

LectureTools: A Powerful Web-Based Alternative to Clickers

Presented by

Perry Samson — samson@umich.edu

My Agenda

- Demonstrate what Lecture 1 does
- Show what's been learned
- Guide you to set up your own course
- Where's this going?

Answer
Questions



My A

Der

LectureTools Questions
https://www.lecturetools.org/question/studList

Q: can you please redefine global warming potential?
it's the rate at which it can be a greenhouse gas much more strongly than carbon dioxide

Q: Why would CO2 have the same global warming potential for 20, 100 and 500 moves? Wouldn't it decrease?
CO2 is sort of the standard that all other gases are compared to. So CO2 will have a 1, and the other ones are... So regardless of time, it will always be the standard. Of... 10 years... scientists realize say CH4 should be the standard. It will have a GWP of 1. It's an index so to speak, not a concentration.

Q: why does potential of N2O increase from 20 to 100 yrs
Over time N2O accumulates more and more because it has such a long lifetime compared to carbon dioxide

Q: how can a number get bigger as you go from 20 years to 100 years? for example HFC 23 ???
perhaps because the HCF23 has a long lifetime, so say you release 3 units in the atmosphere today (just making up a number), that will be in the atmosphere for about 260 years. If we release 3 more units tomorrow, that will overlap with the one from today. In other words, it's effects are cumulative b/c it's so long lasting in the atmosphere. There are other factors involved.

Q: Why is methane worse if it has a shorter life span?
Methane has a much faster reaction time with certain molecules in the atmosphere compared to other compounds

Q: Sorry, but I don't understand what those numbers refers under lifetime and GWP.
Under lifetime, it's the number of years that the gas will be in the atmosphere, and it was explained by prof. Samson in class. See a previous slide. GWP gives an idea of the potential of the other greenhouse gases have relative to CO2 (which is 1)

Done www.lecturetools.org 1 Error

LectureTools

My LectureTools | Logout

USER: Perry Samson
COURSE: Extreme Weather

My Courses
Lecture Selection
This Lecture
Lecture Slides
Activities
Animations
Print Lecture
Links
Instructions

Play Podcast
Lecture Slides for: W..., April 9, 2008

Tornadoes, Lightning and Hail

Oh my...

Draw on this slide | Ask a question | Your notes have been saved.

My Notes | Rate

Ordered List:
Tornado bearing down
A tornado is on the ground in your town you should (rank)

1. Go to the southwest corner of basement
2. Go to northeast corner of basement
3. Open windows
4. Close windows
5. Jump into bathtub
6. Hide under bed
7. Run like banshee
8. Drive like banshee

Draw on this slide | Ask a question | Your notes have been saved.

Fujita Scale: F0

This scale of tornado is entry level and while menacing, not particularly destructive.

Maximum Wind Speeds	Typical Effects
40-72 mph	Gale Tornado. Light Damage: Some damage to chimneys; breaks twigs and branches off trees; pushes over shallow-rooted trees; damages signboards; some windows broken; hurricane wind speed begins at 73 mph.

Draw on this slide | Ask a question | Your notes have been saved.

G

A

B

C

D

F

E

Student's View :: Reorder Quiz

QuickTime™ and a
MPEG-4 Video decompressor
are needed to see this picture.

Instructor's View :: Reorder Quiz

QuickTime™ and a
MPEG-4 Video decompressor
are needed to see this picture.

Student's View :: Image Quiz

QuickTime™ and a
MPEG-4 Video decompressor
are needed to see this picture.

Instructor's View :: Image Quiz

QuickTime™ and a
MPEG-4 Video decompressor
are needed to see this picture.

Student's View :: Social Networking

FRONT OF CLASS

	Paul Schmidt	Jennifer Gregory
Lauren Thams		Megan DeShong
Steven Anderson	Ryan Leach	
	Teya McCockran	
Martha Stortz		
Brian Burnstein	Meredith Rogan	Veronica Snoddy
Robert Evenson		Dillon Mehrberg
	Meredith Reynolds	Noah Jacob
Laura Pople		Yolanda Cossio
Chase Masters		Brandon Breslow

	Matt LaChance								
sahil saluja		Leslie Shellito		Sarah Ward	Connor Field				
	Marsheda Ewulomi	Heather Lucier	Heather K...	Michaelene Dye		Sarah Bush	Jamie Ticknor		
	Elaina Peterson				Emma Stevens				
					Adrienne Reed	Shane Malott			
Heather Dorer		Veronica Cetnar		Britney Kman	John Birney		Anna Mickols	Erika Mayer	
		Casey Herman		Michel Katz	Shannon Eagen	Oliver Nakad	Christina Barkel	Rebecca Siegel	
	Jackie Endres	Elisabeth Peters		Michael Hultz			Michelle Weatherdon	Jeremy Tyler	
Albert Ong	Elizabeth LaBelle			Mark Wilhelm		Mark Leemon	wenmian shao	Stacia Simonsen	Michelle Wong
Neesha Sarkunaseelan	Slyvia Moh Sze Tan		Adam Richards		Rebecca Segel	Chelsea Samples-Steele	Carolyn Somes	Mari Yamanami	Gabriel Suprise
Joseph Taverna	Kelsey Hagberg	Paige Bennett	Peter VandenToorn	Nicole Morack	Christopher Johnson	Benjamin Trachman			daniel herman

Elizabeth Raschke		Perry Samsom
Lauren Schmandt	Jeffrey Chang	
Mark Beaudry		
Kelly Clawson		Eric Rodriguez
		Melissa Nacy
Stephanie Kunkel	Teresa Sinelli	
Sarah Adams		zachary fortier
Bridget Hunt	Amanda Ghourdjian	

Heather Lucier



Year: Freshman
Major: Undecided
Living: Oxford

Change Seat
Refresh

- Not in Lecture:
- Katie McKeiver
 - Aneisha McDole
 - tristin llewellyn
 - Angela Wang
 - Ashley McNees
 - Scott Granger
 - Melanie Killips
 - James Larkin
 - Sagar Patel
 - Joseph Krotkiewicz
 - LaToya Williams
 - Jessica Asbill

LectureTools

[Main](#) | [Overview](#) | [For Students](#) | [For Instructors](#) | [Student Registration Instructions](#)

WELCOME TO LECTURETOOLS

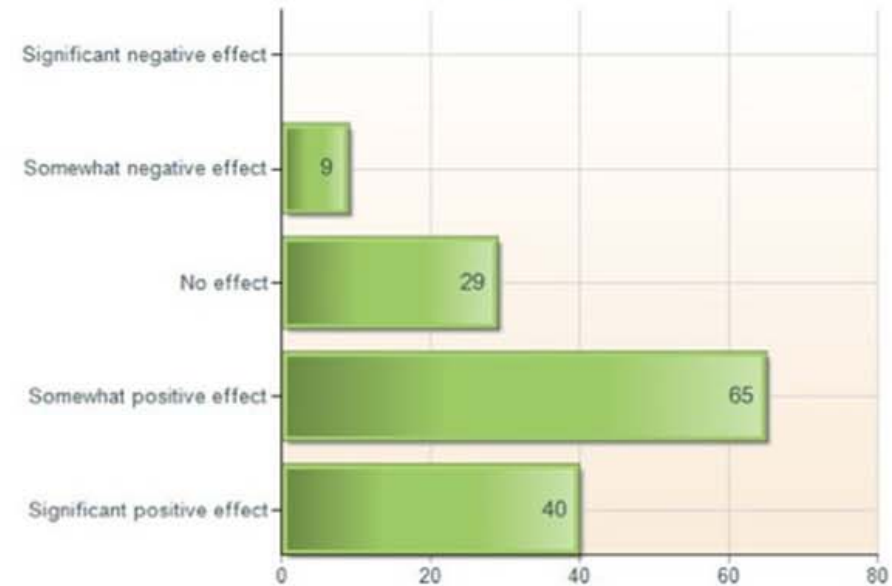
Learning in large introductory classes is a challenge in today's college environments. Students in these classes often feel anonymous and disconnected from the class experience, which may affect their ability and/or motivation to learn. Instructors likewise grapple with the low degree of interaction and inability to reach students individually.

