This research is part of the RAND Corporation’s Countering Truth Decay initiative, which studies the diminishing role of facts and analysis in public life. Through this initiative, RAND has invited researchers and engaged stakeholders to find solutions that counter Truth Decay and the threat that it poses to evidence-based policymaking.

The original report identified four trends related to Truth Decay, which we link to media literacy education in this report: (1) increasing disagreement about facts and analytical interpretations of facts and data, (2) declining trust in formerly respected sources of facts, (3) a blurring of the line between opinion and fact, and (4) the increasing relative volume and resulting influence of opinion and personal experience over facts (Kavanagh and Rich, 2018).

This report is one in a series addressing ways that education can play a role in curbing Truth Decay. More information about Truth Decay is available at www.rand.org/truth-decay

ML education work best and how ML education can be implemented effectively. Research about the effectiveness of ML education has focused on a variety of skills, such as understanding that media images are often unrealistic (Fingar and Jolls, 2013), critically evaluating and applying research to problems (Crist, Duncan, and Bianchi, 2017), detecting bias and interpreting news stories (Tully, Vraga, and Smithson, 2020), and others. The wide-ranging interpretations of ML competencies pose challenges in aggregating research on the effectiveness of ML educational interventions.¹

¹ The National Association for Media Literacy Education and its partners are undertaking a research initiative to address the challenge of aggregating research about the impact of ML. See Mihailidis et al., undated.
In addition to the various ways that ML is defined in research, there is also no shortage of ML-relevant standards. These standards originate from such fields as information literacy, news literacy, digital literacy, 21st Century Skills, and others. We have identified dozens of lists of ML-relevant standards in our research. This degree of saturation can make it difficult for educators to know where to start; rather than encouraging ML education, the volume of relevant standards and resources can create confusion. The large number of existing standards can also make it challenging for educators and policymakers to understand how to define ML for themselves and to determine what competencies are most important to their work. To address this, a previous RAND report (Huguet et al., 2019) suggested that an important step in using ML education to help mitigate Truth Decay would be to identify one set of key ML competencies and present these competencies in the form of standards. In this report, we do just that. Instead of creating our own, our team read dozens of existing sets of standards and distilled them to those most relevant to countering Truth Decay at this unique time in history. We emphasize that the standards we offer do not encompass the full array of ML competencies; instead, our selected standards are a synthesized list distilled using the specific lens of Truth Decay. The goal of this report is to equip educators, policymakers, ML advocates, and researchers with a targeted list of standards that clearly identify competencies related to countering Truth Decay.

The wording of our Truth Decay ML standards is drawn from other standards that were typically written for the high school level, but we believe they can inform instruction at all grade levels. We opted for high school because adolescents’ typical cognitive development makes this group particularly well suited for instructional experiences that address the often complex phenomena related to Truth Decay. At the same time, those who work with younger students might find these standards to be a useful reference for thinking about longer-term ML goals and informing the creation of developmentally appropriate standards for those students. Given that younger-grade students also access media (including the internet)—often without adult supervision—these standards can provide an important starting point for conversations about younger students’ ML needs. State or local education agencies or other education-focused organizations commonly adopt standards in core content areas (e.g., mathematics, language arts) to define competencies that students are expected to learn. Standards are developed by subject-matter experts, and school districts, states, or other bodies adopt those standards to guide decisions about instruction and assessment. Education standards typically specify “what students should know and be able to do” (Dusenbury et al., 2020, p. 3) rather than describing specific pedagogical practices that teachers might be expected to adopt. In this way, standards provide educators with information about learning expectations but do not dictate exactly how educators should go about ensuring that students meet those expectations. Clearly specified standards can help create a common language about the knowledge, skills, and dispositions that students should master, and they can also serve as a means of communicating expectations about what outcomes educators should prioritize (Collaborative for Academic, Social, and Emotional Learning, undated; Hamilton, Stecher, and Yuan, 2012). Standards-aligned resources—such as high-quality curriculum materials, professional development, and support from school or district leaders—can promote standards-aligned instruction (Kaufman et al., 2020; Pak et al., 2020).

Standards for a subject or topic can inform important aspects of teaching and learning. Teachers can use standards to guide their instruction directly, such as by developing lessons that target competencies in the standards or adopting standards-aligned instructional materials developed by others. Standards also often shape teachers’ professional development. Moreover, standards often inform the development of both large-scale and classroom-based assessments. For several subjects, state standards are the backbone of state accountability systems under the Every Student Succeeds Act (Olson, 2019). Regardless of the intended use of such standards, the specific ways that they define skills are likely to influence how teachers promote these student competencies in their classrooms.

