



Communicating your science



Why does
it matter?

Why should YOU do it?



The internet is the primary
source for science information
for 60% of Americans



8% of Americans say **scientists contribute “not much” or “not at all” to society**

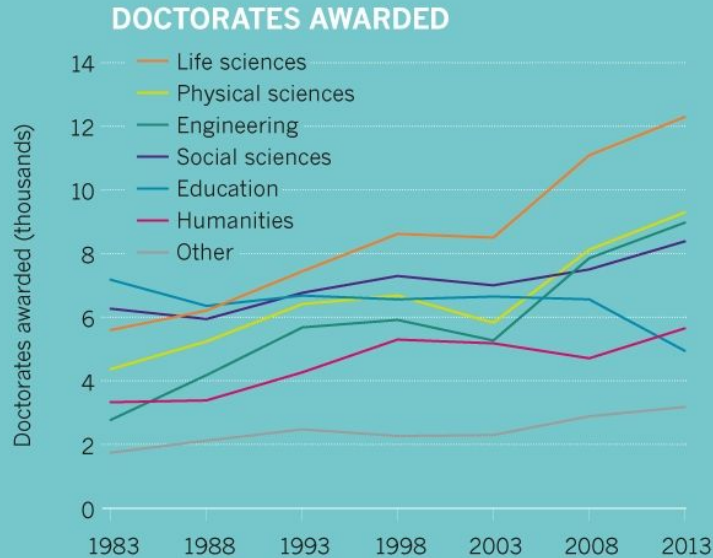
(General public appreciation of science also dropped to 65% (from 70%, 2009 to 2013))



A Crowded PhD Market

UPS AND DOWNS OF PHDS

The number of students in the United States who graduate with a doctorate has increased, with the most rapid rise in life-sciences degrees. The proportion of PhDs in permanent academic positions is falling, and the number graduating with no job or postdoc lined up is on the rise.



The slide features a light blue background with a large teal circle on the left containing the title. Various smaller circles in orange, red, and teal are scattered around. Icons include a lightbulb in a yellow circle, puzzle pieces in a yellow circle, and a thumbs-up in a teal circle.

AAAS Research Competencies (7)



