

Online Course in Science Journalism

Created by the WFSJ and SciDev.Net



Lesson 4 - Writing skills

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4.1 Introduction

A journalist writing about science may be competing against all sorts of other stories and needs to master rules that have much in common with writing about other topics for the media. You will be able to write interesting articles about science as long as you do your research, understand your topic, and have good communicative skills, and follow the normal rules of journalistic writing.

But there are some things that science journalists in particular need to keep in mind. How does one simplify complex scientific jargon, for example? Or how do we help readers comprehend numbers - such as those related to size, volume, weight, and distance - that might be extremely small or extremely large? Or more importantly, how does a science journalist write about a seemingly mundane topic in a way that holds the reader's attention from beginning to end?

By the end of this lesson, you should have an understanding of the basics of good journalistic writing. You'll also learn how to make writing about science more interesting. Learn to use some simple tricks and tools of this trade and your articles will compete with others covering armed conflicts and natural disasters on the front pages of any newspaper or magazine!

4.2 Introduction to different types of science writing

Science writing varies according to the editor, the audience, you, the publication, and the type of reporting required.

A. News story

News stories are written to cover something that happened just now or recently. They are usually, but not always, shorter than other types of stories. They are structured such that the "who, what, when, where, and how" of the story are written in the first sentence or two of the article. News stories usually have short paragraphs and sentences. Conferences, recent scientific discoveries, and infectious disease outbreaks are frequently the subject of news.

EXAMPLE: 2009 carbon emissions fall smaller than expected

[<http://www.bbc.co.uk/news/science-environment-11799073>]

B. Feature article

Feature articles are usually written with more depth than a basic news story. A feature article can cover a news item (something that has just happened) but provides more information and covers more ground. Feature articles also cover stories that are ongoing or which have less urgency. They usually have an interesting introduction that grabs the reader's attention, followed by a 'nut graf' to focus the story, and then the main body of the piece containing background information. Finally, there may be a conclusion, a final climax or joke, or an unusual side story to draw the piece to an end.

EXAMPLE:

Greening Desert

[<http://www.unep.org/OurPlanet/imgversn/171/Nadia%20el%20Awady.pdf>]

C. The interview

Although we resort to interviews with experts, researchers, scientists, and people "on-the-street," a single interview can be the focus of an article. These articles are usually written in question-and-answer style, although they can also be written more imaginatively. The important point is that the reader's attention should be focused not only on the topic, but on the person and his or her views. Through these articles, we help our audiences better understand how a certain person thinks about one topic or a large variety of topics (see Chapter 3: The interview [<http://www.wfsj.org/course/lesson.htm?e=e03>]).

EXAMPLE:

Here's an interview written in Q&A format:

Shrek and the quest for perfecting 3D animation

[<http://www.onislam.net/english/health-and-science/technology/438262.html>]

D. Editorial, analysis, commentary, or opinion piece

As SciDev.Net's director, David Dickson, writes:

The purpose of an editorial is to provide a point of view on an issue of topical interest.

An editorial may either be unsigned or signed. If the editorial is unsigned, it is usually taken to represent the views of the publication or website in which it appears, as expressed either by the editor, or by a staff member (or occasionally a freelance contributor) writing with the editor's support.

If an editorial is signed, it does not represent the point of view of the publication or website. However it is generally accepted that the editorial has been given a prominent position because the editor (or editorial staff) feel that it is a point of view that deserves an audience.

An editorial should include both a clear conclusion on the topic being addressed, and a clear logical structure that sets out the facts and arguments on which this conclusion is based. It may also describe counterarguments, indicating briefly why the author disagrees with them.

The following points should be born in mind when writing editorials:

1. Ensure that you express your opinion clearly and succinctly.
2. Ensure that your arguments have a logical structure.
3. Avoid technical or obscure language.
4. Avoid the need to refer to other articles or web pages for the argument to be intelligible.
5. Avoid abusive language (and remember that there is a fine line between legitimate and potentially libellous comment!)

EXAMPLE:

See this editorial by David Dickson for SciDev.Net

Water security and climate change: how science can help

[<http://www.scidev.net/en/editorials/water-security-and-climate-change-how-science-can-help.html>]

E. Investigative report Investigative reporting involves extensive and original research and investigation into a particular topic. It usually involves finding an answer to an important and often controversial question, such as: "Does the local water supply really explain reports of an increased incidence of a certain disease in the area?" or "Are researchers who claim to have cloned the first human telling the truth?"

Scientists, in this kind of report, may be the expert witnesses upon whose work the journalist relies in uncovering the truth, or they may be the focus of the investigation. And the science journalist may need to pit one scientist's views against another in order to tell the story.

