

Measuring Information Fluency Instruction: Ethical Use of Images in Engineering Student Presentations

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Cal Maritime



ME 349 Fluid/Thermal Laboratory

- Senior laboratory
 - 35-45 students
 - 12 groups
- 3 experiment modules
 - Theoretical background to results analysis
 - Group presentations on theory & experiment
 - Full technical reports
- Multi-year information fluency project
 - Result of assessment data, concerns
 - Last year focused on source selection and ethical use for reports

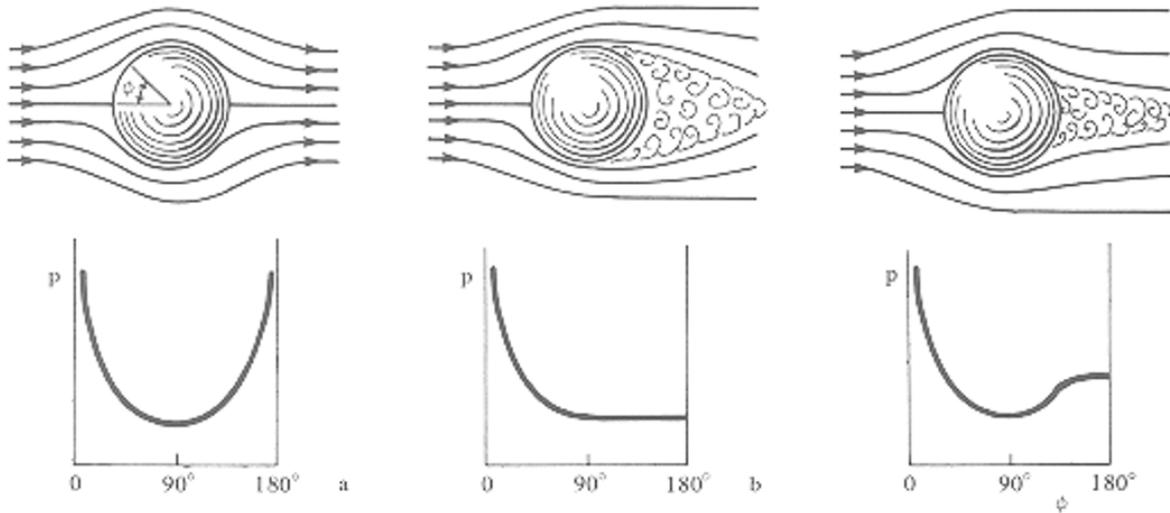


Students using wind tunnel during lab [21].

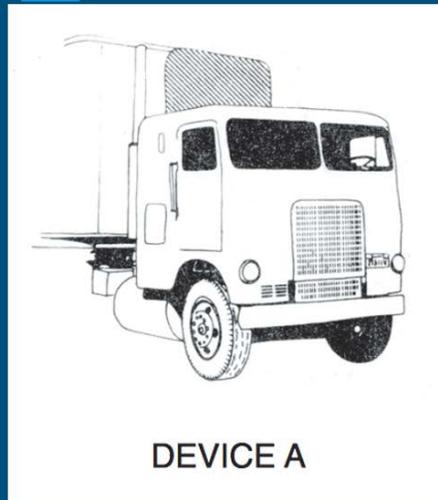
ME349 Lab Presentations

- Presentations reviewed by library faculty reviewed before the study
 - Missing or inconsistent use of sources and citations for images
 - Sample from student presentations (2017)

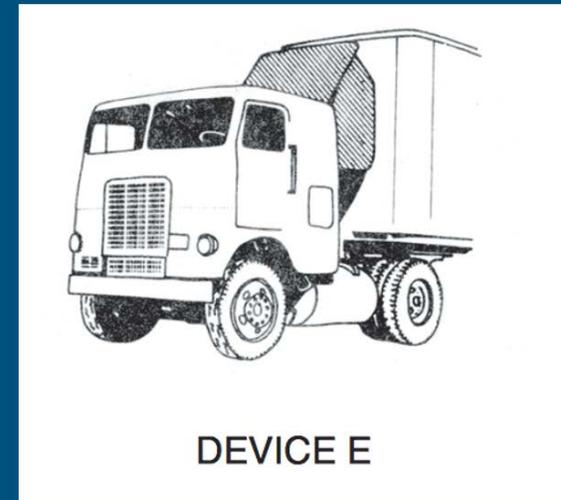
Theory: Effect of Turbulence on Drag



NASA FRC Research



[1]



[1]

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Literature Review:

How do students use images?

- The ethical use of images is challenging for everyone [2,3].
- Students are not getting the instruction they need [1,4].
- Students show poor understanding of copyright and fair use [1,5,6].
- Students do not think they have to cite images and they are not sure who to give credit to [7].

Literature Review:

What are librarians are doing to help students?