AAAS Researcher Competencies

Scientific Knowledge

Research Skills

Communication

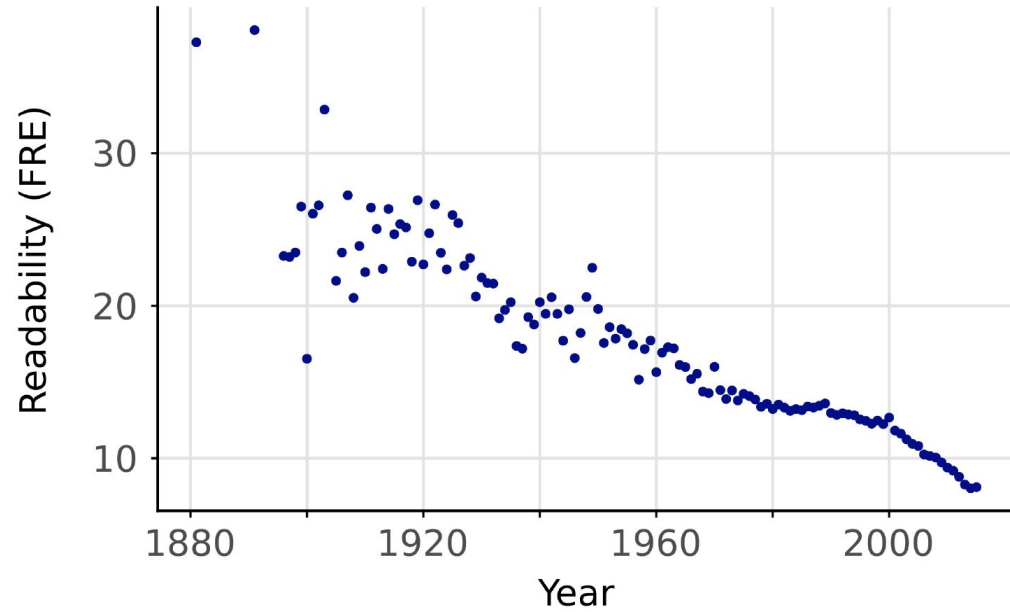
Management/Leadership

Professionalism

Responsible Conduct of Research

Career Management

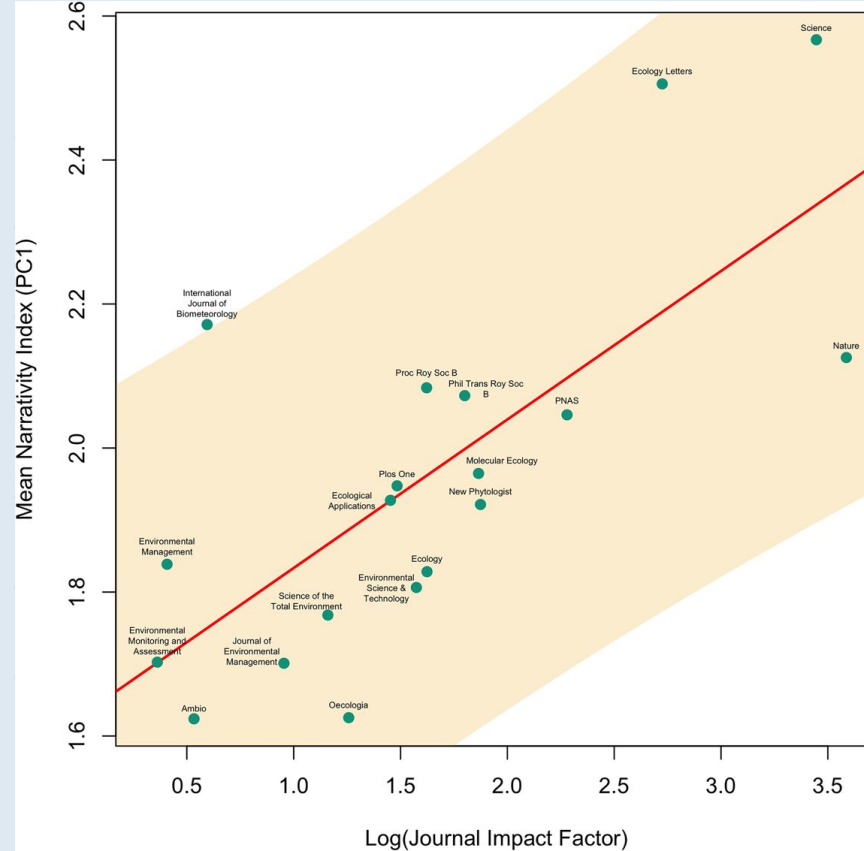
Readability of Scientific Journal Articles



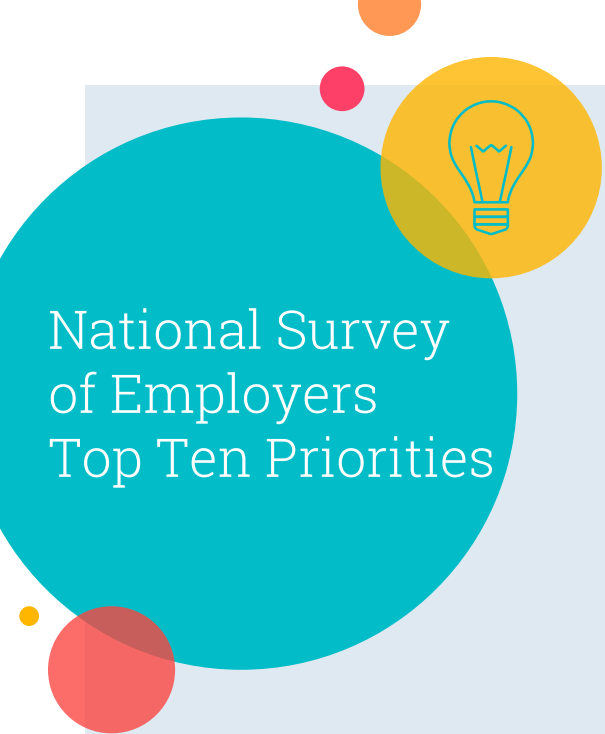
The readability of scientific texts is decreasing over time, Plavén-Sigra, Matheson, Schiffler, Thompson (pre-print bioRxiv)