Investigative reporting usually takes more time because it is more difficult to find people who have the answers, or who are willing to be interviewed. It may be that there are no ready answers and the journalist has to work hard to find any. But the quality of the research will certainly influence the final piece (see also "Do the leg work"

[http://poynter.blogs.com/narrative/2003/12/do_the_leg_work.html]

Investigative reports can result in a single article or in a series of in-depth articles and reports.

EXAMPLE: This is an investigative article published by Nature magazine about the trial of six medical workers in Libya accused of infecting children with HIV:

'A shocking lack of evidence'

[<http://www.nature.com/nature/journal/v443/n7114/full/443888a.html>]

F. Blogs

In most styles of writing, journalists are expected to distance themselves as individuals in order to report fairly, in a balanced and unbiased manner. Blogs, however, have provided journalists with an outlet for their innermost thoughts, experiences, and adventures.

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With almost any story that a journalist covers, there is a story behind the story. For example, if a journalist goes to Iran to cover the nuclear energy issue, there will certainly be stories about how he initially came across the information. And if your editor limits you to a 500-word news story, you can write an extended version in your blog.

Blogs are normally presented on the websites of specific individuals. There are many free online programs that enable you to write a blog, Wordpress [<http://www.wordpress.org>] being the most well-known. Also, the newspaper or magazine you write for might have a special section on its website devoted to journalists' blogs. Speak with your editor if you have a story-behind-the-story to share.

Blogs have a different tone of voice than newspaper writing. In blogs the writer doesn't only speak in the third person, objectively, but also includes himself/herself in the writing.

EXAMPLE:

Take a look at these blog entries from Pulitzer Prize-winning science writer Deborah Blum:

[<http://blogs.plos.org/speakeasyscience/>]

The more varied forms of science writing you do the larger your potential market.

4.3 Basics of science writing in any style

A. Bring the science down to earth

The job of the journalist is to bring the scientist down to earth, even though he or she might sometimes be reluctant.

Bring out the human in the scientist. Highlight aspects of his or her personality that everyone can relate to – a hobby, a certain thing he or she does when going into deep thought before answering a question. What does he or she wear in the lab? What kind of a laugh does he or she have? How does he or she relate to colleagues at work? Do his or her eyes light up when talking about research?

When writing about the science, explain how it relates to your readers' everyday lives. Ask the researcher during your interview why creating nanotubes from DNA molecules could be revolutionary for computer technologies. Or explain to your readers how stem cell research has the potential to discover cures for disease. Try the narrative technique of introducing your story by writing about someone afflicted with a disease and explain how stem cell research could change this condition.

EXAMPLE 1:

Take a look at this excerpt from an article in Australia's COSMOS magazine [September 2005, page 34]. The article addresses a research study published in the New England Journal of Medicine, but in a very down-to-earth way:

He wasn't an addict. The drug was codeine, not cocaine. The dose was small, and administered by a physician. And yet the patient overdosed and nearly died. The culprit? His genes.

Codeine delivers its pain-killing punch because the body converts it into morphine. Most people have just one copy of the gene that performs this reaction. This patient had three. His body processed codeine into morphine with supersonic speed. At the height of intoxication, 800 times the expected level of morphine saturated his brain.

EXAMPLE 2:

Here is an excerpt from Seed magazine, published in the U.S. [Feb/March 2006, page 58]:

Professor Elizabeth Gould has a picture of a marmoset on her computer screen. Marmosets are a new world monkey, and Gould has a large colony living just down the hall. Although her primate population is barely three years old, Gould is clearly smitten, showing off these photographs like a proud parent.

Find a way to help your reader personally relate to the subject matter of your article.

4.3 Basics of science writing in any style (continued)

B. Simplify the science

Metaphors are an important part of science writing because they create strong images from everyday life and cultural references which make science easier to understand: the atmosphere is a greenhouse, the brain of a chess player a computer; a black hole is a monster that eats its victims, while stars send out their "last cry" in the form of X-ray emissions. In general, metaphors provoke associations between different parts of our thought processes – a short circuit in our thinking (short circuit is, again, a metaphor!).

The central metaphor of a story can also be used to frame it. For example if you call Ian Wilmut the creator of Dolly the cloned sheep, you can describe his cloning-research as a god-like metaphysical act, which gives the story both critical and political angles. The same is true if you describe physicists who build a big particle accelerator in the quest for a "theory of everything" as true believers who have built a cathedral.

Metaphors – as well as **comparisons** or **similes** (their weaker counterparts) – can be used to explain things in science writing. To clarify what it means to say that the universe is expanding, it helps to say that the stars drift apart like raisins in yeast dough. The immune system is like an army defending its home country; scientists work like detectives to solve a problem.