LectureTools is designed to provide a class experience by:

1. Enabling note-taking synchronized to lecture slides,
2. Providing opportunities to pose questions electronically during lecture,
3. Including a complete personal responder system to participate actively in class activities and
4. Tools for self-assessment of confidence of understanding.

OUTCOMES: Current semester students report they feel more attentive, more engaged, and learn more with LectureTools and vastly prefer it to clicker systems! [refresh page to see additional plots]

Do you feel that the use of your laptop in this class has affected your learning?



LectureTools in the News

- Current Want LectureTools in YOUR classes this fall? Submit classes you think would benefit at the student-run LectureTools Facebook page.
- 4 May, 2009 University of Michigan offers workshop "**LectureTools: A Web-Based Alternative to Clickers**" as part of *Enriching Scholarship '09*
- 22 April, 2009 Instructors can now search and add Learning Objects from MERLOT and the National Science Digital Library from within LectureTools.
- 13 April, 2009 University of Michigan selects Prof. Perry Samson, lead designer of LectureTools, as recipient of "2009 Teaching Innovation Prize."
- 24 Feb, 2009 Software & Information Industry Association (SIIA) selects LectureTools as finalist for CODiE Award in categories of "Best Educational Use of a Technology Device" and "Best Postsecondary Instructional Solution."



Username:

Password:

Login

[Forgot your password?](#)

Not Registered?

[Student Registration](#)
[Instructor Registration](#)

My Agenda

- Demonstrate what LectureTools does
- Show what's been learned
- Guide you to set up your own course
- Where's this going?

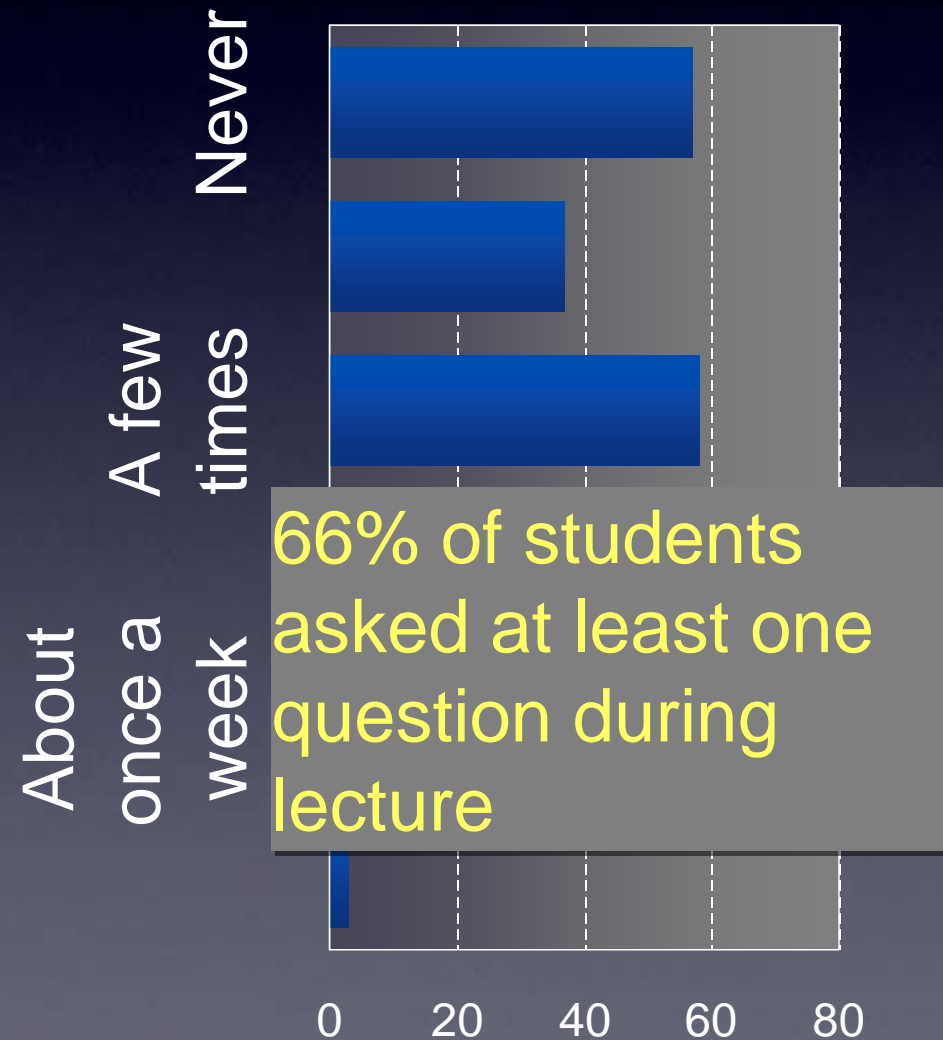
Change in class

- Students voluntarily bring laptops to class



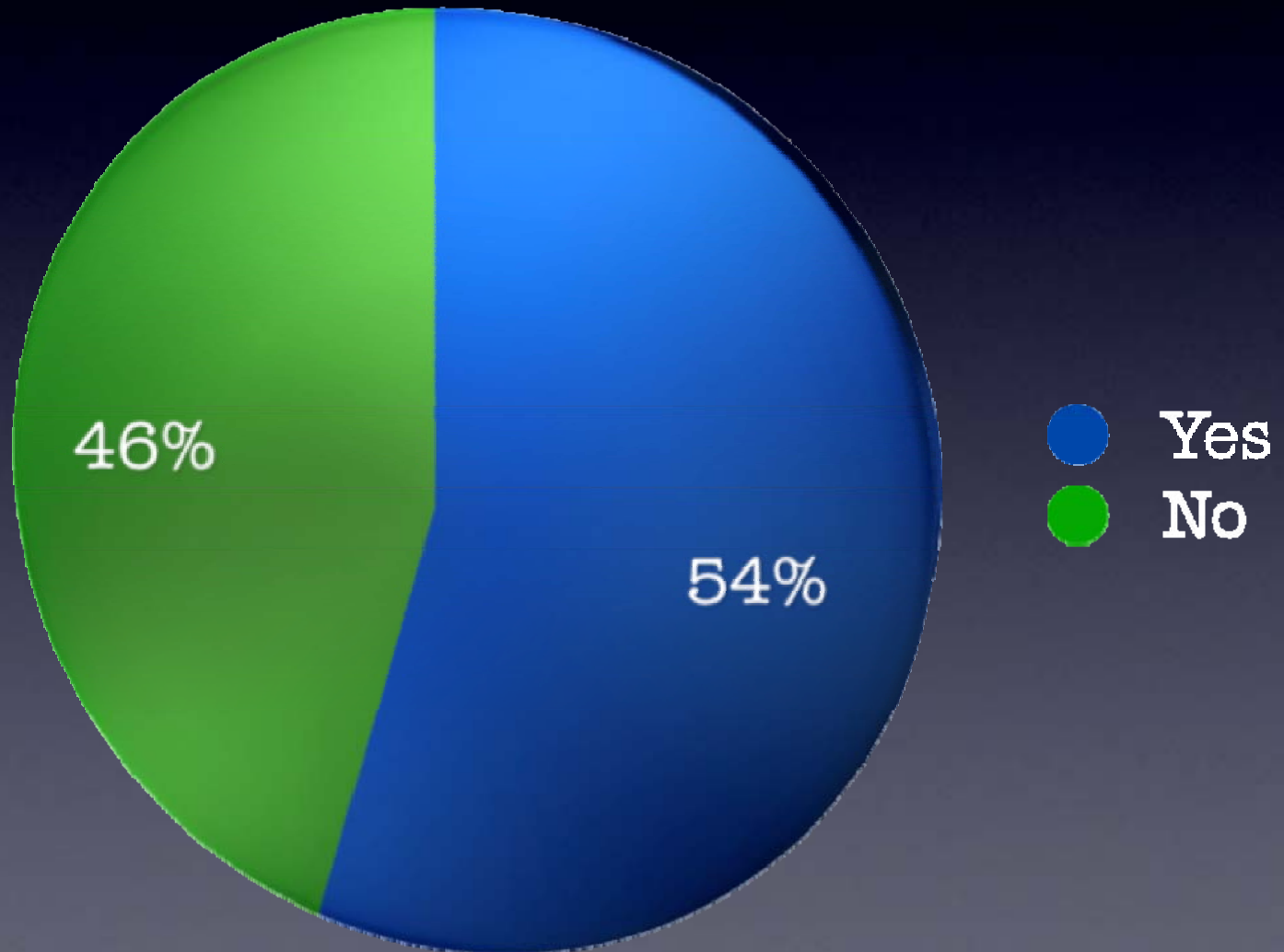
Change in class

- Students ask more questions



An Alternative to Clickers

Have you used 'clickers' (like Qwizdom) in other classes?