Narrativity of Journal Abstracts



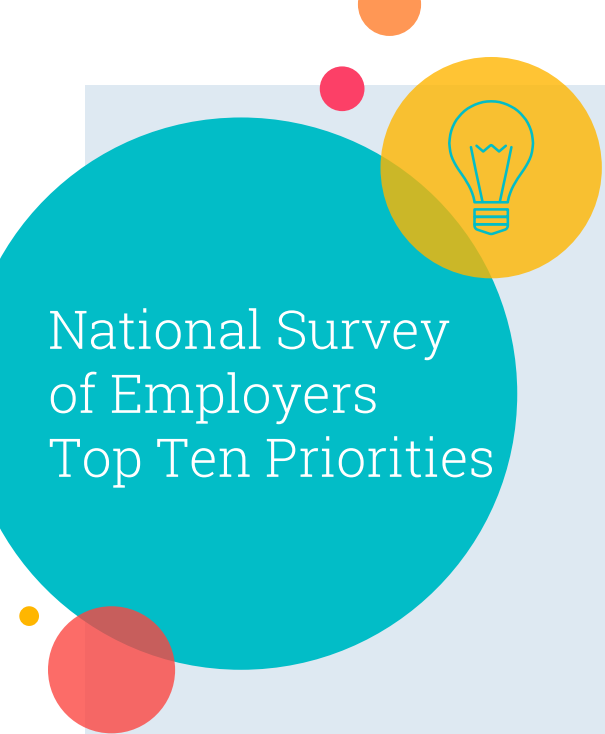
A Hiller et al, Narrative Style Influences Citation Frequency in Climate Change Science, PLoS ONE (2016)



National Survey of Employers Top Ten Priorities

National Association of Colleges and Employers Survey (2016)