But the last two examples already show that some metaphors have been over-used and are not always a good choice. Metaphors are powerful tools that should be used with care. And very often it is better not to use them and just describe or explain things in another way.

EXAMPLE:

Here is a story with a metaphor in its headline that also frames the story.

India hops on board the 'jatropa express'

[<http://www.scidev.net/content/features/eng/india-hops-on-board-the-jatropa-express.cfm>]

If you click on the link to the original "Nature" article you will see that the train-metaphor gets a new meaning.

(see the link at the bottom of the SciDev.Net article)

Dealing with numbers

How many soccer fields are there in 6000 square meters? How many atoms fit on the head of a pin?

When dealing with numbers, whether you're describing weight, area, size, volume, length or whatever, it's usually a good idea to make them easier for readers to relate to by making comparisons with things that we see or use in our every-day lives. Help your audience "visualize" the number rather than leave the number at face value.

EXAMPLE:

See how this BBC article [<http://news.bbc.co.uk/1/hi/sci/tech/4085214.stm>] compares 30 billionths of a metre in diameter to one thousand times finer than a human hair. Now that brings this phenomenally small diameter closer to home!

See also this article "Planning and writing a science story" by Jan Lublinski
[<http://www.scidev.net/en/practical-guides/planning-and-writing-a-science-story.html>]

Dealing with jargon

Never assume that your readers will understand every scientific term or concept in your writing. Make sure you explain the meanings of terms but beware of oversimplifying – a trap that journalists sometimes fall into.

EXAMPLE:

Here's an excerpt from an IslamOnline.net article

[<http://www.onislam.net/english/health-and-science/nature/411539.html>] that explains two terms (estuarine ecosystems and sinkholes) using two different methods: an exact definition and an explanation of the process itself:

The rapidly dropping sea level has been accompanied by a drop in the water table along the coasts. This has resulted in a multitude of problems. Springs and their associated habitats are drying up, threatening the rare species that inhabit the Dead Sea basin. Estuarine ecosystems (where the freshwater from springs meets the saline waters of the Dead Sea) are also disappearing. And, as the groundwater levels drop, salts are dissolved from the soil, leaving it porous and unstable. As a result, sinkholes have developed with the land becoming prone to caving in on itself, sometimes forming craters as large as 15 meters in diameter. Immense damage has consequently been done to agricultural lands and to infrastructure, such as roads and bridges, and human safety in the region is in constant jeopardy.

Take time to be creative in simplifying complex scientific concepts. Your audience will appreciate it.

4.4 Basics of news writing

A. What is newsworthy?

Before writing your news story, it's worth considering what is likely to be the most newsworthy angle for your audience, and therefore what you should highlight in your piece. There are a variety of factors, called news values, that help to determine whether an event is newsworthy or not:

If there is conflict: not just armed conflicts between nations, but debates about stem cell research or evolutionism versus creationism/intelligent design can be considered conflicts.

If there is an unusual occurrence such as a natural disaster.

Prominence of a person, institution, or place that is well known to the audience.

Proximity: the closer a story is to us the more important it is.

Self-interest: when there is direct relevance to the audience.

Human interest: when the story touches our emotions and feelings.

Timeliness (something that has just happened or begun to happen).

Change.

Impact on our lives: for example medical research that can lead to treating illness.

Violence.

Drama.

For more news values see http://en.wikipedia.org/wiki/News_values

B. Information for news stories

A good news story requires the following types of information:

Details: who, what, when, where, why, and how.

Background: put the story into context, but stick to the facts and be very careful not to state your own opinion.

Anecdotes: try to find a story or a scene in what you are covering to help make your news story livelier.

Quotes: quotes are important, but tricky to use. Don't use quotes that are dispensable. If a quote contains mainly factual information that can be paraphrased then paraphrase it. Only use the "golden quotes" that would be a sin to paraphrase – such as those in which people are describing their own feelings or reaction to a situation.

C. Sources for news stories

While writing your news story, always use at least two different types of sources, preferably more.

Sources can be material sources such as polls, documents, government archives, journals, press releases, other media stories; or they can be human sources such as officials, experts, people involved, people affected, people who can remember an event, and the man-on-the-street.

EXAMPLE:

Read this article on the Australian Broadcasting Corporation's science section.

India's hidden greenhouse gas source?

[<http://www.abc.net.au/science/news/stories/2007/1964548.htm>]

Note how the writer refers to a study, the lead author of the study, an institution, activists and government sources.

D. Types of news stories

Advance story: This is a story that announces a forthcoming event, such as a conference. It usually follows the inverted pyramid structure, with the most important and interesting information at the top, followed by supporting information of diminishing importance. The structure of the advance news story is usually as follows:

Lead: Start the news story with answers to the three main questions of what, when and where.