Critiquing Clickers

• Design

- The scope of questions are limited
- Students can't ask questions
- Not integrated with other learning strategies

• Use

- Students feel they're used mostly to take attendance
- Question design is key.

An Alternative to Clickers

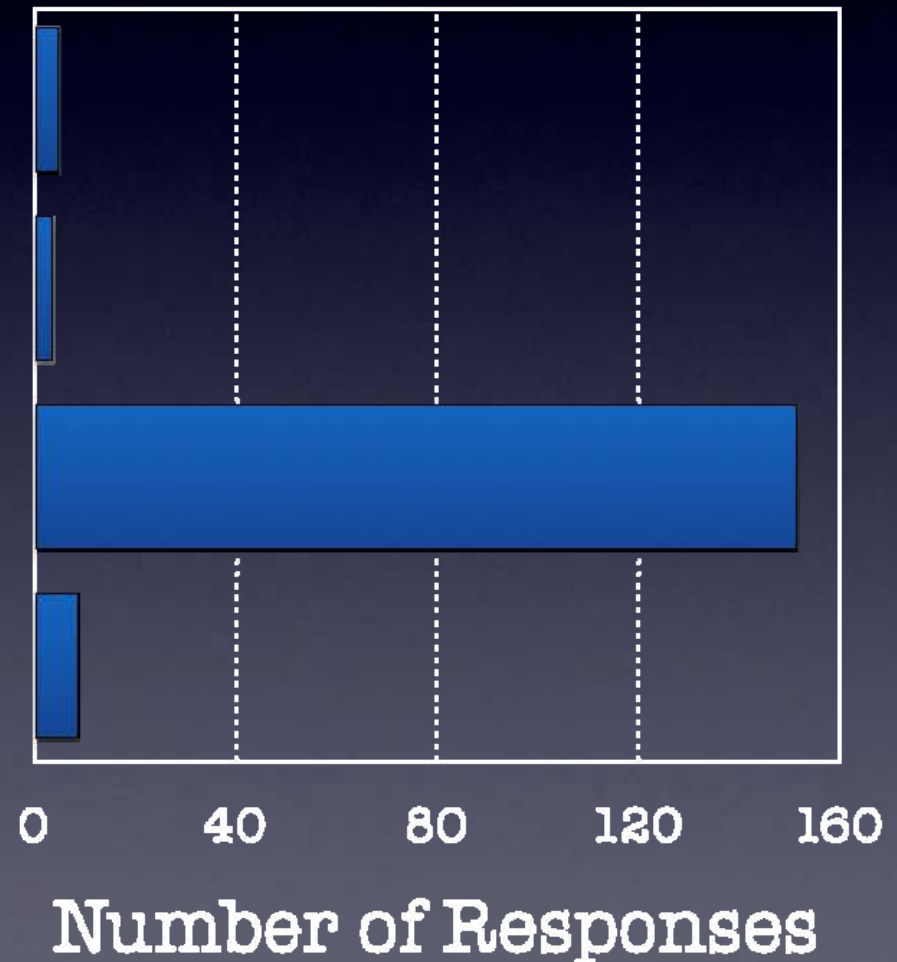
Given the option which would you prefer:

No student response system

Use clickers

Use LectureTools

Both clickers and LectureTools



Student Feedback:

1. I really prefer the use of lecturetools compared to "the clicker".
2. I feel that lecture tools is very efficient and really helps me stay organized.
3. I feel that lecturetools is a much more interactive system than the clicker. It is very easy to access and use, and provides a multitude of note taking options.
4. Printing out 10 pages of slides for every class is a horrible waste of paper. This system is extremely efficient and very well put together.

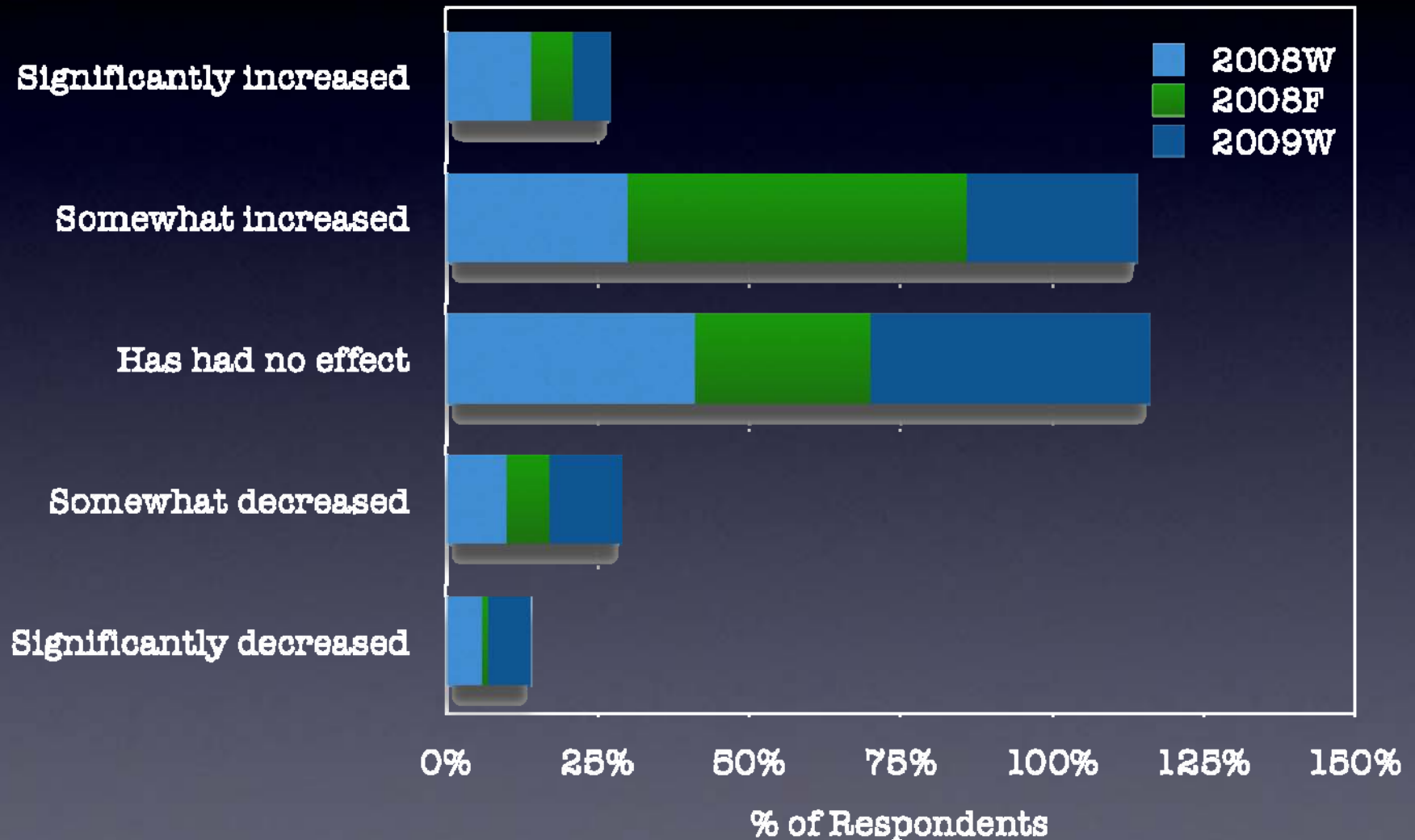
Student Feedback:

5. I only wish that I had more classes using this system as it would save me a lot of money and a lot of headaches.
- I find the fact that I can ask questions directly to a GSI and get an immediate answer (or read others' questions and see those responses) to be really helpful
 - My favorite feature, however, is the fact that this is all available online, and for free, which is \$35 less than "the clicker."
 - I think it's far superior to Quizdom. I've found that most people seem to use Quizdom only as a way to check attendance.