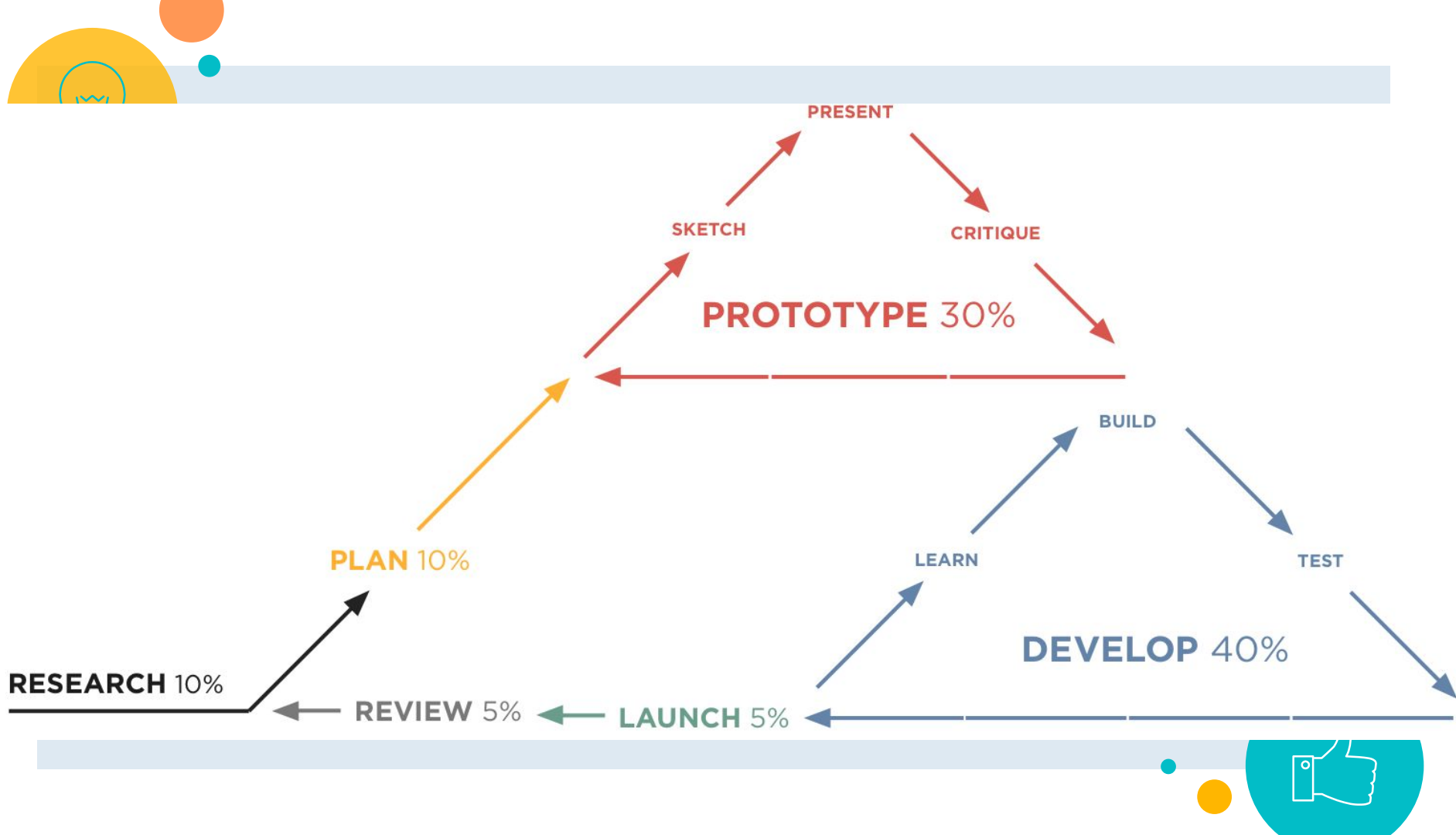
National Survey
of Employers
Top Ten Priorities

#1: Verbally communicate
with persons inside and
outside the organization





So how
learn to
do we do it?





The Funnel of User-Centered Comms Design



First: figure out
your story



Next: Build Your
Outline



Next Steps



Our Revision Process

THIS WEEK: Populate & reflect on your outline

NEXT: Draft & develop text

7/27 Rough Draft due for peer editing

8/6 Final Draft due

8/13 Skype meeting w/ Sara's editing notes*

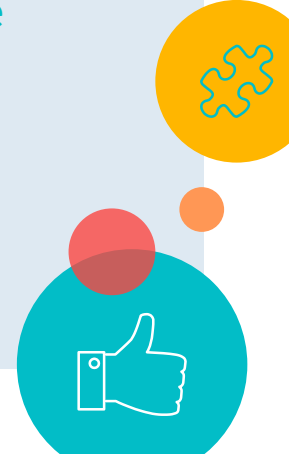
8/21 Final revisions & formatting to Aaron



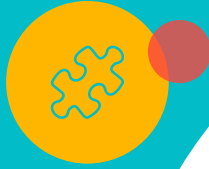


Editing Meetings

On 8/6:

- Email saramgrady@gmail.com a Google Doc of your revised text
 - Include your name, email address, PI's name
 - Sign up for an editing slot on 8/13 at <http://bit.ly/2u4hLEk>
- 

