars of the organizations involved in this tweet.

An interesting trend that emerged from our think-aloud interviews was that more than half of students failed to click on the link provided within the tweet. Some of these students did not click on any links and simply scrolled up and down within the tweet. Other students tried to do outside web searches. However, searches for "CAP" (the Center for American Progress's acronym, which is included in the tweet's graphic) did not produce useful information. Together these results suggest that students need further instruction in how best to navigate social media content, particularly when that content comes from a source with a clear political agenda.

RUBRIC

➤ Question 1: Why might this tweet be a useful source?

MASTERY	Student fully explains that the tweet may be useful because it includes data from a poll conducted by a polling firm.
EMERGING	Student addresses the polling data and/or the source of the polling data but does not fully explain how those elements may make the tweet useful.
BEGINNING	Student does not address the polling data or the source of the polling data as a reason the tweet may be useful.

SAMPLE RESPONSES

MASTERY

This student identifies the polling firm and provides evidence of the firm's reliability.

The polling information which the tweet references was collected by Public Policy Polling, which appears to have a fairly strong accuracy record, though with a Democratic bent (e.g., Wall Street Journal article: http://www.wsj.com/articles/SB122592455567202805)

EMERGING

This student references the poll but does not explain why that makes the tweet a useful source of information.

The photo used in this tweet was compiled from a public policy polling survey.

BEGINNING

This student focuses on the tweet's appearance rather than its content.

It could be useful because a graphic with a strong message can be enlightening or more likely thought provoking.

This student equates Twitter followers with trustworthiness.

MoveOn.org has a large following on Twitter.

Question 2: Why might this tweet not be a useful source?

MASTERY	Student fully explains how the political motivations of the organizations involved may have influenced the content of the tweet and/or poll, which may make the tweet less useful.
EMERGING	Student addresses the source of the tweet or the source of the news release but does not fully explain how those elements may make the tweet less useful.
BEGINNING	Student does not address the source of the tweet or the source of the news release as reasons the tweet may be less useful.

SAMPLE RESPONSES

MASTERY

This student explains how MoveOn.org's work as a political advocacy organization might influence the tweet's contents.

According to the MoveOn.org Wikipedia page, MoveOn.org is a "progressive public policy" group and thus will most likely be against most any media or information distributed by the NRA. The criticisms section of the Wikipedia page cited more than one instance of MoveOn.org distorting the truth and even attempting to alter Google searches for their own benefit. I would seek a different source to know NRA members' opinions on background checks.

EMERGING

The student suggests that the tweet is politically motivated but does not explain how this might influence the content of the tweet.

Although MoveOn.org claims to be independent, they also were paid to work on Obama's campaign so are clearly Democrat-oriented, and the NRA members tend to be Republicans (http://front.moveon.org/about/#.V0NYK5MrLBI).

BEGINNING

This student focuses on the nature of Twitter rather than the source of the tweet.

Twitter is a social platform built for sharing opinions, and though there are plenty of news organizations sharing facts on Twitter, I'd be more likely to trust an article than a tweet.