Remember, you are announcing something to come, so cut to the chase and announce it. The lead is usually made up of one or two sentences that should be no longer than 25 to 35 words each.

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Second paragraph: Provide more details on what is happening, the people involved (such as the organizers), who will be attending, and what important topics will be discussed.

Third paragraph: Provide further information and background on the topics or the people involved, depending on which is more important.

The advance news story is usually about four paragraphs long, with each sentence no longer than 10 to 15 words.

EXAMPLE: Take a look at this advance story.

Kuwait hosts 8th science in Qur'an conference

[<http://www.onislam.net/english/health-and-science/news/427889.html>]

Spot news: this is a story that reports on something that has just happened. This is also written in inverted pyramid style with the most important information at the top, followed by less important information. Start with a lead that addresses the questions of what, when, where, why, and how. Follow your lead with relevant details. Then continue, in your third paragraph, with quotes and background information.

EXAMPLE:

Here's an example of spot news from New Scientist.

Satellite snaps first images of mysterious glowing clouds

[<http://space.newscientist.com/article/dn12171>]

"People talking" news story: An example of a "people talking" news story is one that covers a press conference or public lecture.

- a. **Lead:** In your lead, summarize the most important statement made at the event by paraphrase.
- b. **Second paragraph:** Quote the speaker directly and explain where and why they made the statement.
- c. **Third paragraph:** Provide background information.

EXAMPLE:

Read this story from Reuters.

China's development is costing the Himalayas: activist

[<http://www.reuters.com/article/environmentNews/idUSDEL25608220070629>]

Follow-up news story: These stories follow up on an event that is ongoing and still holds the audience's interest. This can be a follow-up of a spot news or "people talking" story. Readers drawn to this story may already be familiar with the story and want more information, or may be learning about it for the first time.

EXAMPLE:

This story was posted on the BBC following a heat wave in southern Europe that had received much news coverage:

Heatwaves will 'boost death rate'

[<http://news.bbc.co.uk/2/hi/health/6245370.stm>]

While writing news, make sure to:

Be **objective:** Don't insert your own personal opinion into the story

Be **balanced:** Show as many sides to your story as possible. It's important to realize that balance does not mean two sides of a story. Most stories have many sides. **And being balanced does not mean giving the same amount of weight to each side.** For example, if most scientists believe in the science of climate change whereas only two scientists don't, you should indicate the greater weighting that the former has in the scientific community.

Attribute your sources: Always tell your readers where your information comes from, so long as you are not putting your sources in danger.

With enough creative energy you can turn almost anything into news. Remember: your sources are the experts, not you.

4.5 Basics of feature writing

A. Getting started: The "nut graf"

Like news writing, feature stories should be newsworthy. The main differences between a "hard" news story and a feature story (note that news stories can be written as news features) is that news stories are to-the-point, less detailed or colourful, and hence usually far shorter than features. Features tend to have more depth and background information, and employ a larger variety of writing styles. News stories generally have to be written quickly, for publication **today** so as to be newsworthy, while feature stories can wait for days or even weeks. News and feature stories also have a different structure. News stories are written in the "inverted pyramid" structure (see chapter 1), whereas feature articles are stories with a beginning, middle and end.

The hardest part of writing a feature story is putting the first few words to paper. The critical task is first to figure out the most important message you wish to convey. If you have many angles from which to choose, cover them in more than one article. (See also the section in chapter 1 about "Working with the research sentence"

[<http://www.wfsj.org/course/lesson.htm?e=e01#L01P08>])

One of the best ways to learn how to focus your story idea is by learning how to write a "nut graf." This is a term coined in U.S. newsrooms to describe a paragraph that is usually placed as the third or fourth paragraph of your article to summarise what your story is about. (For a fuller description, visit this link [<http://www.poynter.org/column.asp?id=52&aid=34457>])

Start writing your article by writing the 'nut graf'.

EXAMPLE:

The River Nile has been Egypt's 'vein of life' since time immemorial. Now facing a variety of threats ranging from Bilharziasis to the dumping of raw sewage, industrial, and agricultural effluents, the longest river in the world has slowly been turned into a death sentence for Egypt's millions.

A blend of public awareness and a strong commitment towards living a better life have, however, formed a successful recipe that pays homage to the waters that have been the country's symbol of prosperity and abundance since the times of the Pharaohs. (Source: [<http://www.onislam.net/english/health-and-science/nature/441800.html>])

By reading these two paragraphs – the article's nut graf – the reader can immediately grasp what the article is all about: the pollution of the River Nile, how it affects the health of Egyptians, and efforts underway to fix the problem. The writer has thus focused her story idea and has essentially limited herself to this particular angle for the rest of the story.