Revision Resources

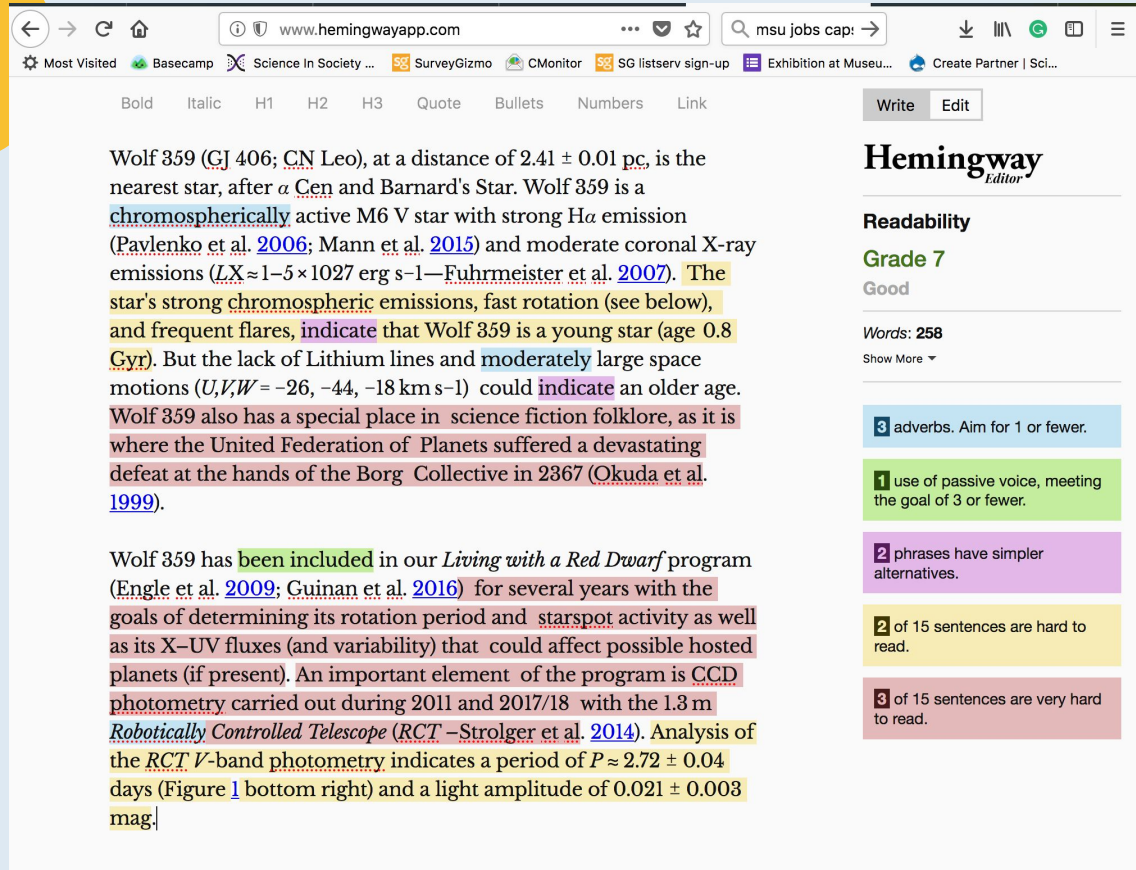


The slide features a light blue background with a large, semi-transparent light blue rectangle. On the left, a large teal circle contains the text 'Hemingway App'. Above it is a yellow circle with a lightbulb icon. To the right, a yellow circle with a puzzle piece icon is positioned above a teal circle with a thumbs-up icon. Various other smaller circles in teal, yellow, and red are scattered around the main elements.