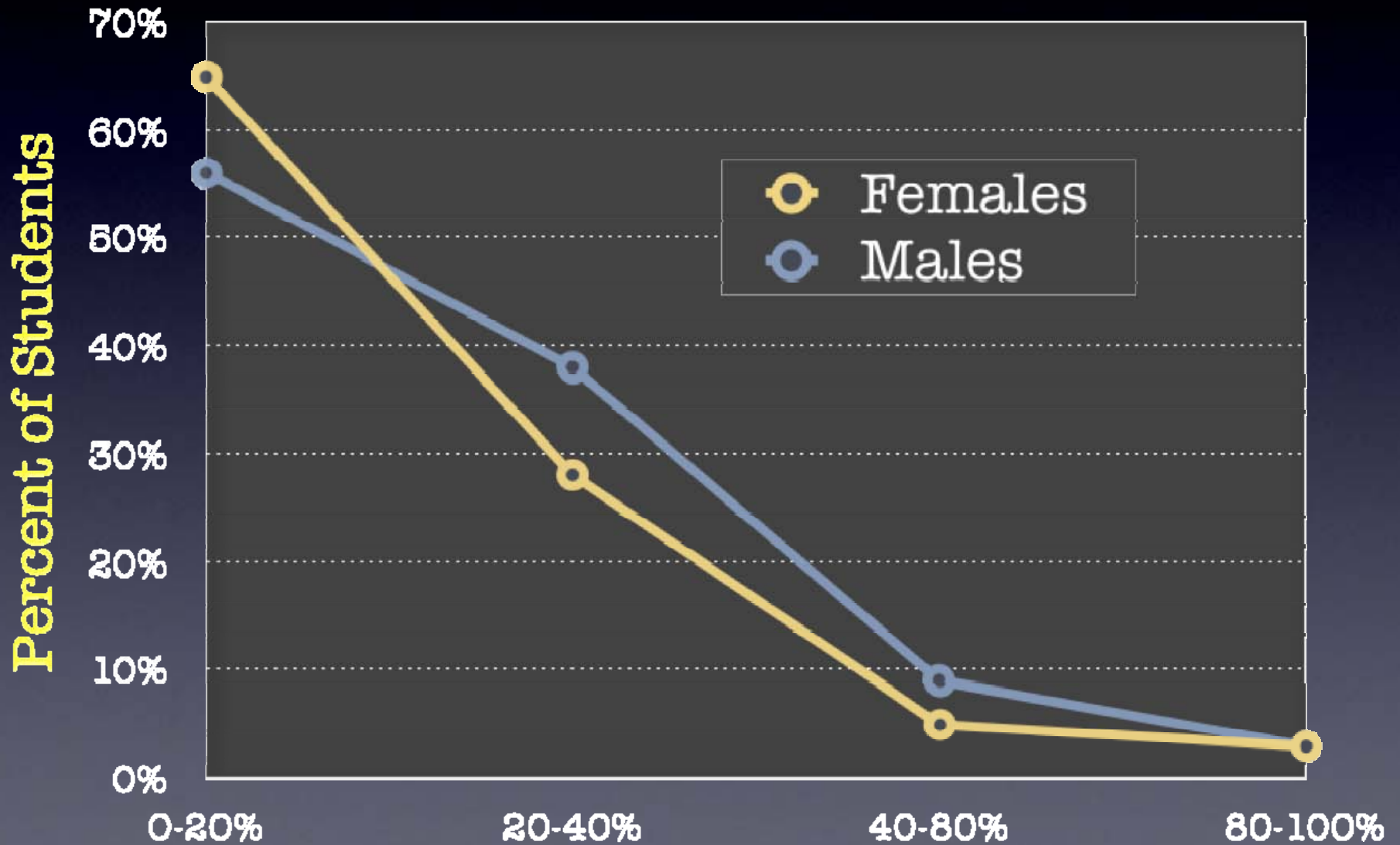
Faculty Concerns:

1. To what degree will the introduction of laptops into class introduce distractions?
2. To what degree will the introduction of laptops into class change attentiveness?
3. To what degree will the introduction of laptops into class change engagement?
4. To what degree will the introduction of laptops into class change student learning?

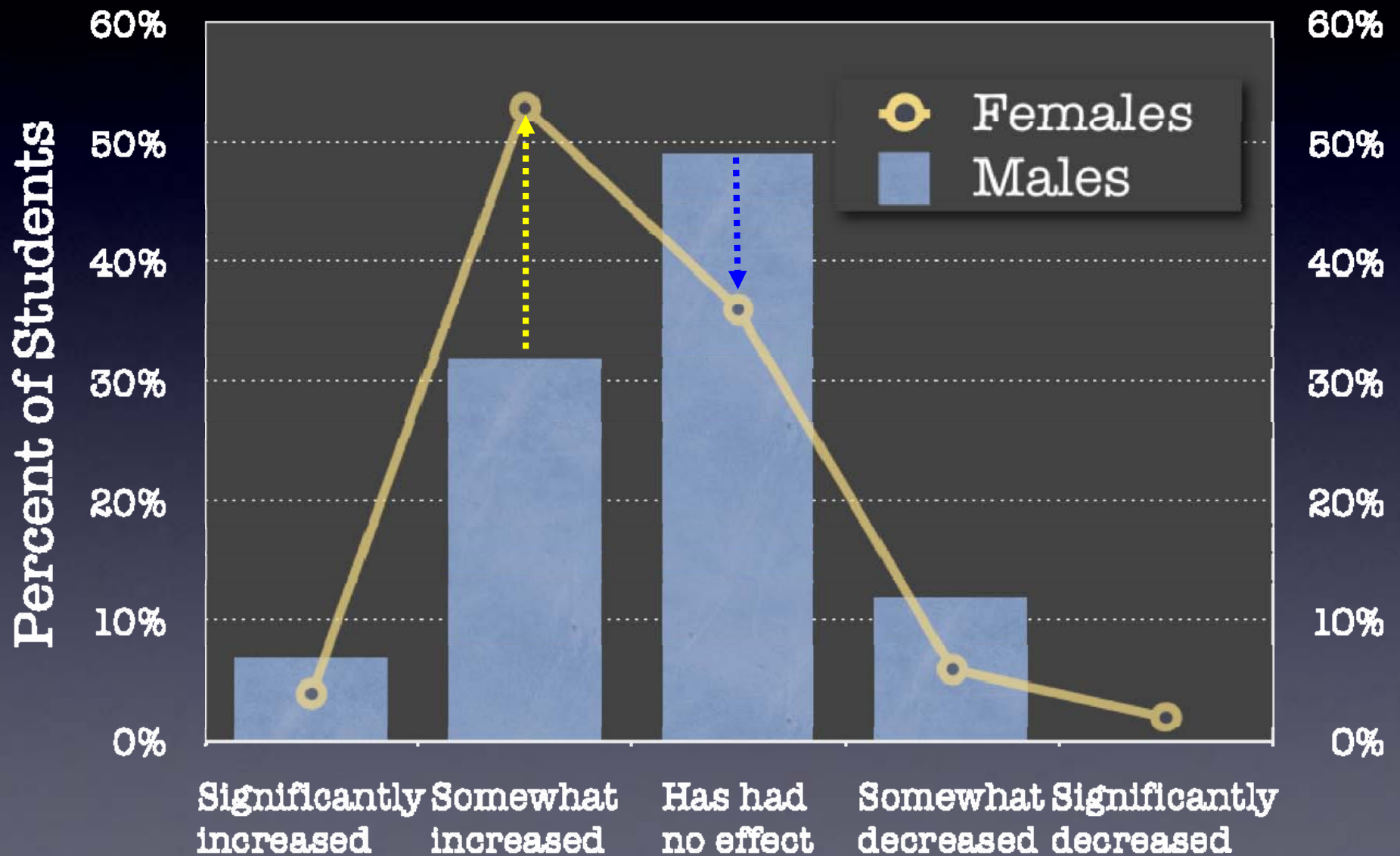
“How do you feel that your use of laptops in this class has changed the time you spend on tasks **unrelated** to the lecture?”