B. Leading into the nut graf

Once you have written the nut graf, you must consider how to lead into it with a good introduction that grabs the reader's attention. There are several types of introductions you can use:

Summary: Sum up the **who, what, when, where, why** and **how** of the story, similar to a typical news lead.

Anecdotes: Tell a short compelling story that people can relate to.

EXAMPLE:

Taking again the story about the River Nile

[<http://www.onislam.net/english/health-and-science/nature/441800.html>], look at its first two paragraphs and see how an anecdote is used:

Descriptive: provide a description of the person you are covering, or of something that happened in the event.

Question: If your article is investigating an issue that will be completely answered by the end of the article, you can begin with a question.

EXAMPLE:

This article on IslamOnline.net starts with a series of questions that many Internet users probably answered with a definitive "yes"!

Keeping Cool May Cause Data Loss

[<http://www.onislam.net/english/health-and-science/nature/427599.html>]

Pun or truism: Play with words or think of a pun or a truism that can be applied to the core of your topic, like for example the title of this NewScientist story

[<http://www.newscientist.com/blogs/shortsharpscience/2011/01/nasas-aviation-vision-wraparou.html>].

Quote: If during your research you came across an important quote that can pull the reader into your story, use it.

C. The body of the feature article

While writing the body of your article remember to:

Never lose sight of the main idea you summarized in your nut graf.

Use multiple sources and from multiple categories. Do not, for example, quote scientists without also quoting officials or people affected by the science.

Avoid implying positions of "black versus white" or "evil versus good" in your writing. As in news, there is more than one side to every story. Provide balance not through creating two extreme opposites but by portraying different sides to a story and giving each the appropriate weight. Always attribute your sources.

Provide enough background that anybody can follow your topic.

Provide colour in your writing. Be descriptive of your main characters and important scenes in your story.

D. Wrapping up your article

Any good feature article needs a good ending. The reader should be able to find a logical connection between your ending and your nut graf.

You can end a feature story with a 'kicker'. This is the last paragraph of the story that sums up the point of the story and refers back to the first paragraph, without it being a summary. A quote that sums up the story often works well. See for example the last paragraph of Surviving Side Effects

[<http://www.nature.com/scientificamerican/journal/v297/n4/full/scientificamerican1007-24.html>].

What's most important is that you don't want to leave your reader hanging, nor do you want to leave him feeling that it was a poor end to a good article. Aim at writing an ending that is thought provoking, or that leaves your reader with a sense of satisfaction.

Stay focused in your writing from beginning to end.

4.6 Narrative writing: Tell your readers a story

Narrative writing is a style that can be used for both news and features. It is a form of storytelling that involves the development of characters and a story line. It is compelling because it satisfies the questions "What happens next?" or "How did that happen?" or "What is learned or understood next?"

(see [http://www.poynter.org/content/content_view.asp?id=117320])

An example is telling the story of a research study through people who might be affected by the research or the researchers themselves. Develop their characters. Demonstrate how various aspects of their personalities led them to their research idea or finding, or how a casual argument led to a realisation of a better methodology. The key to finding the right nuggets of the story is most likely to come from your interviews with researchers (see chapter 3: The interview).

EXAMPLE:

Read the following excerpt from a National Geographic magazine article to get a sense of what narrative science writing is about:

So what, really, is this thing called love?

[<http://www7.nationalgeographic.com/ngm/0602/feature2/index.html>]

It's worth remembering that the narrative approach does not necessarily require long pieces. Short, succinct stories about individual scientists could also be very engaging (see also "Short and sweet: storytelling in 300 words"

[http://www.poynter.org/content/content_view.asp?id=99998])

Lure your reader into reading your article with a gripping introduction. Keep your reader in suspense while at the same time doling out intriguing clues here and there. Develop your characters well and give the reader time to relate to their idiosyncrasies. Communicate the science through the characters themselves. Bring your narrative to a climax and then keep your readers hooked to the very last word.

Science writing does not have to be boring.

4.7 Writing for the internet

Although the basic format of a news or feature story is similar for either print or the internet, there are some particular considerations when writing for the Internet:

Internet readers surf and scan rather than read. As we're all aware, reading long texts from a computer screen is tiring for the eyes. Although the internet does have the advantage of limitless space, keeping it short and sweet will increase the chance of people finishing your story.

Structure your article so that a reader can get your main gist simply by scanning through the paragraphs while scrolling. Group ideas together and provide clear and indicative subtitles. Break up your article with small side-bars containing quotes or ideas from your article. Keep sentences and paragraphs shorter than they normally would be for print publications.