We engaged in a systematic, multiphase process to generate the Truth Decay ML standards presented in this report. We reviewed standards related to ML, news literacy, information literacy, digital literacy, and other relevant subject areas. We also examined social and emotional learning standards, Common Core State Standards, Next Generation Science Standards, and

---

2 ML experts do not agree whether ML should be viewed as a set of discrete skills that can be incorporated into specific standards or instead conceptualized more holistically. Because we are interested in the effectiveness of ML education, we assert that defining explicit competencies is a key step to developing appropriate measures necessary for research in the area of ML education.
other standards that overlap with the content of ML—all of which were written by experts in their fields. We sought to narrow these lists exclusively to standards related to Truth Decay, and then synthesize all those lists into one simplified set. Because we used the Truth Decay lens to focus our analysis, we excluded competencies that are relevant to participating in the information ecosystem but not to the core of Truth Decay—such as “keyboard and mouse skills” and familiarity with “hardware, storage, and file management practices” (Hobbs, 2010). We also focused less on creativity in our ML standards than we would have if we were not focused on Truth Decay—for example, we did not include standards like, “Create multimedia presentations with multiple pages, audio, images, and transitions for individual assignments” (Arizona Department of Education, 2009).3

We list the standards in the following section, organizing them into four categories that align with the previously mentioned Truth Decay trends. We then briefly discuss each trend and how the standards address it. We do not provide detailed descriptions of each standard, nor do we provide instructional guidance; rather, we identify the primary competencies that educators can promote to equip their students to limit the spread of Truth Decay. In the conclusion, we explain how we view these standards as applicable across different stakeholder groups.

These standards represent the competencies that are required to engage in the information ecosystem in a way that can help curtail Truth Decay. We wish to reiterate that the standards we offer do not encompass the full array of ML competencies; instead, they are a synthesized list written using the specific lens of Truth Decay. Again, we have framed these standards to be developmentally appropriate for high school students, but they can also inform standards for younger grades and adults of all ages.

Although we organized our list of standards using the four trends of Truth Decay, these trends are not mutually exclusive. The trends are interrelated by their nature; therefore, some standards could actually fall under more than one trend. We selected one trend for placement of each standard for the purpose of organization, but we encourage readers to consider ways that the standards might cross the boundaries of these categories.

3 Details on our methods for developing our list and a full list of the sets of existing standards referenced for this report are provided in the online appendixes (Huguet et al., 2021).
MEDIA LITERACY STANDARDS

Seeking a complete understanding of the facts

**TRUTH DECAY**

**TREND:** increasing disagreement about facts and analytical interpretations of facts and data

1. Recognize limitations of one's own knowledge or understanding of the facts.
2. Use strategies to fill gaps in knowledge (e.g., connecting with experts on a topic; seeking information in a library; using search engines to find additional information).
3. Understand how modern information sources and tools can limit available facts and perspectives (e.g., search engine algorithms; specialized discussion groups; selection in social media connections).

Identifying trustworthy sources of information

**TRUTH DECAY**

**TREND:** declining trust in formerly respected sources of facts

4. Identify the expertise (e.g., academic, office held, firsthand knowledge) and consider the motivations (e.g., political, financial) of the creator of an information product.
5. Evaluate whether information products meet established standards for process and presentation (e.g., scientific process, journalistic standards, peer review).
6. Analyze information for bias, deception, or manipulation.
7. Consider the social, political, and historical contexts of an information product and how those contexts influence meaning.

Evaluating the credibility of information and soundness of arguments

**TRUTH DECAY**

**TREND:** a blurring of the line between opinion and fact

8. Understand the ways in which technology has the capability to undermine formerly trustworthy information products (e.g., audio and video “deep fakes”).
9. Analyze whether evidence provided for an argument is adequate and can be independently confirmed; identify gaps in support or reasoning.
10. Compare multiple viewpoints on a topic and use evidence to determine how to manage discrepancies.
11. Recognize the ways that media and information products might trigger emotional responses that influence attitudes or elicit specific behaviors.

Responsible engagement to counter Truth Decay

**TRUTH DECAY**

**TREND:** the increasing relative volume and resulting influence of opinion and personal experience over fact

13. Recognize personal and cultural perspectives, particularly on controversial topics, and how those can influence interpretations of information.
14. Maintain openness to updating one's own views when presented with new facts or evidence.
15. Take action rooted in evidence (e.g., construct new knowledge, create and share media, engage in informed conversations and decisions about important issues).
At the center of Truth Decay is an increasing disagreement about facts and analytical interpretations of facts and data. To address this trend, we highlight three standards designed to provide a more complete understanding of facts. First, we note the need for an ability to identify gaps in one’s knowledge or understanding (Standard 1). When forming or updating an opinion about a topic, it is critical to identify where information is missing from one’s own knowledge or from the claims of others. Next, we suggest using strategies to fill those knowledge gaps (Standard 2), such as connecting with experts in a topic, seeking information in a library, or using search engines to find additional perspectives. Importantly, when seeking to augment knowledge, one must also understand how modern information sources and tools can limit or prioritize available facts and perspectives (Standard 3). For instance, seeking evidence via social media can result in gathering information from a select group of individuals who might represent less-than-balanced viewpoints (Cohen, 2018; Eady et al., 2019); when seeking information using search engines, the information that rises to the top of one’s search can be determined by algorithms and actually mislead rather than inform (Shin and Valente, 2020). Students who master Standard 3 would not rely solely on their in-group on social media for information, and they would recognize that the first link identified in an internet search is not always the best source for factual information.

The second trend of Truth Decay is declining trust in formerly respected sources of facts and information. Standards related to this trend focus on understanding sources of information and their motivations. Public trust in journalism outlets, universities, and other research institutions has plummeted in the past decade (Kavanagh and Rich, 2018), adding to confusion about where to turn for accurate and unbiased information. To combat this challenge, the public at large must be able to recognize the expertise of individuals and organizations presenting information and understand why a particular party might be publishing or sharing information—be it an earnest effort to disseminate facts or an effort that is driven by political, ideological, or economic motives (Standard 4). Understanding the expertise and motivations of the information source relates to understanding the processes that contribute to creating information products (Standard 5); for instance, having a grasp of the steps that journalists must take before publishing a news story in a well-respected news outlet, or having an idea of the rigorous processes that peer-reviewed journal articles must go through prior to publication, might contribute to rebuilding trust in institutions. This knowledge might help individuals compare the credibility of a well-researched journal article with that of an opinion piece. It is critical that consumers also evaluate information for bias, deception, and manipulation more generally (Standard 6) as techniques used to spread misinformation and disinformation evolve. Finally, it is critical for Truth Decay ML standards—and for ML more broadly—that individuals learn to apply knowledge about the context within which information products are produced (Standard 7).

The third trend of Truth Decay focuses on the problematic blurring of the line between opinions and facts. Our standards related to this trend focus on evaluating the credibility of information and the soundness of arguments. ML is vastly more than simply identifying facts versus opinions or truth versus falsehood. These are keys in countering Truth Decay over the long term, however, and our standards outline ways to identify when and where claims fall short. As technology continues to develop, it is crucial that we are aware of the ways that it can be used to doctor images, video, and audio to mislead the public (Standard 8). The technology used to create these “deep fakes” is rapidly evolving, but at the time of publication there remain visual and audio clues that can tip off information consumers (e.g., discolorations in a person’s face, poorly synced sound and video). Having the knowledge that this technology exists is just as important as being able to specifically identify “fakes.” Beyond the visual, we must be able to trace the logic of an argument—analyzing whether evidence is adequate and can be independently confirmed and where there might be gaps (Standard 9). To better understand what is opinion and what is fact, we suggest comparing multiple viewpoints on a single topic and using evidence for each viewpoint to determine how to manage discrepancies (Standard 10). For instance, one perspective on climate change might say that it does not exist; that perspective should be measured against scientific evidence pointing to changing climate patterns. However, identifying what is fact and what is opinion might not be useful in all situations. For example, the Russian misinformation campaigns in the United States during the 2016 election did not solely rely on spreading false information; these campaigns also promulgated emotionally engaging information that could stoke particular reactions from consumers (Helmus et al., 2020). Thus, it is important to recognize how media and information can trigger emotional responses in addition to intellectual ones (Standard 11). Students who master this standard would be able to identify how an advertisement, meme, or other information product uses emotion to persuade them to certain actions, whether that be purchasing particular goods or voting for one candidate over another.
The final Truth Decay trend is the increasing volume and resulting influence of opinion and personal experience over facts. Responsible engagement with the information ecosystem is not simply about consuming information. It is also about creating, sharing, and selectively emphasizing content. Standards in this category focus on individuals’ responsibilities related to anticipating and monitoring the kind of impacts that one’s shared information can have in the virtual and real world (Standard 12). We highlight the importance of building ML skills from the perspective of information creators to slow the increasing volume of opinion and personal experience over facts in the information ecosystem. Standards in this final category also require learners to recognize their own biases and perspectives before contributing commentary or information to ongoing public conversations (Standard 13). Ultimately, this requires openness to updating one’s viewpoint when presented with new information (Standard 14), a competency that is highly challenging when viewpoints are deeply held beliefs or reinforce personal identity. Although this is one of the more challenging standards, research suggests that it is possible to learn how to evolve one’s thinking based on new and changing information (Kahne and Bowyer, 2017). Finally, the actions that students take in response to information should be informed by evidence and a knowledge of context, so that students are able to participate responsibly in broader society (Standard 15).

Conclusion

The Truth Decay ML standards can be a resource for a wide variety of audiences, such as teachers, school and district administrators, curriculum developers, ML advocates, and researchers. We know that most teachers believe that it is important for their students to learn skills related to ML (Hamilton, Kaufman, and Hu, 2020), but the multitude of standards and available resources can make it difficult to know where to start. This report synthesizes myriad existing standards that specifically address the challenge of Truth Decay—drawing from standards in ML, digital literacy, information literacy, news literacy, social and emotional learning, and other areas—to identify a single, concise set of standards. Regardless of whether instruction involves use of stand-alone ML curricula in classrooms or the integration of ML concepts into other academic content, these standards can inform educators’ choices. In selecting ML activities or curricula, teachers might consider the degree to which their options incorporate the 15 standards identified here; some ML programming might focus on content that—although potentially useful in other ways—does not address or only partially addresses the immediate public threat of Truth Decay.

School- and district-level administrators can also use this list to frame their deliberations around ML. At a time when institutions are seeking information about how to best integrate ML into their school materials and others are mandating ML instruction, decisionmakers can use these standards to identify areas of priority for their communities. We also recognize that ML itself is a relatively new concept for some leaders in the position of making these decisions. For those individuals, we hope that this report can help frame conversations.

Curriculum developers also might consider this list when developing resources. A previous RAND report describes how the kinds of competencies covered

4 For instance, in 2019, the Washington Office of Superintendent of Public Instruction (undated) allocated funding for research to better understand ML curricula that could be integrated into existing classes; the Ohio Board of Education (2020) approved statewide standards that include media literacy competencies.
by ML curricula, lesson plans, and other resources vary widely (Huguet et al., 2019). While some may focus on teaching students how to access information, others hone in on skills related to civic education, and still others are about technical issues, such as formatting references. This variety can add to the challenges that teachers and school and district administrators face in decisionmaking. We suggest that developers consider ways that their products can be informed by our list of standards. We particularly encourage the use of these standards in developing aligned curricula and measures of ML skills, which can help in determining and improving on the effectiveness of ML education.

In addition to educators, policymakers, and resource developers, there are numerous advocacy groups that host conferences (such as the National Association for Media Literacy Education) and spread awareness about the importance of ML education. Some of these advocacy organizations also conduct research of their own or develop resources in ML. Although bounded by the Truth Decay lens, our standards might inform their projects and advocacy in ML more broadly as they work to implement systemic change.

Finally, these standards might also be useful to researchers. We have previously identified wide-ranging ways that researchers conceptualize ML (i.e., through a lens of the economic motivations of media, the role of media in civic life and democracy, and tools for discerning information quality) (Huguet et al., 2019). The diversity of ways in which researchers define ML means that it is measured differently across studies, and aggregating findings is a challenge. We recommend focusing on a particular shared group of competencies when designing research and measures for learning outcomes, given the immediate and critical challenge that Truth Decay presents to our society (RAND researchers intend to outline approaches to evaluating ML educational interventions in a forthcoming publication).

References


ABOUT THIS REPORT

This report is one in a series that is part of the Countering Truth Decay initiative. The original report, *Truth Decay: An Initial Exploration of the Diminishing Role of Facts and Analysis in American Public Life*, by Jennifer Kavanagh and Michael D. Rich, was published in January 2018 and identified a research agenda for studying and developing solutions to the Truth Decay challenge. In July 2019, the RAND Corporation released a follow-up report linking media literacy to Truth Decay (*Exploring Media Literacy Education as a Tool for Mitigating Truth Decay*); that was followed in August 2020 by a report describing a nationally representative survey of teachers’ opinions on media in schools (*Media Use and Literacy in Schools: Civic Development in the Era of Truth Decay*). This report is the most recent in the series.

The authors would like to thank Michelle Ciulla-Lipkin, Julia Kaufman, and Susannah Faxon-Mills for their feedback on this report.

This study was undertaken by RAND Education and Labor, a division of the RAND Corporation that conducts research on early childhood through postsecondary education programs, workforce development, and programs and policies affecting workers, entrepreneurship, and financial literacy and decisionmaking. More information about RAND can be found at www.rand.org. Questions about this report should be directed to ahuguet@rand.org and questions about RAND Education and Labor should be directed to educationandlabor@rand.org.

FUNDING

Funding for this research was provided by unrestricted gifts from RAND supporters and income from operations.