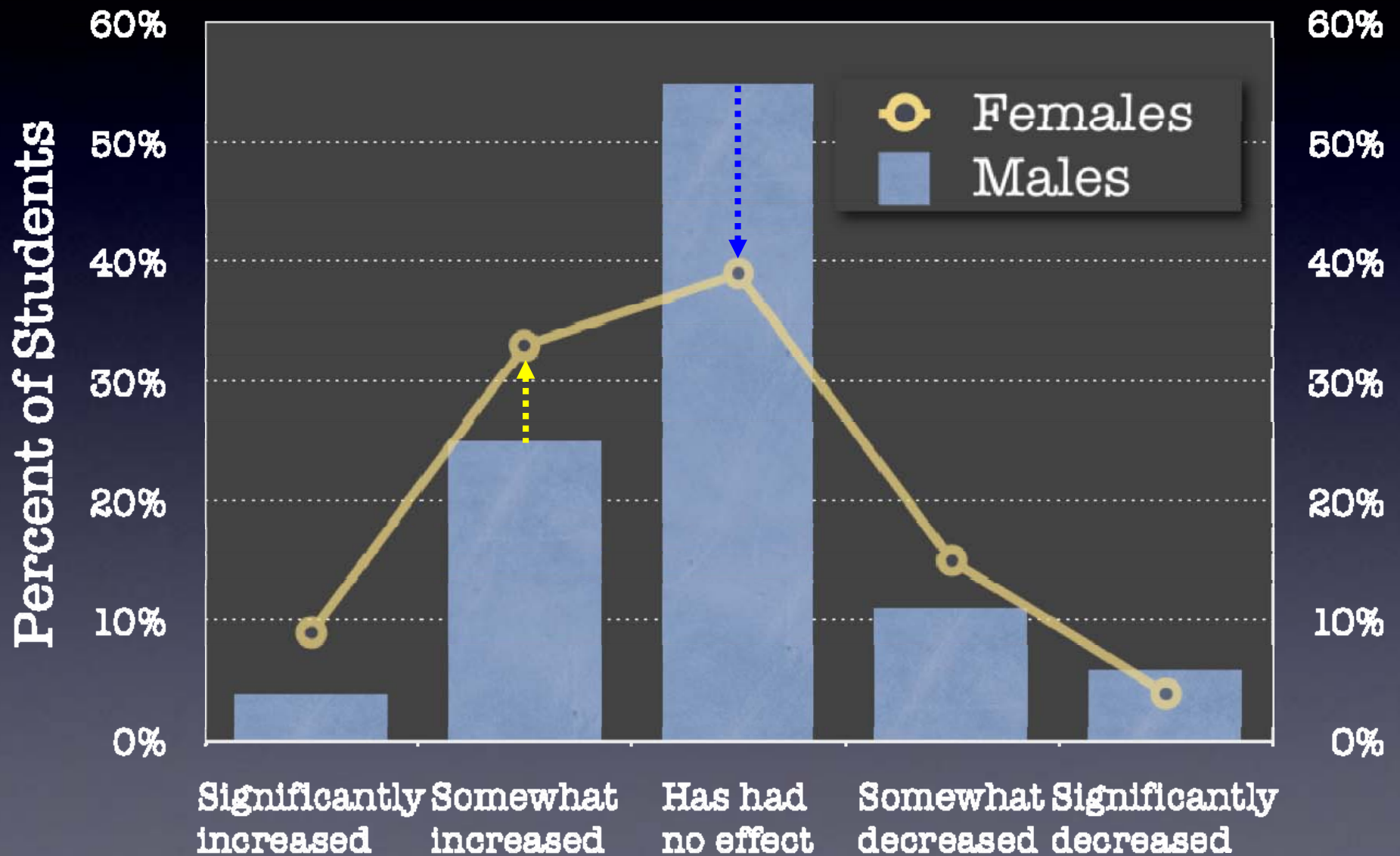
“In classes where you do not use a laptop, what percentage of time do you estimate you are engaged in tasks not pertaining to that course?”



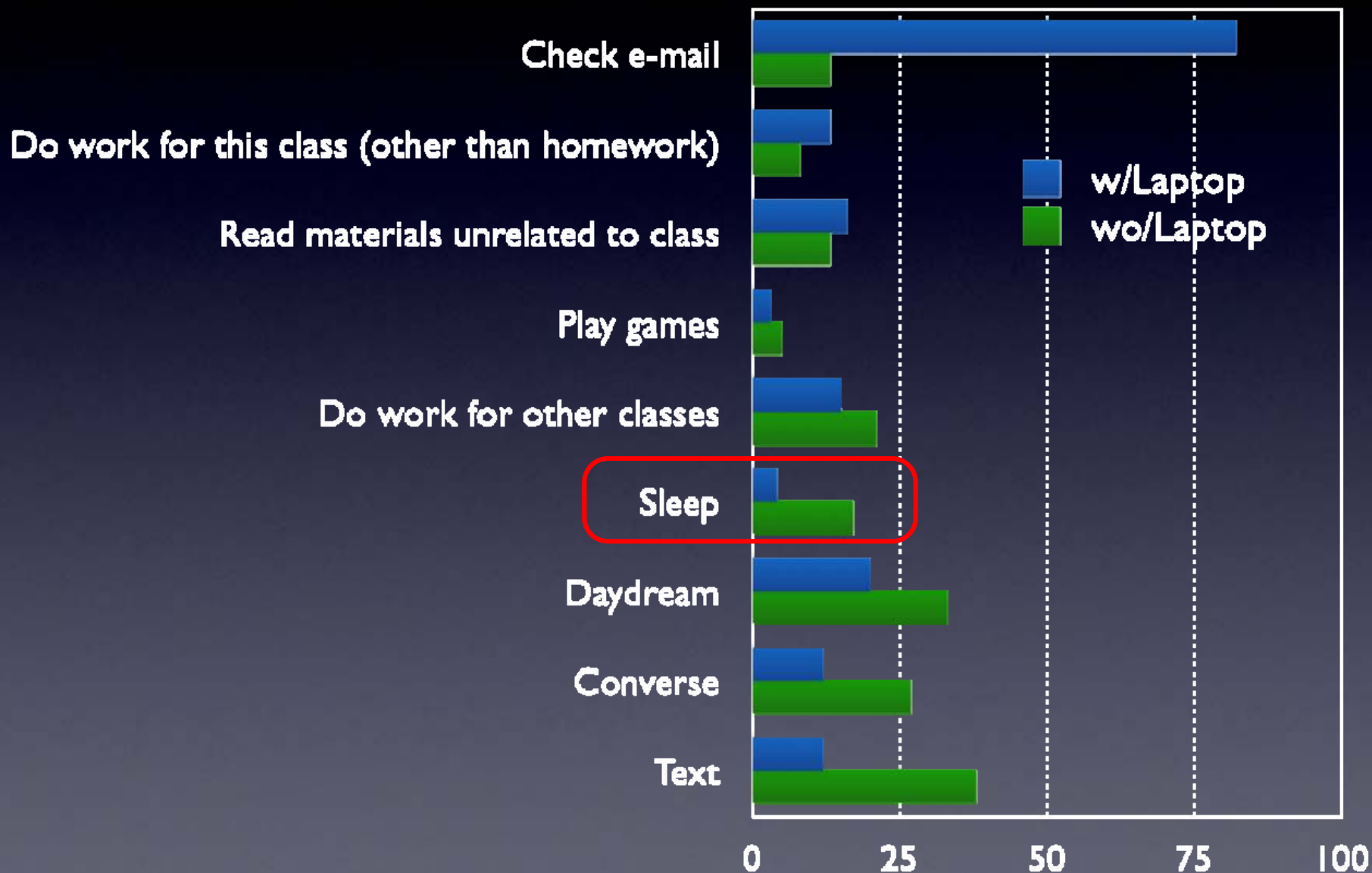
“How do you feel that your use of laptops in this class has changed the time you spend on tasks **unrelated** to the lecture?” {Fall, 2008}



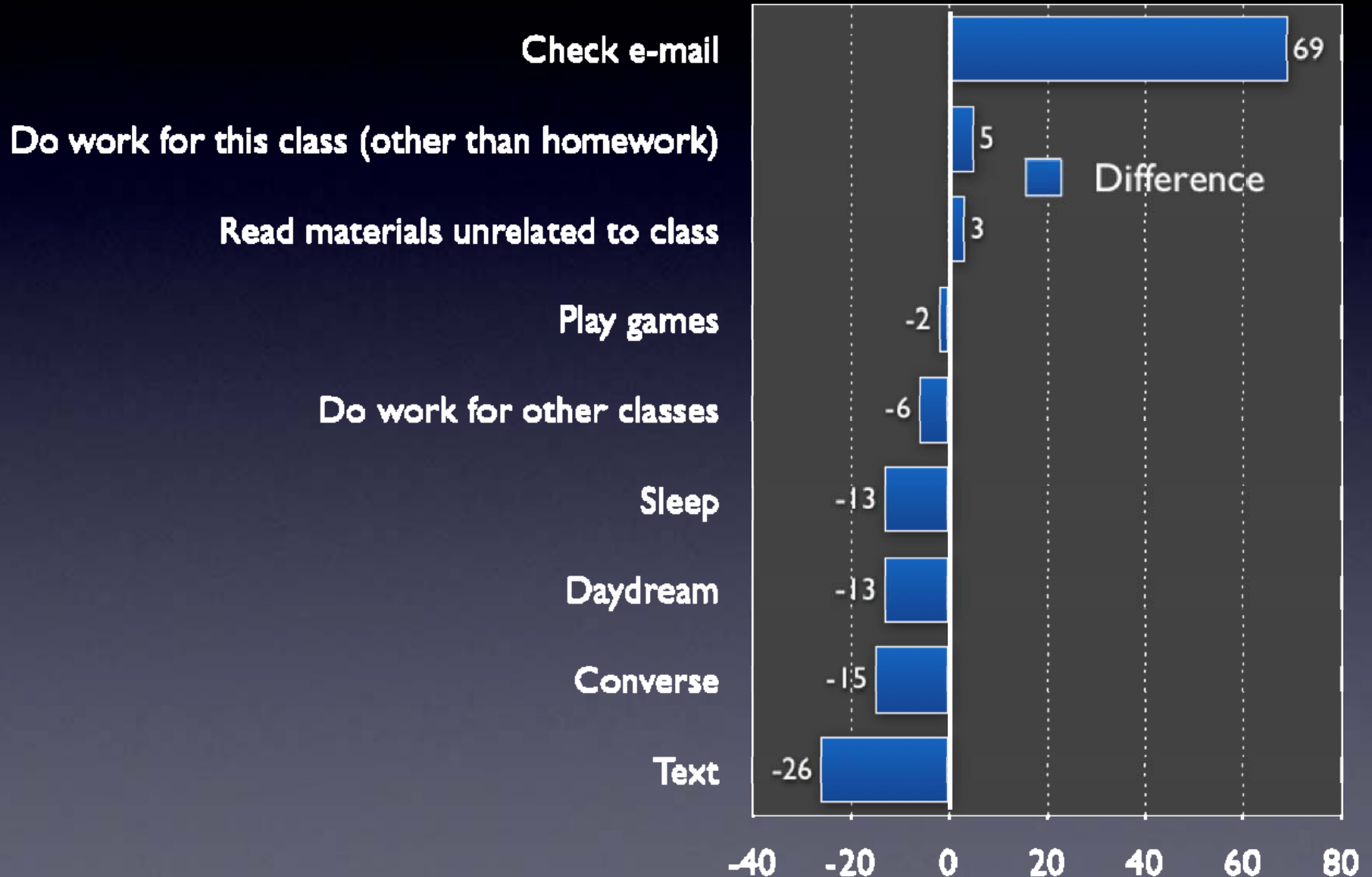
“How do you feel that your use of laptops in this class has changed the time you spend on tasks **unrelated** to the lecture?” {Winter, 2009}



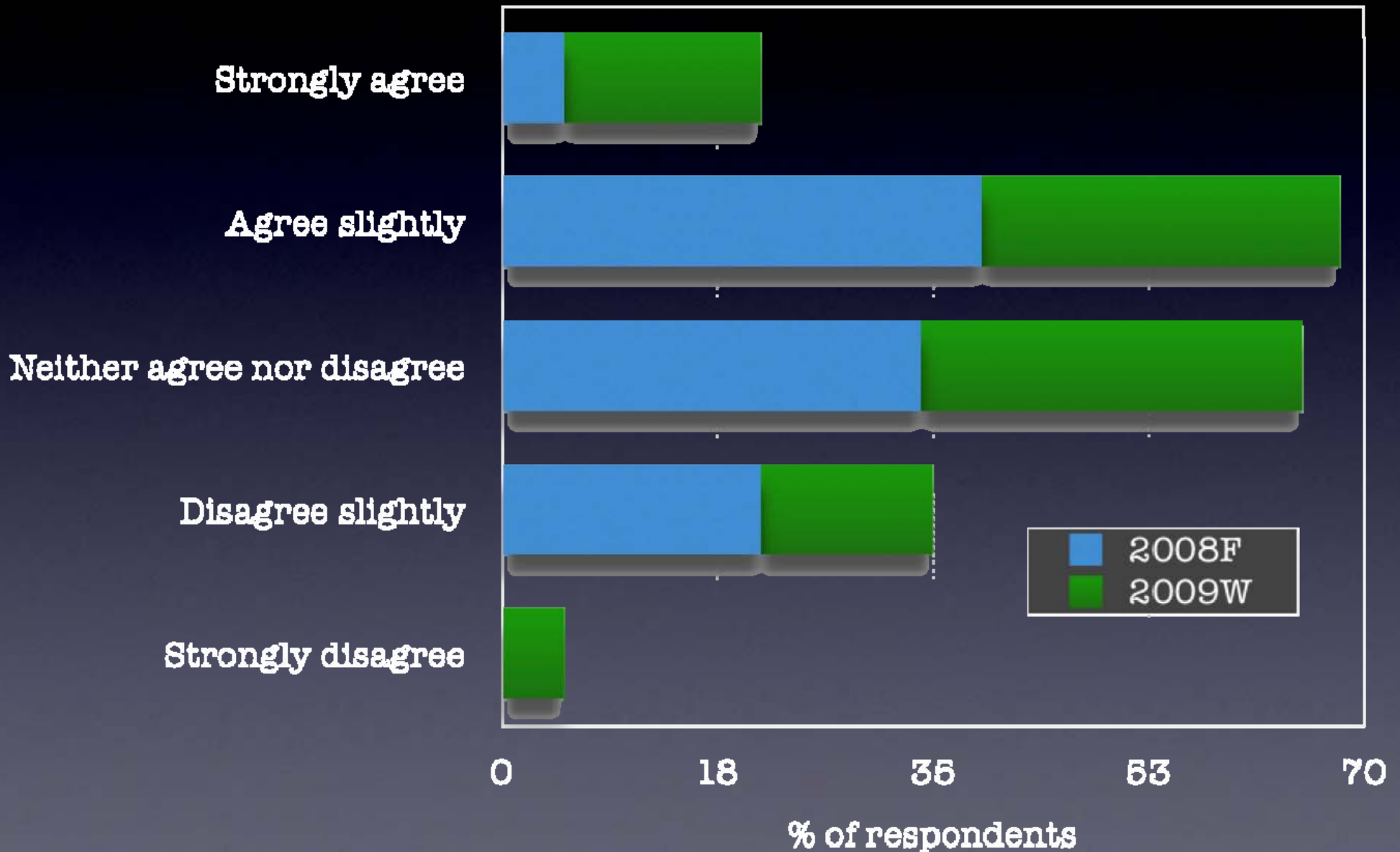
What's Changed?



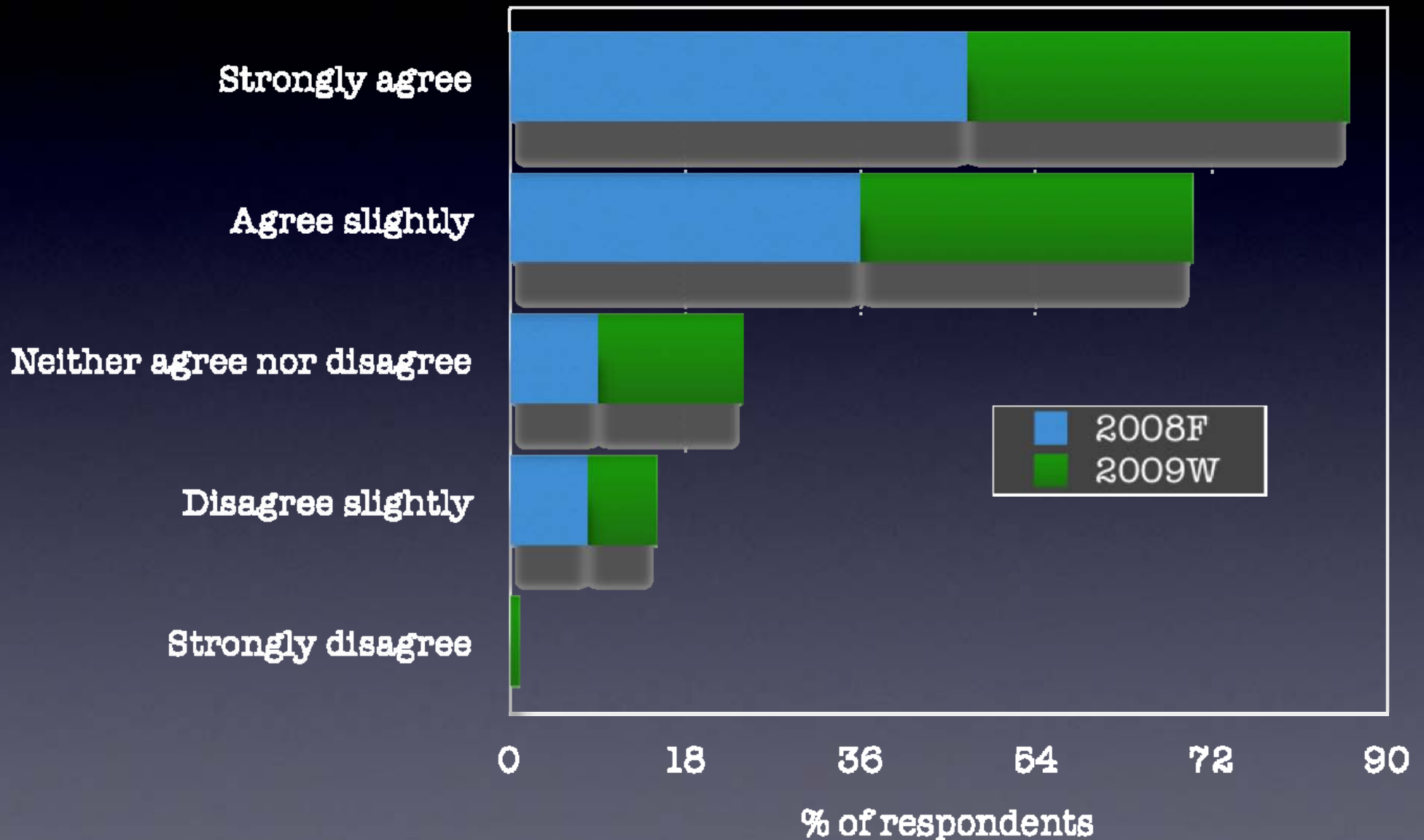
What's Changed?



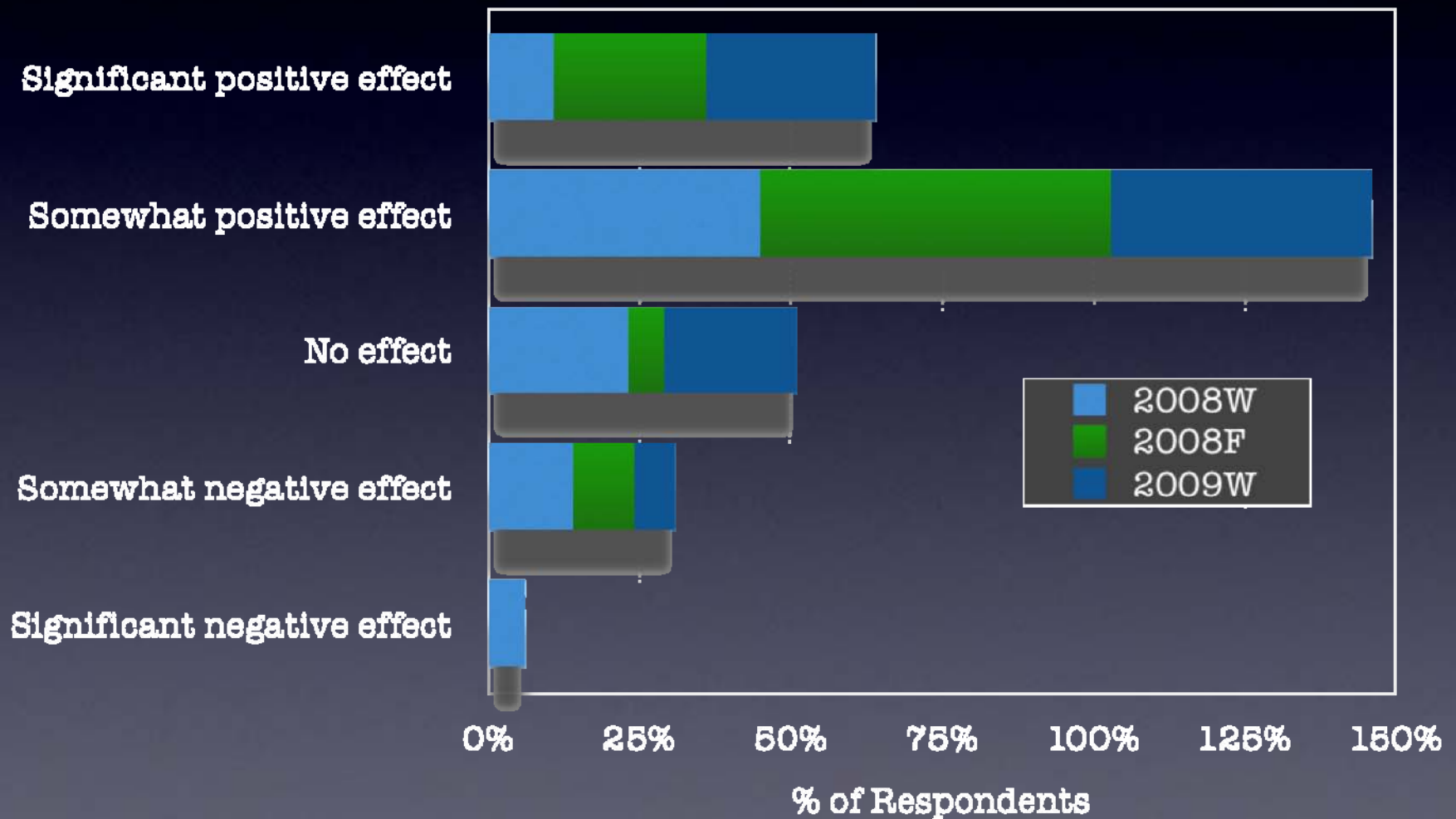
“My **attentiveness** in this class has increased due to laptop use”



“In this class laptops help me to be **engaged** during lecture”



“Do you feel that the use of your laptop in class has affected your **learning**?”



Summary

Laptops are a source of distraction:

1. Students admit that the presence of laptops in class adds distraction.
2. Distraction appears to affect women more than men.

Regardless, laptops are viewed as positive

1. Students feel laptops help them be **more** engaged .
2. Students feel laptops help them be **more** attentive.
3. Students feel laptops have a **positive** affect on their learning.

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Statistics syllabus exams Gunderson Handouts

Lecture Slides for: Tuesday, May 5, 2009

Welcome to Stats 350 Winter 2009

Brenda Gunderson bkg@umich.edu

- Please Pick up a Syllabus Handout
- Also up front: a few copies of lecture notes for today (if you have your lecture notes coursepack – you don't need this!)
- We will turn on clickers LATER in class.
- Today:
 - Go through syllabus & course basics
 - Intro to Chapter 2: Turning Data into Information
 - Try some Clicker Questions along the way!
- For next class: Read Chapters 1 and 2

"Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write."
– H. G. Wells

Draw on this ↑ slide

My Family ...



My Notes

B I U | Courier New | 4 (14pt) | **A** | **ab**
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This is a note.

Statistics

...the most important science in the whole world: for upon it depends the practical application of every other science and of every art: the one science essential to all political and social administration, all education, all organization based on experience, for it only gives results of our experience." zczxc dfgdg Zxx

Ask a question

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Slide Specific Resources

Statistics

① ② ③ ④ ⑤ Understanding

My Courses

Lecture Selection

This Lecture

Links

Instructions

Class Notes

Readings

Perry Samson | [logout](#)

Chapter 4: Gathering Useful Data for Examining Relationships

Search the book

 Search

Course STATS 350

Name *Introduction to
Statistics & Data
Analysis*

Term Spring, 2009

Instructor Gunderson

School UNIVERSITY OF
MICHIGAN-ANN
ARBORBook *Mind on Statistics,
3rd Edition*

Table of Contents

[Chapter 1](#)[Chapter 2](#)[Chapter 3](#)**[Chapter 4](#)**[4.1 Speaking the Language of Research
Studies](#)[4.2 Designing a Good Experiment](#)[4.3 Designing a Good Observational Study](#)[4.4 Difficulties and Disasters in Experiments
and Observational Studies](#)[Chapter 5](#)[Chapter 6](#)[Chapter 7](#)[Chapter 8](#)[Chapter 9](#)[Chapter 10](#)[Chapter 11](#)[Chapter 12](#)[Chapter 13](#)[Chapter 14](#)[Chapter 15](#)[Chapter 16](#)[Chapter 17](#)Select Section [4.1](#) [4.2](#) [4.3](#) [4.4](#) [Exercises](#)

Confounding variables are less likely to be a problem in the interpretation of randomized experiments. Because the treatments are randomly assigned to the units, the values of confounding variables should approximately even out across treatment groups. For example, the group of physicians that was randomly assigned to take aspirin and the group of physicians randomly assigned to take placebo in Case Study 1.6 should have had similar compositions in terms of other health-related variables. Therefore, health-related variables such as diet and exercise would not be confounded with the explanatory variable, which was whether a physician took aspirin or placebo.

Example 4.1 What Confounding Variables Lurk Behind Lower Blood Pressure?**THOUGHT QUESTION 4.2**

Choose a possible confounding variable for the situation in Example 4.1, other than the ones mentioned in the example, and explain how it meets the two conditions necessary to qualify as a confounding variable.

Hint: Think of something that would probably be different for people who attend church compared to those who don't and that might affect blood pressure.

Example 4.2 The Fewer the Pages, the More Valuable the Book?

As these examples illustrate, it is unlikely that any explanatory variable is the direct and sole explanation for the values of the response variable. There are almost always confounding variables. These confounding variables might be measured and accounted for in the analysis of the data, or they could be unmeasured lurking variables. In either case, always think about the possible effect of confounding variables when you consider the results of statistical studies. Confounding variables can be especially problematic in interpreting the results of observational studies. Randomized experiments are designed to help control the influence of confounding variables.

Perry Samson | [logout](#)

Lightning: Due Friday, Apr 10 by 10:00 AM

Your Answer to Question #2:

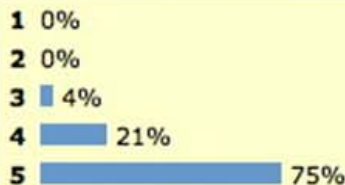
The radio waves produced by lightning are called:

- sferics
- St. Elmo's fire
- thunder
- sonic boom
- ball lightning

Your answer is **CORRECT!**

Please take a moment to affirm your answer by reading the highlighted section from the text.

Confidence Distribution for This Question from Your Course



AOSS 102 responses = 303

Still confused? — [Search](#) clarifications others have requested.

[Next Question](#)

Need clarification? — Search clarifications other have requested about this question.

Lightening Detection and Suppression

For many years, lightning strokes were detected primarily by visual observation. Today, cloud-to-ground lightning is located by means of an instrument called a lightning direction-finder, which works by detecting the radio waves produced by lightning. A web of these magnetic devices is a valuable tool in pinpointing lightning strokes throughout the United States, Canada, and Alaska. Lightning detection devices allow scientists to examine in detail the lightning activity inside a storm as it intensifies and moves (see Fig. 10.24). This gives forecasters a better idea where intense lightning strokes might be expected. In addition, when this information is correlated with satellite images, a more complete and precise structure of a thunderstorm is obtained.

Each year, approximately 10,000 fires are started by lightning in the United States alone and around \$50 million worth of timber is destroyed. For this reason, tests have been conducted to see whether the number of cloud-to-ground lightning discharges can be reduced. One technique that has shown some success in suppressing lightning involves seeding a cumulonimbus cloud with hair-thin pieces of aluminum about 10 cm long. The idea is that these pieces of metal will produce many tiny sparks, or corona discharges, and prevent the electrical potential in the cloud from building to a point where lightning occurs. While the results of this experiment are inconclusive, many forestry specialists point out that nature itself may use a similar mechanism to prevent excessive lightning damage. The long, pointed needles of pine trees may

HIGHLIGHTED PARAGRAPH

MARGIN NOTES

Click here to attach a margin note to the highlighted paragraph or click another paragraph to highlight.

List My Margin Notes for this Chapter

VISUALS

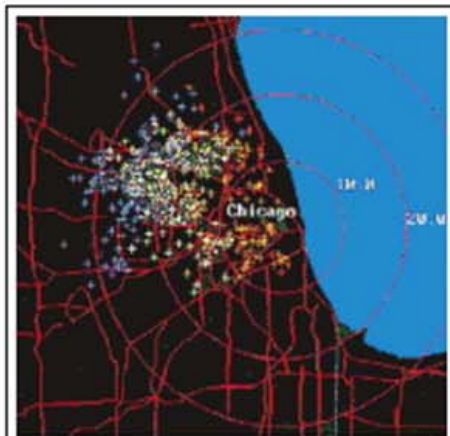


Fig. 10.24

[view](#)

KEYWORDS

Cloud — A visible aggregate of tiny water droplets and/or ice crystals in the atmosphere above the earth's surface.

Next Steps

Try it!

<http://www.lecturetools.org>

Write me...

samson@umich.edu

Enjoy a [BOTL...](#)

[Mahony & Sons](#): TODAY, 4:30 pm