Is there a complex scientific procedure that can be explained using **graphics**? It would be great if you could design your own graphics, but if the web team includes a graphic designer then you could suggest captions and a description and useful images for guiding the creation of an explanatory graphic. Alternatively you may find images that are freely available from elsewhere that the website could download and use. A picture file with accompanying captions or even some audio and video will really dress up your article.

You can also **hyperlink** terms or names to other websites that provide additional information, or list resources at the end of your article to which readers can refer. Most websites won't pay for the extra work, but the editor will certainly appreciate your efforts and may keep you on his or her priority list of writers. Your readers will benefit too.

When writing for the internet, spice up your writing with hyperlinks, additional resources, and graphics. Write for scanners, not intense readers.

4.8 Self-teaching questions (1-5)

QUESTION 1:

Below are the first few paragraphs of three articles. Decide whether each one of them is a news story, a feature story, a narrative, an investigative report, an interview, an editorial, a blog, or a combination of more than one type of science writing:

a. Article 1

NASA's aging but durable Mars rover Opportunity will make what could be a trip of no return into a deep impact crater as it tries to peer further back than ever into the Red Planet's geologic history.

The descent into Victoria Crater received the go-ahead because the potential scientific returns are worth the risk that the solar-powered, six-wheel rover might not be able to climb out, NASA officials and scientists said Thursday.

The vehicle has been roaming Mars for nearly 3.5 Earth years. Scientists and engineers want to send it in while it still appears healthy.

"This crater, Victoria, is a window back into the ancient environment of Mars," said Alan Stern, the NASA associate administrator who authorized the move.

"Entering this crater does come with some unknowns," Stern added. "We have analyzed the entry point but we can't be certain about the terrains and the footing down in the crater until we go there. We can't guarantee, although we think we are likely to come back out of the crater."

b. Article 2

Avian flu has hit international news headlines again. Nigeria has reported the first human death in sub-Saharan Africa, the United Kingdom is going through its first outbreak among poultry, and in Southeast Asia avian flu continues to simmer, with ongoing outbreaks and human deaths.

The agent responsible - the H5N1 influenza virus - could spark a pandemic to rival those of the last century that killed millions of people. Africa is where Southeast Asia was three to four years ago. Outbreaks of avian flu in poultry are repeatedly reported in Nigeria and Egypt. Other outbreaks in Niger, Cameroon, and Djibouti have fortunately been contained, but neighbouring countries like Togo, Ghana and Chad are still at high risk.

We must not stand by and let history repeat itself. Every available force must be mustered to limit H5N1's spread across the continent.

Communication holds the key

African countries must urgently make the media a full partner in national preparation plans.

Until recently, the African media has been ill prepared to report effectively on outbreaks of avian flu. The first African H5N1 outbreak, among poultry in Nigeria last year, led to sensational media headlines causing public alarm and panic. The media must be empowered to correctly and authoritatively cover avian flu issues.

c. Article 3

While the human population boom in Egypt continues unabated, there is a certain organism that is not so lucky. The croaking of male frogs has always been a familiar sound to the residents of Egypt. In recent years, however, the sound has all but disappeared. The once popular frog population has been steadily on the decrease.

Frogs were once abundant dwellers in the waters of the River Nile. They were so common during the time of the ancient Egyptians that they were called Hefen, the hieroglyphic word for 100,000. The hieroglyphic symbol for Hefen was a tadpole, since frogs gave huge amounts of these offspring. It was such an integral part of the ancient Egyptians' life that they depicted

the goddess of fertility as a frog. Although the Egyptian frog has lived in Egypt since ancient times, it now faces a multiplicity of problems. Once one of the most plentiful life forms in Egypt, it has nearly disappeared. The challenges frogs need to contend with are many, and humans form the bulk of their problems.

Existence Problem

There are seven different types of frogs in Egypt. However, the most common is *Bufo regularis*, also known as the African common frog or the Egyptian matriculated frog.

Dr. Samy Zalut, a professor of biodiversity and evolutionary biology in Egypt's Ministry of Environment, was the first to acknowledge the problem. "The first thing we need to establish is this: Is there a threat to the frogs?" said Zalut.

He explained that the common frog is facing several challenges. Human expansion has caused extensive habitat damage for the frogs. Destructive pesticides that seep into the sewage system also cause poisoning and even mutation to large numbers of frogs and tadpoles.

QUESTION 2:

Find creative ways to rewrite some of the terms in the following sentences. For your convenience, terms that might be difficult for the general public have been highlighted in bold:

"Steve Linscombe still isn't quite sure how it happened. The director of the Louisiana State University AgCenter for Rice Research knows that he grew a few lines of **transgenic** rice in field trials between 2001 and 2003. He also knows that one of those lines, LLRICE601, was grown on less than one acre. What he is not clear on is how the line then wended its way into the food supply. That little mystery is now the subject of an official investigation and a class-action lawsuit."

"There are drugs to treat this early chronic stage, but the parasite also causes a process similar to **autoimmunity against** which the drugs are not effective."

The development of drug resistance in the parasite that causes **river blindness** could lead to outbreaks in communities where it has been under control, according to research published last week (16 June) in *The Lancet*.

Materials scientists from Oxford and Nottingham universities performed chemical reactions inside **nanotubes**.

QUESTION 3:

Read the following sentences and think of ways to bring the numbers closer to home for your readers:

Patients who inhaled radioactive ultrafine carbon particles displayed traces of it in their bloodstream not long afterwards. These very small pieces of matter are called nanoparticles, defined as anything smaller than 100 nanometres in size.

Chajnantor has been chosen as the site for the Atacama Large Millimeter Array (Alma), a major telescope array that aims to illuminate one half of the Universe that has hitherto been shrouded in darkness. It lies at an altitude of 5,300 metres.

An ongoing survey of the heavens has spotted the most distant, and therefore earliest, giant black hole in the universe. The object, a quasar given the catchy name CFHQS J2329-0301, was found with three other extremely distant quasars in the Canada-France High-z Quasar Survey. CFHQS J2329-0301 is about 13 billion light-years away, say the scientists.

QUESTION 4:

With each of the following three news stories, determine what type of news story each is, list which elements of newsworthiness they have, and what categories of news sources were used.

News story	Type of news story	Elements of newsworthiness	Categories of news sources
'Better and cheaper' typhoid treatment found [http://www.scidev.net/content/news/eng/better-and-cheaper-typhoid-treatment-found.cfm]			
Science journalists 'need code of ethics' [http://www.scidev.net/News/index.cfm?fuseaction=readnews&itemid=3561&language=1]			
Apple's iPhone makes it to stores [http://news.bbc.co.uk/2/hi/technology/6250192.stm]			

QUESTION 5:

What kinds of leads were used in the following three articles?

Article	Type of lead
Beauty with a purpose [http://www.onislam.net/english/health-and-science/nature/414175.html]	
Fish farming saves Kenya's wetlands [http://www.onislam.net/english/health-and-science/nature/420153.html]	
Sorting out the junk: Email in a data-congested world [http://www.onislam.net/english/health-and-science/technology/438778.html]	

4.9 Answers to Self-teaching questions

QUESTION 1:

Below are the first few paragraphs of three articles. Decide whether each one of them is a news story, a feature story, a narrative, an investigative report, an interview, an editorial, a blog, or a combination of more than one type of science writing:

- a. Article 1 (see previous page)
- b. Article 2 (see previous page)
- c. Article 3 (see previous page)

Answers:

- a. News.
- b. Editorial.
- c. Feature.

QUESTION 2:

Find creative ways to rewrite some of the terms in the following sentences. For your convenience, terms that might be difficult for the general public have been highlighted in bold:

"Steve Linscombe still isn't quite sure how it happened. The director of the Louisiana State University AgCenter for Rice Research knows that he grew a few lines of **transgenic** rice in field trials between 2001 and 2003. He also knows that one of those lines, LLRICE601, was grown on less than one acre. What he is not clear on is how the line then wended its way into the food supply. That little mystery is now the subject of an official investigation and a class-action lawsuit."

"There are drugs to treat this early chronic stage, but the parasite also causes a process similar to **autoimmunity against** which the drugs are not effective."

The development of drug resistance in the parasite that causes **river blindness** could lead to outbreaks in communities where it has been under control, according to research published last week (16 June) in The Lancet.

Materials scientists from Oxford and Nottingham universities performed chemical reactions inside **nanotubes**.

Answers:

The following answers may be worded a little differently from your own:

Transgenic plants possess one or more genes that have been transferred to them in the laboratory from other species with the aim at producing plants with special characteristics. Autoimmunity is a condition where antibodies produced by the patient's own immune system against the parasite begin to attack the body's own tissues.

River blindness (onchocerciasis) is caused by a parasitic worm, *Onchocerca volvulus*, and is transmitted by black flies breeding along fast-flowing streams. It causes blindness and skin disease in sub-Saharan Africa and some tropical regions of the Americas. Around 37 million people worldwide may be infected.

Nanotubes are tiny tubes of carbon atoms that are essentially sheets of graphite an atom thick and that are folded back on themselves to form cylinders.

QUESTION 3:

Read the following sentences and think of ways to bring the numbers closer to home for your readers:

WFSJ Online Course – Lesson 4

Patients who inhaled radioactive ultrafine carbon particles displayed traces of it in their bloodstream not long afterwards. These very small pieces of matter are called nanoparticles, defined as anything smaller than 100 nanometres in size.

Chajnantor has been chosen as the site for the Atacama Large Millimeter Array (Alma), a major telescope array that aims to illuminate one half of the Universe that has hitherto been shrouded in darkness. It lies at an altitude of 5,300 metres.

An ongoing survey of the heavens has spotted the most distant, and therefore earliest, giant black hole in the universe. The object, a quasar given the catchy name CFHQS J2329-0301, was found with three other extremely distant quasars in the Canada-France High-z Quasar Survey. CFHQS J2329-0301 is about 13 billion light-years away, say the scientists.

Answers:

A number of answers are possible including the following:

A nanometre is one-billionth of a metre, 80,000 times smaller than a human hair.

The location of the telescope is at about half the cruising altitude of a 747.

The light from the quasar has traveled 13 billion years to reach Earth.

QUESTION 4:

With each of the following three news stories, determine what type of news story each is, list which elements of newsworthiness they have, and what categories of news sources were used.

News story	Type of news story	Elements of newsworthiness	Categories of news sources
'Better and cheaper' typhoid treatment found [http://www.scidev.net/content/news/eng/better-and-cheaper-typhoid-treatment-found.cfm]	Spot news	Spot news Self-interest Human interest Timeliness Change Impact on our lives	Journal Researcher 2 government officials
Science journalists 'need code of ethics' [http://www.scidev.net/News/index.cfm?fuseaction=readnews&itemid=3561&language=1]	People talking	Prominence (of conference) Timeliness Self-interest (for science journalists)	Experts only
Apple's iPhone makes it to stores [http://news.bbc.co.uk/2/hi/technology/6250192.stm]	Spot news and follow-up	Prominence Timeliness Self-interest Human interest Change Impact on our lives Drama	Institution (Apple) People involved

QUESTION 5:

What kinds of leads were used in the following three articles?

Article	Type of lead
Beauty with a purpose [http://www.onislam.net/english/health-and-science/nature/414175.html]	Proverb lead
Fish farming saves Kenya's wetlands [http://www.onislam.net/english/health-and-science/nature/420153.html]	Descriptive lead
Sorting out the junk: Email in a data-congested world [http://www.onislam.net/english/health-and-science/technology/438778.html]	Question lead

4.10 Assignments (1-5)

ASSIGNMENT 1:

Take a look at some of the following English-language science publications and discuss with your mentor how their audiences might vary and as a result how your own writing might vary for each of them:

New Scientist [<http://www.newscientist.com>]
Nature [<http://www.nature.com>]
Science [<http://www.sciencemag.org>]
Scientific American [<http://www.sciam.com>]
Nature News [<http://www.nature.com/news/index.html>]
National Geographic [<http://www.nationalgeographic.com>]
SciDev.Net [www.scidev.net]
BBC News Science/Nature [http://www.bbc.co.uk/news/science_and_environment/]
Science in Africa [<http://www.scienceinfrica.co.za/>]
Smithsonian.com [<http://www.smithsonianmag.com>]
ABC Science [<http://www.abc.net.au/science/>]

ASSIGNMENT 2:

Take a look at the following articles. What do you think their story pitches were like? Practice writing a story pitch for each of the following articles and discuss them with your mentor:

Cutting China's carbon cost
[<http://www.scidev.net/en/features/cutting-chinas-carbon-cost.html>]
Antarctic glaciers picking up speed
[<http://www.abc.net.au/science/news/stories/2007/1943662.htm>]
Beauty with a purpose
[<http://www.onislam.net/english/health-and-science/nature/414175.html>]
Autism symptoms reversed in lab
[<http://news.bbc.co.uk/2/hi/health/6245742.stm>]

ASSIGNMENT 3: Take one of your more exciting articles, write a 1000-word blog related to the topic and share it with your mentor. Is it written well enough that it deserves publication?

Experiment with setting up your own blog at [www.blogger.com], [<http://wordpress.com/>], [<http://www.posterous.com>] or countless other websites that provide this free service. Encourage friends and colleagues to post their own comments to your blog posts.

ASSIGNMENT 4:

Take your latest news story and practice writing it as a feature story or vice versa. Discuss with your mentor.

Attend a conference session or a press conference in your city on some science- or health-related issue. Practice writing one advance news story and one people-talking news story about the event you attended. Share with your mentor.

Visit the university or scientific institution nearest to you. Find an interesting research study that was just published by one of its researchers and write about it in spot news format, then write about it as a feature story. Remember to do enough background research and interviews to manage both!

ASSIGNMENT 5:

Before you start writing your next feature article, write its nut graf and discuss it with your mentor. Is your idea focused enough? Is the nut graf compelling enough?