- The *ACRL Framework* and the *Visual Literacy Competency Standards for Higher Education* recognize our responsibility to instruct students in the ethical use of images [8,9]
- Librarians are trying, according to surveys [11,12].
- The literature provides recommendations for best practices and descriptions of approaches taken [1,2,13-20]
- Sadly, there is no evidence-based research about the efficacy of librarian efforts.

Hypothesis

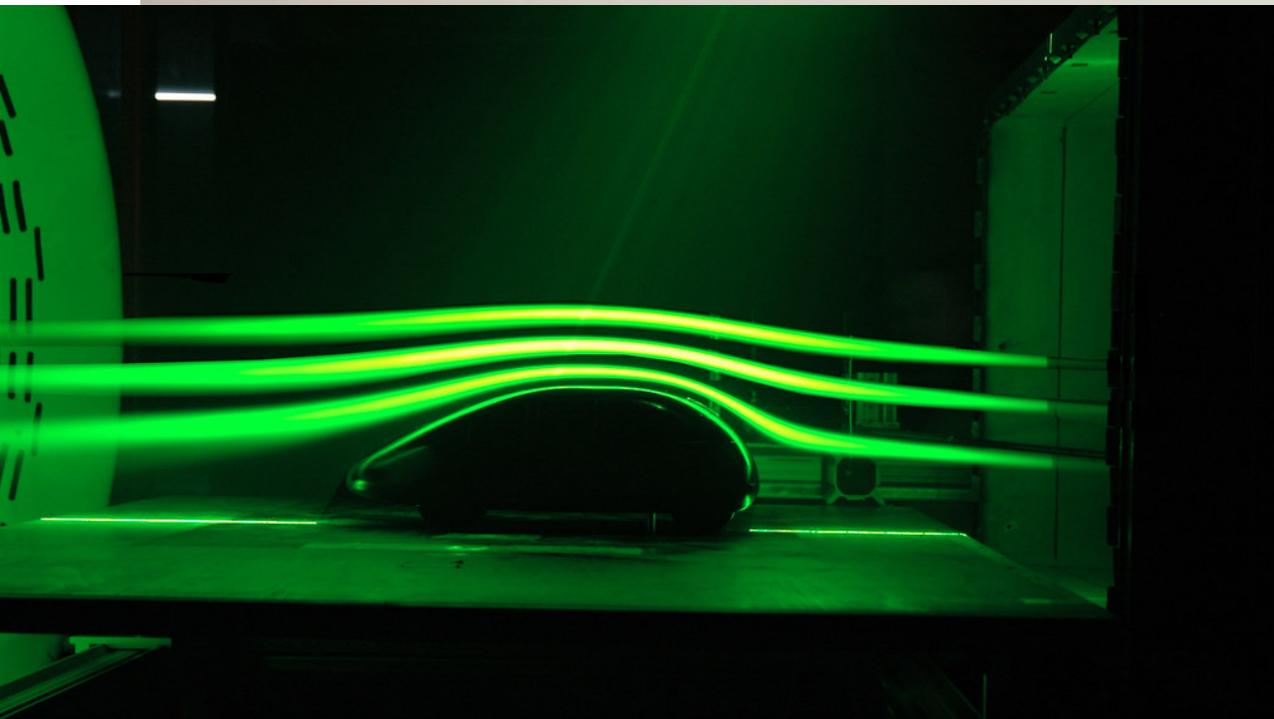
After a library instruction session about the ethical use of images, students will use more copyright-free images and improve attribution of images in their presentations.

Learning Outcomes

- Students will be able to explain what copyright law is in order to ethically use images in their assignment
- Students will be able to locate copyright-free images in order to ethically use images in their assignment.
- Students will be able to create image citations in AIAA style in order to ethically use images in their assignment

library.csum.edu/ME349

[1] DLR German Aerospace Center,
Model in the Wind Tunnel, 2014,
(vol). CC-BY 3.0.



Effects

- ✓ • One copy made
- ✓ • No effect on market
- ✓ • No lending mechanism

Purpose

- ✓ • Teaching
- ✓ • Research
- • Restricted Access

Nature

- ✓ • Important Ed Purpose
- ✓ • Factual/Nonfictional

Amount

- ✓ • Small quantity
- ✓ • Not access to entire work
- ✓ • Appropriate for educational purpose

Example of student work [22].

Methods

- Compare student presentations before and after library instruction
- Measure changes in image use in student presentations
 - Rubric based assessment presentations
 - Individual image analysis

Samples Collected

	Control (Fall 2017)	Test (Fall 2018)
Presentation A (early in semester)	No instruction	No instruction
Presentation B (late in semester)	No presentation-specific instruction	Post-presentation instruction

Rubric

	None (0)	Beginning (1)	Developing (2)	Proficient (3)	Exemplary (4)
Attribution	Images are not labeled or cited.	Images are labeled but do not contain sufficient information to determine the source.	Some images are cited	All images are cited but the style is incorrect or inconsistent	All images are cited using the appropriate style
Ethical Use	Images do not show license status.	Images show information related to license status but do not provide enough information to determine license status	Some images show license status.	All images show license status, but not all are copyright free	All images are copyright free (with proof of Creative Commons license, public domain status, or original creation of the student)

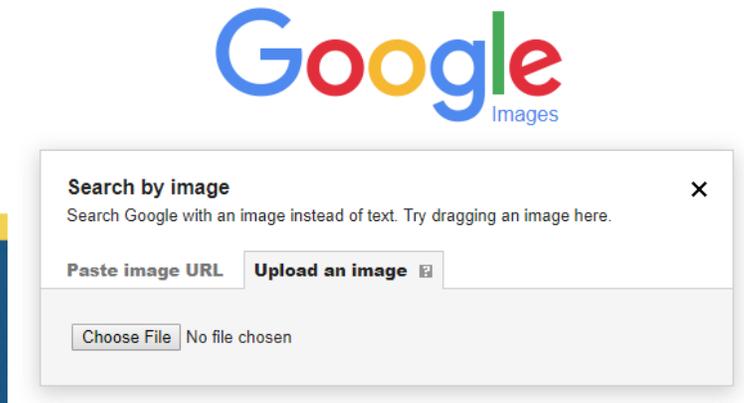
Rubric Results

Attribution	Control (2017)	Test (2018)	Difference Between Groups
Presentation A	2.00	1.58	-0.42
Presentation B	2.20	1.83	-0.37
Difference Between Presentations	+0.20	+0.25	

Ethical Use	Control (2017)	Test (2018)	Difference Between Groups
Presentation A	0.00	0.00	0.00
Presentation B	0.00	0.50	+0.50
Difference Between Presentations	+0.00	+0.50	

Image Analysis

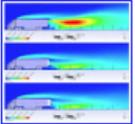
- Reviewed presentations
 - PowerPoint files were collected
- Determine image sources
 - Some quickly identified from text or common source
 - Google Images



Google 12_9.jpg x

All **Images** Maps Shopping More Settings Tools

About 25,270,000,000 results (1.06 seconds)

 Image size: 590 × 563
Find other sizes of this image:
All sizes - Medium

Possible related search: **trailer tail aerodynamics**

Semi Truck TrailerTail® Fuel Savings Technology | STEMCO
www.stemco.com/product/trailertail/
STEMCO's TrailerTail® increases fuel efficiency by 5.5% and improves stability ... CARB Compliant with 2010 CARB regulations for trailer aerodynamics as a ...

Trailer tail - Wikipedia
https://en.wikipedia.org/wiki/Trailer_tail
A trailer tail, boat tail, or rear fairing is an aerodynamic device intended to improve the fuel economy of semi-trailer trucks. It comprises a set of panels, usually ...

Visually similar images



Report images

Pages that include matching images

Review of Aerodynamic Drag Reduction Devices for Heavy Trucks ...
<https://www.tc.gc.ca/.../review-aerodynamic-drag-reduction-devices-heavy-trucks-bus...>
 590 × 563 - Aero-tractor models provide a reduction in aerodynamic drag, over the Figure 25 – Flow field behind three trailers with no boat tail, 2 ft boat tail and 4 ft boat ...

Image Analysis (cont.)

Group	Slide #	Source Cited?	Source	Type	Link
1	4	N	NASA History Website (though lots of copies floating around)	Public Domain	https://history.nasa.gov/SP-367/chapt3.htm#f35
1	7	N	Science Learning Hub (NZ - Uwaikato)	Copyright	https://www.sciencelearn.org.nz/resources/1346-causes-of-aerodynamic-drag
1	8a	N	Stemco Trailer Tail !Modified w/o permission	Copyright	http://www.stemco.com/product/trailertail/
1	8b	N		Student Creation	
1	10a	N	Alexander Derevyanko 3dmolier-studio	Copyright	https://aleezon.artstation.com/projects/rK3Oe
1	10b	N	HBM Corp, Service and Support	Copyright	https://www.hbm.com/en/6768/what-is-a-load-cell-and-how-does-a-load-cell-work/
1	11	N		Student Creation	
2	3	N	Wikimedia	CC	https://commons.wikimedia.org/wiki/File:VOLVO_FH480_Globetrotter.jpg
2	4	N	Google Pages	Copyright	https://sites.google.com/site/aerodynamics4students/table-of-contents/flow-visualisation

Image Analysis Results

Citation	Control (2017)	Test (2018)	Difference Between Groups	Use of Copyrighted Images	Control (2017)	Test (2018)	Difference Between Groups
Presentation A	64.7%	37.0%	-27.7%	Presentation A	80.0%	73.3%	-6.7%
Presentation B	52.4%	47.2%	-5.2%	Presentation B	83.7%	65.7%	-18.0%
Difference Between Presentations	-12.3%	+10.2%		Difference Between Presentations	+3.7%	-7.7%	

Conclusions

- Results support hypothesis
 - More data points needed for confirmation
- Designing instruments for this application challenging
 - Rubric based assessment was inconclusive
 - Individual image analysis gave was more accurate instrument
- Qualitative data should be next step
 - Focus groups

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