Hemingway App

<http://www.hemingwayapp.com/>

Hemingway App



The screenshot shows the Hemingway App interface in a web browser. The address bar shows www.hemingwayapp.com. The browser's search bar contains "msu jobs cap:". The app's toolbar includes options for Bold, Italic, H1, H2, H3, Quote, Bullets, Numbers, and Link. The text being edited is a paragraph about Wolf 359, a star. The app highlights several areas for improvement: 3 adverbs (aiming for 1 or fewer), 1 use of passive voice (aiming for 3 or fewer), 2 phrases with simpler alternatives, 2 of 15 sentences that are hard to read, and 3 of 15 sentences that are very hard to read. The right sidebar shows the Hemingway Editor logo, a Readability Grade of 7 (Good), and a word count of 258 words.

Wolf 359 (GJ 406; CN Leo), at a distance of 2.41 ± 0.01 pc, is the nearest star, after α Cen and Barnard's Star. Wolf 359 is a chromospherically active M6 V star with strong H α emission (Pavlenko et al. 2006; Mann et al. 2015) and moderate coronal X-ray emissions ($L_X \approx 1-5 \times 10^{27}$ erg s $^{-1}$ —Fuhrmeister et al. 2007). The star's strong chromospheric emissions, fast rotation (see below), and frequent flares, indicate that Wolf 359 is a young star (age 0.8 Gyr). But the lack of Lithium lines and moderately large space motions ($U, V, W = -26, -44, -18$ km s $^{-1}$) could indicate an older age. Wolf 359 also has a special place in science fiction folklore, as it is where the United Federation of Planets suffered a devastating defeat at the hands of the Borg Collective in 2367 (Okuda et al. 1999).

Wolf 359 has been included in our *Living with a Red Dwarf* program (Engle et al. 2009; Guinan et al. 2016) for several years with the goals of determining its rotation period and starspot activity as well as its X–UV fluxes (and variability) that could affect possible hosted planets (if present). An important element of the program is CCD photometry carried out during 2011 and 2017/18 with the 1.3 m Robotically Controlled Telescope (RCT—Strolger et al. 2014). Analysis of the RCT V-band photometry indicates a period of $P \approx 2.72 \pm 0.04$ days (Figure 1 bottom right) and a light amplitude of 0.021 ± 0.008 mag.

Write Edit

Hemingway
Editor

Readability
Grade 7
Good

Words: 258
Show More ▾

- 3 adverbs. Aim for 1 or fewer.
- 1 use of passive voice, meeting the goal of 3 or fewer.
- 2 phrases have simpler alternatives.
- 2 of 15 sentences are hard to read.
- 3 of 15 sentences are very hard to read.

The slide features a light blue background with a large cyan circle on the left containing the text 'Dr-Jargonizer'. To its right is a yellow circle with a lightbulb icon. The bottom right corner is decorated with a cyan circle containing a thumbs-up icon, a yellow circle with a puzzle piece icon, and several smaller red and orange circles.

Dr-Jargonizer

Dr-Jargonizer

← → ↺ 🏠

scienceandpublic.com

msu jobs cap: →

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⚙️ Most Visited 🌱 Basecamp 📄 Science In Society ... 📄 SurveyGizmo 📄 CMonitor 📄 SG listserv sign-up 📄 Exhibition at Museu... 🌐 Create Partner | Sci...


☰

Start

Result

Wolf 359 (**GJ 406**; **CN Leo**), at a distance of 2.41 ± 0.01 pc, is the **nearest** star, after **α Cen** and Barnard's Star. **Wolf 359** is a **chromospherically** active M6 V star with strong **Ha emission** (**Pavlenko et al. 2006**; **Mann et al. 2015**) and moderate **coronal** X-ray emissions (**$L_X \approx 1-5 \times 10^{27}$ erg s $^{-1}$** —**Fuhrmeister et al. 2007**). The star's strong **chromospheric** emissions, fast **rotation** (see below), and frequent **flares**, indicate that **Wolf 359** is a young star (age**lesssim**0.8 **Gyr**). But the lack of **Lithium** lines and **moderately** large space **motions** (U,V,W=−26, −44, −18kms−1) could indicate an older age. **Wolf 359** also has a special place in science fiction **folklore**, as it is where the United Federation of **Planets** suffered a devastating defeat at the hands of the **Borg** Collective in 2367 (**Okuda et al. 1999**).

