

Media Literacy: Connections to Math & Science

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MATH & SCIENCE CONNECTIONS TO MEDIA LITERACY Even though few state teaching standards for math or science mention the media, it is clear that math/science teachers use media in their classrooms and that much of the information we receive about math and science comes from the media. It makes much sense to include visual and media literacy in both science and math instruction. What follows are several articles/essays/resources/research items related to the topic. For educators: you may wish to familiarize yourself with both the [main concepts](#) of media literacy as well as the common [critical thinking/viewing questions](#). Questions/comments? Email me: fbaker1346@aol.com

[Learning Math At the Movies](#) (April 2017)

[UCLA Mathematicians Bring Ocean To Life in Disney Movie](#) (January 2017)

[How the screenwriter worked physics into Passengers](#) (December 2016)

[Arrival, AI and Alien Math](#) (November 2016)

[Genius by Numbers Why Hollywood Math Movies Don't Add Up](#) (April 2016)

[Math of 'The Martian' How It Adds Up](#) (October 2015)

[What The Martian Gets Right and Wrong About Science](#) (September 2015)

[In These Movies, Math & Physics are The Stars](#) (January 2015)

[Math & Science Go To The Head of the Class In Movies](#) (November 2014)

[Using Hollywood To Teach STEM](#) (May 2014)

[The Physics of Spiderman's Webs](#) (April 2014)

[Lesson Plan: Testing The Media](#)

[Media is Unreal: Bring Media Literacy Into Science Literacy](#)
(April 2013)

[What can teachers learn from science-fiction media?](#) (March 2013)

[Science & physics in making 'The Hobbit'](#) (ScienceWorld)

[Visual Literacy: Themed Issue of Science & Children](#) (NSTA)

[Checklist for Analyzing Images in Science](#)

['Bourne' reality: Writer-director Gilroy taps real science](#)

[Teaching Critical Thinking Through Media Literacy](#) (July, Science Scope, NSTA)

[How to read, question and interpret science news stories](#) (May 2012) [Media Analysis Checklist](#)

[Media literacy: now part of the new P21 math curriculum documents](#) (April 2012) see [Science document](#)

[Web Slingers: Behind the scenes of Hollywood's blockbusters](#)
(Current Science April 2012)

[Science on Screen program explains real science in context of popular films](#) (Feb 2012)

[Media Literacy as a Key Strategy toward Improving Public Acceptance of Climate Change Science](#), (BioScience, March 2011)

[The Bright Spots of Kids' Educational TV](#)

[An Opportunity Emerges to Rethink Science Education & Teach Media Literacy](#)

['But if It's in the Newspaper, Doesn't That Mean It's True?'](#)

[Developing Critical Reading & Analysis Skills by Evaluating Newspaper Science with CREATE](#). (American Biology Teacher, Sept 2010)

[Visual Literacy In Science](#) (Science Scope, Summer 2010)

[Math In Movies](#) (streaming video clips)

[Reel or real \(Avatar\)](#) Current Science (April 30 issue)

[Science in Media](#)

[Bringing New Understanding to the Director's Cut](#) (graphic feature)

[Avatar: the real-life science behind the fantasy](#); [Science of Movies: James Cameron Interviews](#)

[The Final Frontier: The Science of Star Trek](#)

Report: Real-world police forensics don't resemble television's 'CSI'

NSDL: Media Literacy in the 21st Century: WGBH Teachers Domain (NSTA webinar)

Science works with Hollywood

Teaching with Web-based videos: helping students grasp the science in popular online resources.

(The Science Teacher, Jan. 2009)

Media and Science: Developing Skepticism and Critical Thinking (Science Scope, November 2008)

Encouraging Visual Literacy (Science and Children Nov 2008)

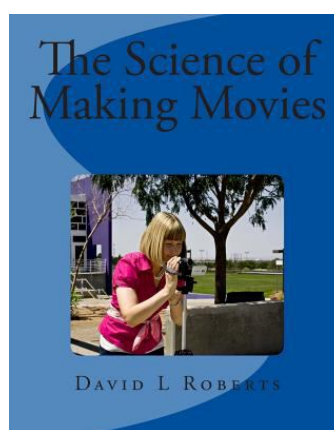
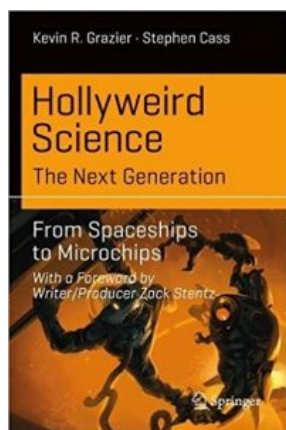
Science Reporting By Press Release (November 2008)

Five Ways to Use Video Equipment in Science Labs (August 2008)

Eliciting Students' Beliefs about Who Is Good at Mathematics (Mathematics Teacher, Aug 2007)

TV As Med School (Oprah Magazine)

Recommended books:



216 Million Americans Are Scientifically Illiterate ([part 1](#), [part 2](#))

The media are partly to blame for Americans' lack of scientific literacy.

Merging Media and Science: Learning to Weigh Sources, Not Just Evidence

Yearbook of the National Society for the Study of Education

Science, literacy, and the internet?

Pseudoscience on TV: Weak Investigations

Turning scientists into screenwriters

IBM supports the deep science of video gaming

Prime Time Science Science at the Movies (2004)

Science would be nowhere without its image(s)

Balance as bias: Global warming and the US Prestige Forget Star Chemistry. How About the Film's?

This summer, the Web site version of the weekly Chemical and Engineering News (<http://pubs.acs.org/cen/reelscience/>) started publishing movie reviews that focus (although not exclusively) on the accuracy of the science, especially the chemistry, in the latest releases.

Science Fictions— understanding news stories which report on drug study results

The pleasure of moving making: reflections on integrating video production technologies into the teacher education curriculum (Spring 2003)

How first year college students read Popular Science: An Experiment in teaching media literacy skills, SIMILE, May 2002

Sci Fi Channel's Battlestar Gallactica Lesson Plan on War Propaganda

Media Literacy In The Science Classroom

Movies Show Scientists: What Do We Learn?

Approaches to Media Literacy In Science Education

The March 2002 issue of Science Scope (publication of the National Science Teachers Association) is dedicated to "Media In The Science Classroom," and includes articles like *Countering Gender Bias In the Media; Star Trek Physics- Where Does the Science End and the Fiction Begin?; Science Fiction and Science Education; Lights, Camera and the Action of Science*, among many others.

Visual literacy in science and tech education

Shutters, Sprockets and Tubes: How Moving Image Machines Work

[Professor Aims to Teach Science With Comics](#)

[Using Comics to Teach Physics](#)

[Science Fictions: The Media's Role in Our Perceptions of Scientists](#)

See also [Math In The Media](#) (original activities and lesson plans about common news stories that use numbers)

[Math & Media: Bias Busters](#) (from the book Rethinking Schools Special edition)

[Math & Photography/ Science of Photography](#)

["Media exposure and knowledge about science"](#) (ED 399 563)

[Use the News: A study of Secondary teachers' use of newspapers in the science classroom](#)

[ENC FOCUS, Volume 8, No. 3 \(late Summer 2001\) "Becoming Literate in Mathematics and Science"](#)

Media Literacy: Yes, It Fits in Math and Science Classrooms

As teachers relate the significance of math and science learning to students' everyday lives, the role of the popular media adds another dimension to the discussion.

by [Frank Baker](#), South Carolina ETV, Columbia, South Carolina

At the end of this article, see:

- [Media Literacy Education Resources](#)

In 1992, a group of media educators gathered to discuss the state of media education. One of the results of their meeting was this definition of media literacy: "...the ability to access, analyze, interpret, and communicate media in a variety of forms..." (Aspen Institute Conference on Media Literacy).

Media literacy education now appears in the curriculum frameworks or standards of 48 states (Kubey & Baker, 1997).

Media education fits quite well into the English/language arts curriculum, as well as social studies and health. But it is also applicable to mathematics and science. Media literacy is about inquiry: asking questions about the news and entertainment media, their makers and their messages. Media literacy is more than analyzing advertising, critical television viewing skills, or making videos with a camcorder. It is a lifelong skill designed to make students wise consumers, critical thinkers, and decision makers.

The Center for Media Literacy (a Los Angeles-based clearinghouse of media education materials) offers these five characteristics of messages delivered to the public via the media:

- All media messages are constructed.
- Media messages are constructed with creative language.
- Different people experience the same media message differently.
- Media messages are primarily driven by a profit motive.
- Media messages have embedded values and points-of-view (Thoman).

It is important that students understand these characteristics as they study media messages related to science and mathematics.

Connections to Science

The 1998 movie *Contact* starred actress Jody Foster as the scientist responsible for deciphering the first extraterrestrial message sent to Earth. The movie was generally applauded by scientists for its authenticity. But, it is rare for Hollywood to accurately portray a female scientist. Stereotypes and misconceptions are frequently generated by television and movie producers.

Classroom teachers can take advantage of students' interest in popular movies to help them analyze the misconceptions. For example, both *Deep Impact* and *Armageddon* posed the question: What would happen if Earth were in danger of being hit by an asteroid or a large comet? Even though scientists tell us the chances of such a collision are small, these movies offer teachers an opportunity to explore how science is portrayed in these and other movies.

Every teacher who uses a video, a CD ROM, or the Internet as part of his or her instruction should ask questions such as this: How does the selection of images by the producer shape our understanding of science concepts?

Even the wealth of science programming by well-known documentary-makers should not be exempt from some inquiry on the part of teachers and students. Rather, the same questions that apply to commercial movies should also be asked of documentaries: who is the producer; what are his or her motives; what techniques does the filmmaker use to convey his message?

Len Masterman, considered one of the world's leading media educators, writes about curriculum connections in his book *Teaching the Media* (1985). He offers these ideas to consider when viewing or reading popular media messages about science and scientists:

- the image, function, and status of science and scientists in the media (e.g., the use of scientists as experts in documentaries and advertisements);
- the scientist as hero (in dramas) or as madman (in much science fiction);
- the validity of scientific tests and principles used in advertisements (e.g., the replication of scientific tests or experiments);
- the integration of popular programs about science into the formal school curriculum;

- the conclusions drawn about scientific issues raised by the media and the scientific principles underlying the issues;
- the exploration of the different philosophies of sciences implicit in advertisements (science as verifiable fact) and documentaries (science as a fertile area of disagreement).

Connections to Math

Math and number literacy are parts of our everyday media exposure: the weatherman tells us there is a 30 percent chance for rain; the morning newspaper reports the stock market numbers; ESPN gives us statistics on sports.

Taking a close look at numbers in the news is a great way to get students to think about and question the source of statistics-and how statistics can be misrepresented. For example, each week, Nielsen Media Research issues its list of the top 100 television shows, based on the shows' ratings and shares. Do students know what rating and share really mean? How are these numbers generated? How are these numbers used by advertisers? Are the numbers accurate?

The advertising industry has been using numbers and statistics for decades. Many of us can remember when one brand of toothpaste made the claim that it was recommended by three out of four dentists. (What about the thousands of other dentists not surveyed?) A car commercial claimed the manufacturer's newest model gave a 30 percent smoother ride than last year's car. (How was smoothness measured?) Teachers can ask students to survey newspapers, magazines, and the Internet for ads that make seemingly outrageous or unsubstantiated claims.

Newspapers and magazines often use bar or pie graphs to visually display information. These graphical displays offer

students another opportunity to analyze how data is portrayed and how accurate or misleading it may be.

Because so many students get their information from the media (television, radio, Internet) it is critical that teachers integrate media literacy into their instruction. Some of the sources listed in the sidebar are good starting points for teachers who want to learn more.

References

Kubey, R., & Baker, F. (1997, October 27). Has Media Literacy Found A Curricular Foothold? *Education Week*, 56.

Masterman, L. (1985). *Teaching the Media*. New York: Routledge.

Thoman, E. (Accessed 2001). *Skills and Strategies for Media Education*. www.medialit.org

Frank Baker is a member of the Founding Board of the Alliance for a Media Literate America (formerly the Partnership for Media Education). He chaired the 1999 National Media Education Conference. Baker works for South Carolina ETV in Columbia, South Carolina.

Media Literacy Education Resources

These web sites provide information and a broad range of resources about media literacy. Alliance for a Media Literate America, formerly the Partnership for Media Education, is a membership group committed to promoting media literacy education. It stages an annual national conference on media education. Its stated mission is to mobilize teachers, parents, social service agencies, public health leaders, and others to support media literacy education. (www.AMediaLitAmerica.org)

Assignment: Media Literacy is a web site that provides K-12 curriculum materials. The site is designed in alignment with state curriculum frameworks in an effort to embed media literacy skills into such subjects as language arts, social studies, health education, and the arts. Samples of student work and teacher dialogues are available. (www.assignmentmedialit.com)

The Center for Media Literacy is a not-for-profit, membership organization located in Los Angeles, California. The center develops and distributes materials to schools and sponsors workshops and conferences. Founder and president of the center is Elizabeth Thoman, a former high school journalism teacher and publisher of a magazine about the media. The center offers a print and an online catalog of resources for teachers. (www.medialit.org/CML)

The Media Literacy Clearinghouse is a web site of background articles and lesson plans. It was funded by the state of South Carolina for the purpose of studying media literacy skills and health-related risks among young adolescents. (<http://www.frankwbaker.com>)

Media Literacy Online Project is housed in the College of Education at the University of Oregon in Eugene. On its web site are links to lesson plans, readings, indexes, and materials for parents. (interact.uoregon.edu/medialit/homepage)

PBS TeacherSource Web Site on Media Literacy gives classroom activities for language arts, social studies, math, science, and health. (www.pbs.org/teachersource/media_li/getting_started.shtm)

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