Wolf 359 has been included in our Living with a Red **Dwarf** program (**Engle et al. 2009**; **Guinan et al. 2016**) for several years with the goals of **determining** its **rotation** period and **starspot** activity as well as its X–**UV fluxes** (and **variability**) that could affect possible hosted **planets** (if present). An important element of the program is **CCD photometry** carried out during 2011 and 2017/18 with the 1.3m **Robotically** Controlled **Telescope** (**RCT**—**Strolger et al. 2014**). Analysis of the **RCT** V-band **photometry indicates** a period of $P \approx 2.72 \pm 0.04$ days (Figure 1 bottom right) and a light **amplitude** of 0.021 ± 0.003 **mag**.



Common:	72%, 159
Mid-Frequency:	16%, 35
Rare:	12%, 26
Suitability for general audience score:	80
Number Of Words:	220

Download

Share

The image features a light blue rectangular background. On the left side, there is a large teal circle containing the word 'Grammarly' in white. Above this circle is a smaller yellow circle with a lightbulb icon. To the right of the teal circle is a red circle. In the bottom right corner, there is a teal circle with a thumbs-up icon, a red circle above it, and a yellow circle with a puzzle piece icon to the right. Several other small circles in teal, yellow, and red are scattered around the main elements.

Grammarly

<https://app.grammarly.com>

Grammarly



UNTITLED

The Physics of Free Will

Kimberly Anne

You're playing a game of pool. You line up your cue stick behind the cue ball. You practice your stroke...one...two...three.... On the fourth stroke, you follow through and the cue stick makes contact. If we could stop time **in** this moment, we could predict with reasonable certainty the outcome of your shot. The cue stick determines the path of the cue ball. The path of the cue ball determines if and how it will hit the target ball. How it hits the target ball determines the path of both, and whether either will reach a pocket. But is this moment the earliest we could make our prediction? Wasn't the path of the cue stick determined by the motion of your arm? And wasn't that determined by an electrical signal from your brain? If we could monitor the state of your brain, could we predict the future of the pool table as you decide to make your shot? And why stop there? Your brain is composed of neurons, white matter, and signaling molecules that must also obey the laws of physics – reacting to forces, conserving momentum, etc. Using brain-monitoring equipment and the

Grammar

Checks use of common grammar rules

in → at

The preposition **in** may be incorrect. Consider changing it to another preposition.

- reacting to forces
- to forces, **conserving** momentum, etc
- should all read the same
- they found reason to question
- mass, that **are** determinate and
- Einstein, which **are** surprisingly accessible

82

RANK

INSIGHTS

SET GOALS

SPELLING

GRAMMAR

PUNCTUATION

CONVENTIONS

PREMIUM
ALERTS

PLAGIARISM




Helpful Reading

[The Science of Scientific Writing](#), Gopen & Swan

[Writing Science in Plain English](#), Anne Greene

[Why Academics Stink at Writing](#), Steven Pinker

+ Your university writing center, the library, and the internet





Thanks!

Any questions?

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saramgrady@gmail.com

@smgrady

sis.northwestern.edu



Old ideas first, new ideas follow

Word choices & sequences focus attention and underline purpose

Sentences have only one main point

Sentence structures emphasize key points (stress positions)

Topic & stress positions string together to develop paragraphs in sequence



COMMUNICATION TIPS

1. Why does this matter? (What's the Big Idea?)
2. How does it connect to you/me/us?
3. How is it related to things your listener already knows?
4. What examples or definitions or analogies might you need to help describe this?





SlidesCarnival icons are editable shapes.

This means that you can:

- Resize them without losing quality.
- Change line color, width and style.

Isn't that nice? :)

Examples:

