

TRANSFORMATIVE TEACHING AND LEARNING

OAKLAND
UNIVERSITY

10th Annual International Teaching and Learning Conference
Oakland University in Rochester, MI



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of Windsor

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Digital Devices in the Classroom: Dilemmas and Discussion

The promise of technology & transformation of our classrooms, interactions with students

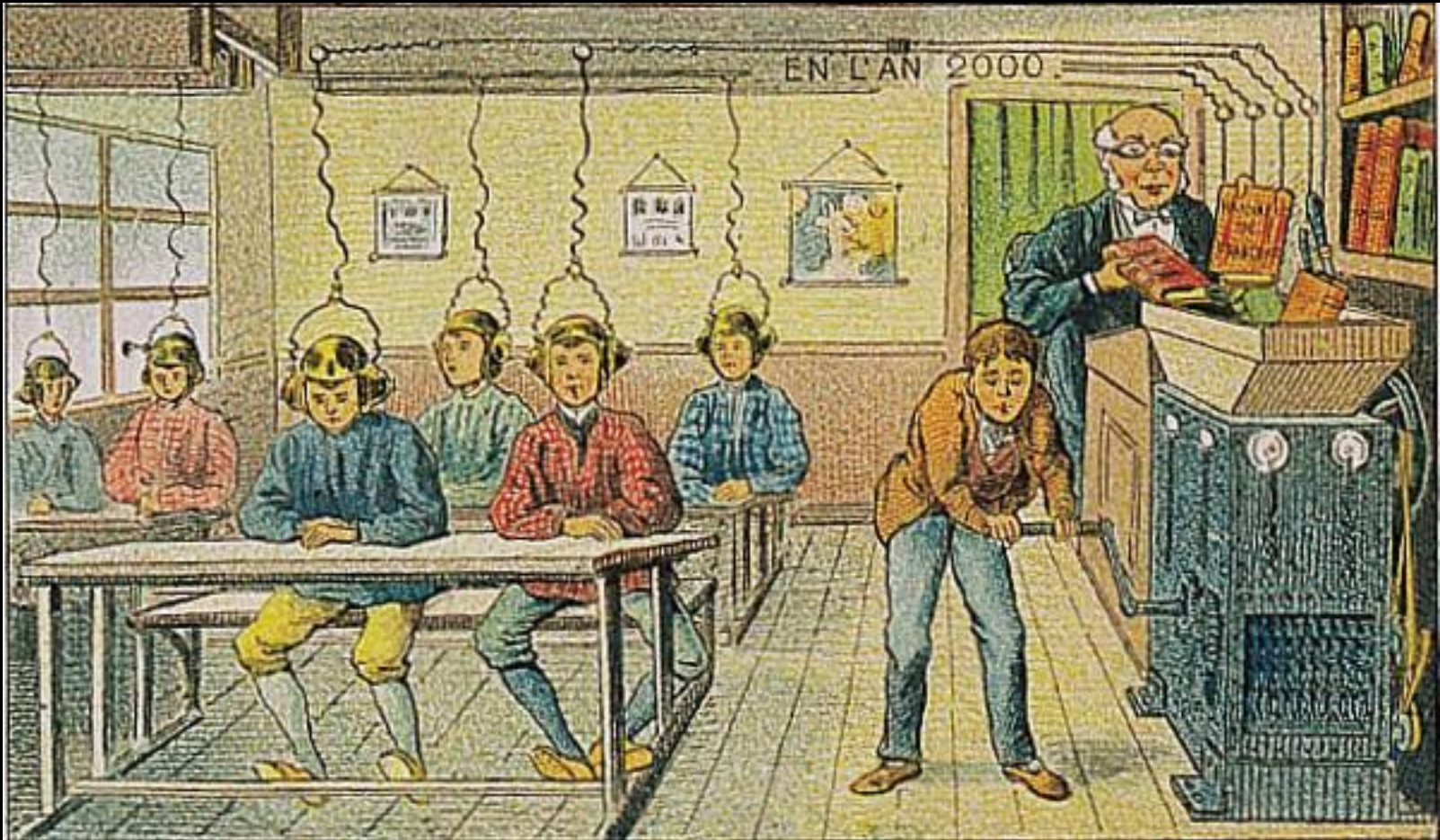


Image from Villemard's Year 2000 series

See: <http://paleofuture.com/blog/2007/9/10/french-prints-show-the-year-2000-1910.html>

What are some potential advantages/benefits of student technology in the classroom?



Take a minute or so to write down your thoughts.



Discuss with the person next to you.



Larger discussion.



A TOOL
IS ONLY AS GOOD
AS THE PERSON USING IT

@NoApp4Pedagogy

Use of devices in class for learning – e.g.



Classroom response systems:

- Clickers (e.g., TurningPoint, iClicker)
- **Web-based/BYOD systems:**

Instructor poses questions in class, students answer on device; can be used with Peer Instruction.

“BYOD” (bring your own device classroom response system), requires internet connectivity with web-enabled device (e.g., laptop, smartphone, tablet).

- LectureTools/Echo360 <http://echo360.com/resource-hub>
- Learning Catalytics <https://www.pearsonhighered.com/products-and-services/course-content-and-digital-resources/learning-applications/learning-catalytics.html>
- Top Hat <https://tophat.com/>
- Poll Everywhere <https://www.polleverywhere.com/>
- Kahoot <https://getkahoot.com/>
- Socrative <http://www.socrative.com/>
- Nearpod: <https://nearpod.com/>

Backchannel/Q & A tools:

- Twitter: <http://twitter.com>
- Google Slides Q & A: <https://docs.googleblog.com/2016/05/slidesQA.html>
- Today's Meet: <https://todaysmeet.com/>

Students can ask Q, discuss topics online during class.

Choosing a system – some Q to consider:

- Are you able/allowed to use it?
(Infrastructure, ancillary fee policies, etc.)
- Costs (to school/students)?
- Features – what's important to you?
 - Question types
 - Being able to track student responses/data
 - Do you want to just ask Q, or let students ask you Q via the system?

Let's try a BYOD system!

Please visit: www.lecturetools.com



Already a LectureTools user?
LOGIN HERE

*We've Evolved.
New Platform. Better Features.
LectureTools is now Echo360.*

SIGN UP

» you'll be glad you did «

LOGIN

» welcome back «



LectureTools will cease to be available as a separate platform as of June 2016. Instructors using LectureTools will need to move all presentation content to the new active learning platform by this coming June 2016. The LectureTools system will be deprecated. For more information please contact success@echo360.com.

Email Address

demo9872|

Password



Americas and Asia



United Kingdom, Europe, and Middle East



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Submit

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LectureTools is supported on IE 9.0+, FireFox 4.0+, Google Chrome 10.0+ and Safari

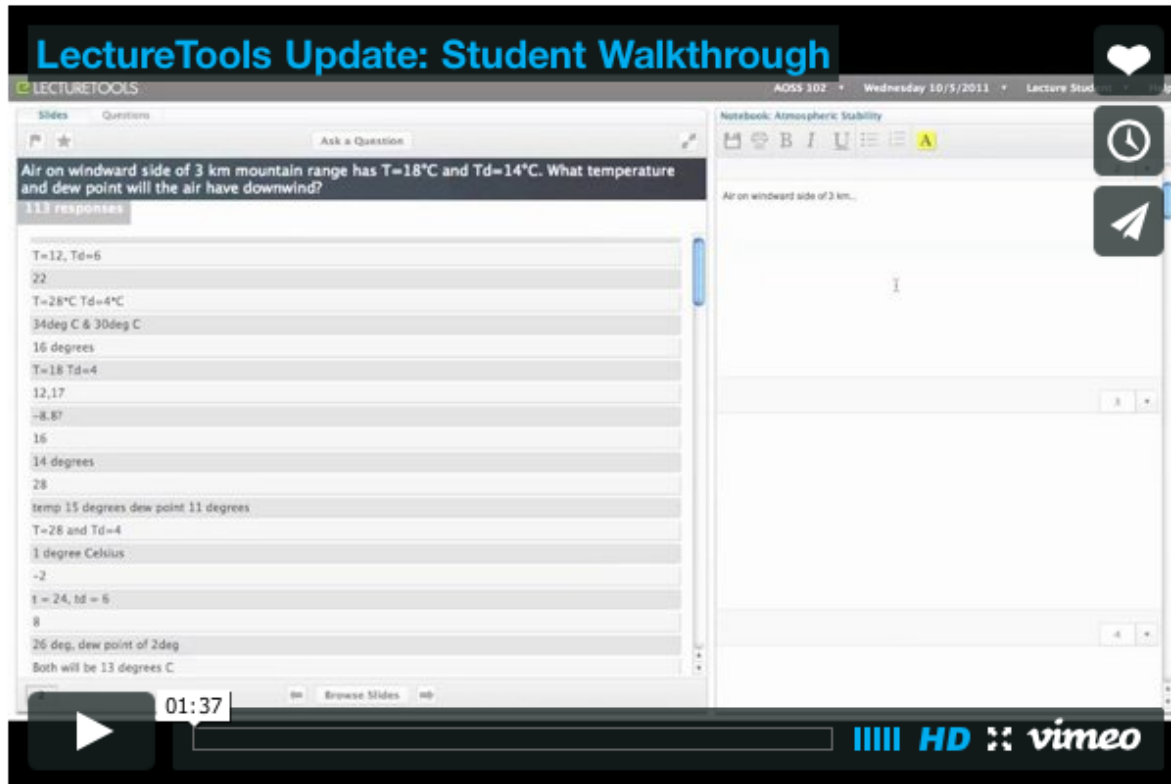
follow us on:  

Login info:

Email address =

demo9872

Password is blank.



Respond to polls with laptop or phone

Use LectureTools on your browser to respond to polls or text in answers with your cell phone. Make sure your number is attached to your account in settings.

Ask questions at any time

All questions posed during or after class will go to your instructor. Answered questions appear anonymously for the whole class to see

Take notes online and flag slides

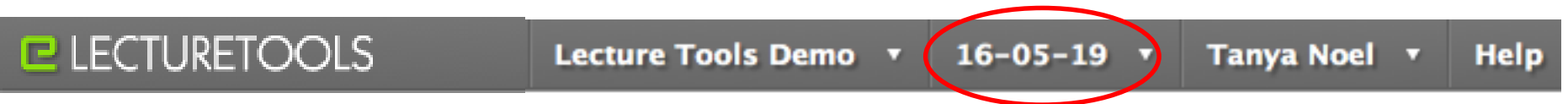
Use LectureTools to type notes online associated with slides or flag slides to review later under browse slides

Click on

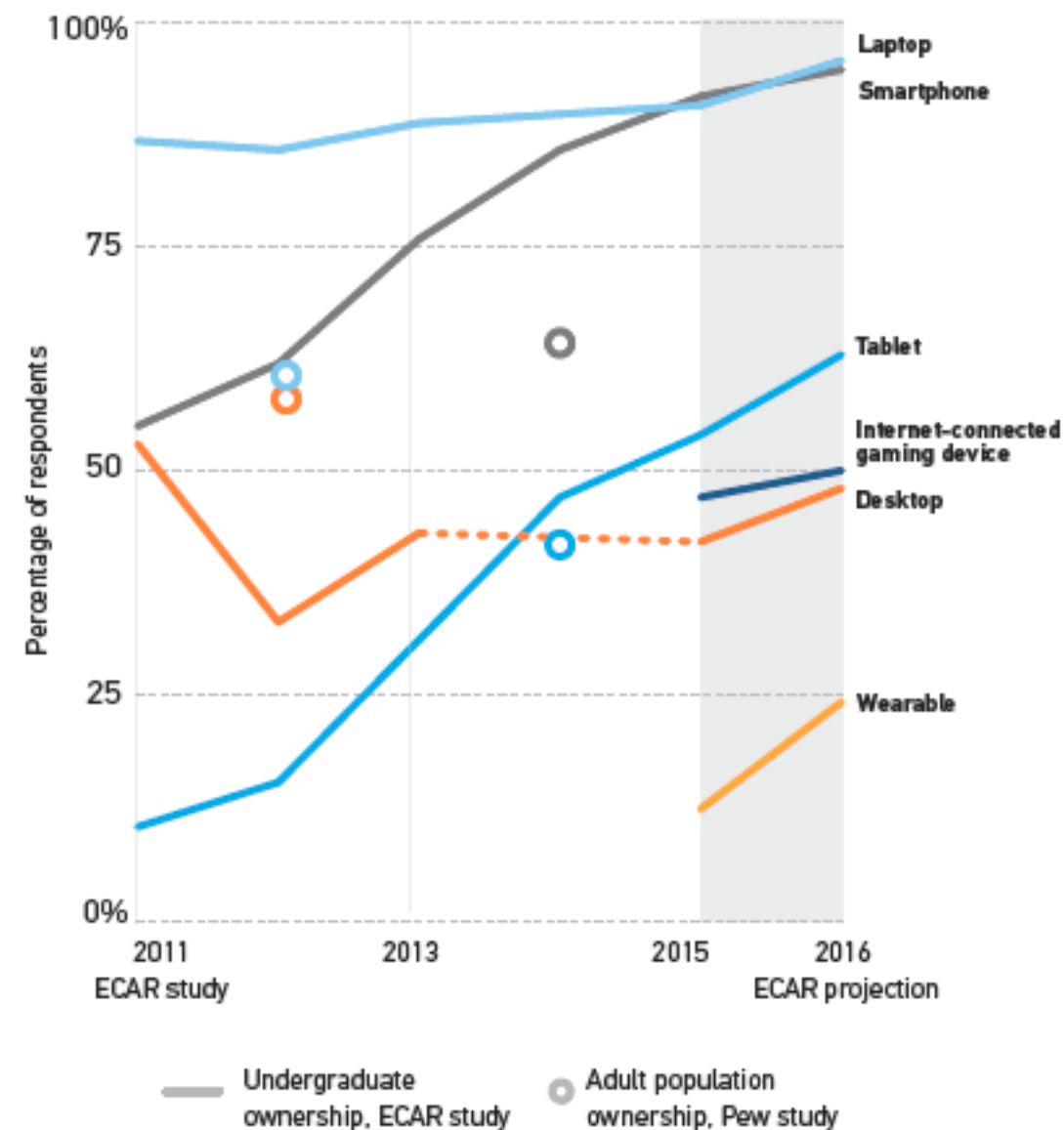
Enter Your First Course 

or Logout

Choose today's date



Lecture Tools demo



Percentage of students owning Internet-capable devices:

2%

none

6%

just one

92%

at least two

64%

three or more

31%

four or more

15%

five or more

10%

six or more

Figure 5. Device ownership history, with 2016 projections¹⁰

Device Ownership Pervasiveness

Single-device ownership is rare (figure 6). Almost half of the undergraduates surveyed (47%) own a laptop, a tablet, *and* a smartphone. The next most popular combination was laptop and smartphone ownership (38%). Just 4% own only a laptop, 3% only a smartphone, and 1% only a tablet. Two percent of all students do not own any of these devices.

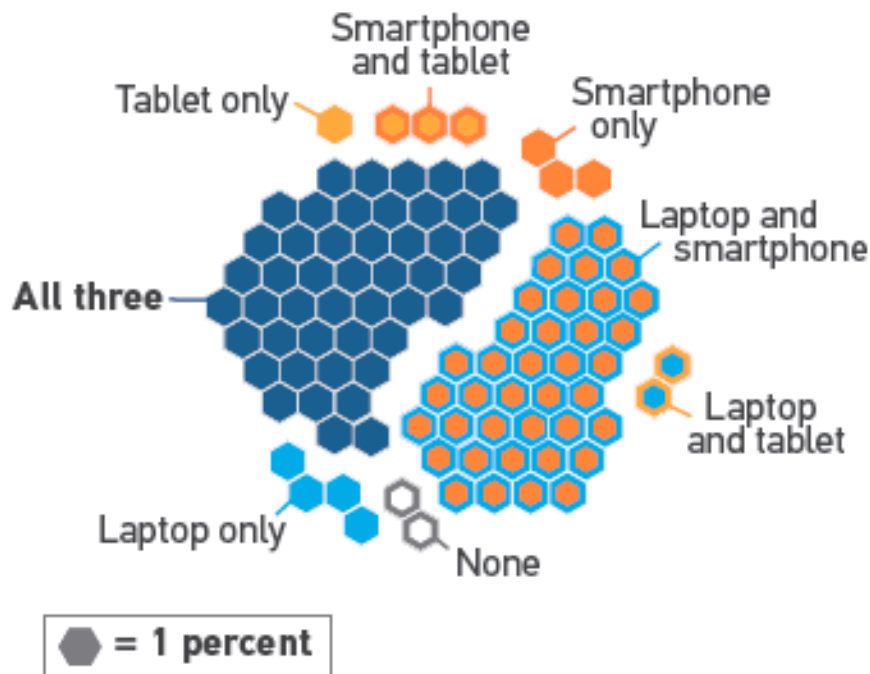


Figure 6. Student laptop, tablet, and smartphone ownership

Percentage of students trying to connect devices to the network *at the same time*:

7%

none

32%

just one

61%

at least two

11%

three or more

My perspectives

The good

- Decent replacement for clickers for in-class questions.
- I love that students can ask me Q in the system – more Q asked in class.
- Some data gathered (not a lot with version I used).

The less good

- Need good wifi ... and some large rooms lack it.
- Laggy compared to clickers.
- Some features missing for “presentation” part of LT.
- Cost to students (though I used with university pilot).

Good & bad?

Students liked the ability to take notes in the system ...

I asked students to bring web-connected devices and use them in my classroom.



What is a concern you have about (or possible disadvantage of) student devices in the classroom?

texting



laurentius. de.
colonna. dixit

**SERIOUSLY. TEACHERS KNOW YOU
ARE TEXTING**

**NOBODY JUST
LOOKS AT THEIR CROTCH AND SMILES**

Students who use digital devices in class 'perform worse in exams'

Study finds use of computers by students in lectures and seminars has 'substantial negative effect' on performance



Students use laptop computers during a class. Photograph: Paul Miller/AAP

Allowing students to use computers and the internet in classrooms substantially harms their results, a study has found.

The paper published by the Massachusetts Institute of Technology found that students barred from using laptops or digital devices in lectures and seminars did better in their exams than those allowed to use computers and access the internet.

The researchers suggested that removing laptops and iPads from classes was the equivalent of improving the quality of teaching.

<http://www.theguardian.com/education/2016/may/11/students-who-use-digital-devices-in-class-perform-worse-in-exams>



College students in a lecture hall

ISTOCK

Leave It in the Bag

Study by faculty members at West Point finds students perform better academically when laptops and tablets are banned from the classroom.

May 13, 2016

By Carl Straumsheim

When faculty members at the U.S. Military Academy at West Point took away students' computers and tablets in an introductory economics courses, their students' grades jumped.

<https://www.insidehighered.com/news/2016/05/13/allowing-devices-classroom-hurts-academic-performance-study-finds>



SEII

SCHOOL EFFECTIVENESS
& INEQUALITY INITIATIVE

Working Paper #2016.02

The Impact of Computer Usage on Academic Performance: Evidence from a Randomized Trial at the United States Military Academy

**Susan Payne Carter
Kyle Greenberg
Michael Walker**

May 2016

The NEWEST no-laptop study – Payne Carter et al.

Randomized study of students in West Point Economics course with multiple sections, small classes.

Classrooms assigned one of 3 possible treatments:



Students prohibited from
using laptop/tablet
(Control)



Students allowed to use
laptop/tablet
("Unrestricted" use)



Students allowed to use
tablet flat on desk only
(Modified tablet)

Payne Carter et al. study

Treatments lasted through entire course, final exam scores used for comparison.

“Average final exam scores among students assigned to classrooms that allowed computers were 18 percent of a standard deviation lower than exam scores of students in classrooms that prohibited computers.”

1.7 on a 100 point scale.

Device use was monitored on 3 occasions. ~80% of students using device in “unrestricted” classroom; 41% of those in modified tablet classroom.

No mention of pedagogical methods used in the course.

Laptop use lowers student grades, experiment shows

Screens also distract laptop-free classmates

The Canadian Press | Posted: Aug 14, 2013 2:46 PM ET | Last Updated: Aug 14, 2013

'It can change your grade from a B+ to a B-.'

—Faria Sana, researcher

COMPUTING

Laptop losers: Tech actually hindering kids in classrooms

Published August 15, 2013 · FoxNews.com



815



169



Using Laptops In Classrooms Lowers Grades: Study

CP | By Michael Oliveira, The Canadian Press

Posted: 08/14/2013 2:08 pm EDT | Updated: 10/14/2013 5:12 am EDT

New research shows laptops in class impact grades

SEPTEMBER 11, 2013 / 318 VIEWS

Close That Laptop in Class!

Multitasking on a laptop in class reduces learning for user and nearby peers.

Post published by Nate Kornell Ph.D. on May 15, 2013 in Everybody Is Stupid Except You

f SHARE

t TWEET


g+ SHARE

✉ EMAIL

**“laptops and smart phones do not
cause more distraction than
windows through which students
look at birds and flowers, yet you
don't seal the windows just because
of that.”**

**-Eric Mazur, as quoted by Fang,
2009**

What do you think?

A photograph of a rat inside a white, transparent Skinner box. The rat is standing on its hind legs, facing a small screen on the left side of the box. The screen displays a colorful game interface with the word 'MITE' at the top and various icons. The rat's reflection is visible on the glass. The box is set against a plain, light-colored background.

**Are digital devices a
different sort of
distraction?**

What can/should we do (in our classrooms)?



Discuss with the person next to you.



Larger discussion.

Ban laptops/devices from the classroom?



12
MAY
2016

MAKING DISABILITY PART OF THE CONVERSATION: COMBATting INACCESSIBLE SPACES AND LOGICS

By Rick Godden and Anne-Marie Womack / 7 Comments /

Journal, Peer Reviewed /

"Access all areas #2" by Pietromassimo Pasqui; CC BY-NC-ND 2.0

In a string of recent education articles, researchers have praised the benefits of hand-written notes and instructors have forbidden computers from classrooms. Frustrated with her student's technological fixation, Associate Professor [Carol E. Holstead reports](#), "I told students they would have to take notes on paper. Period." In such a learning environment, Anne-Marie, who can't listen without pen in hand, would thrive. Rick, though, who relies on various technologies to supplement or replace handwriting, would struggle.

Holstead's preference for handwriting over technology is part of a recent trend to ban laptops in the classroom advocated by critics such as [Hinda Mandell](#), [Dan Rockmore](#), and [Anne Curzan](#). Recently, [National Public Radio](#) even picked up the story, reporting that "there are still advantages to doing things the old-fashioned way." All describe common problems: student distraction and their reluctance to process information, perhaps the defining pedagogical concerns of the 21st century. As educators race to address these problems, though, disability has been noticeably absent from the debate.

<http://www.digitalpedagogylab.com/hybridped/making-disability-part-of-the-conversation/>

Also see: <http://www.thetattooedprof.com/archives/609>

**“Struggling against reality is exhausting
nonstop labor with profoundly
disappointing results...”**

– Martha Beck

**Can we help students to learn “digital civility”
and develop “digital restraint” skills?**



Some options

- Share information/open discussion about capacity of web-enabled devices to distract, possible impact on learning.
- Incorporate “technology breaks” in class.
- Collaboratively develop a code of civility for the classroom.
 - Zoned classrooms (people using devices sit in designated region of class to avoid distracting others).
- Get students using devices productively in class activities (i.e., structured/academic use).

Thank you!

A handout is available.

Please feel free to contact me:

tnoel@uwindsor.ca

<https://twitter.com/TCNoel>



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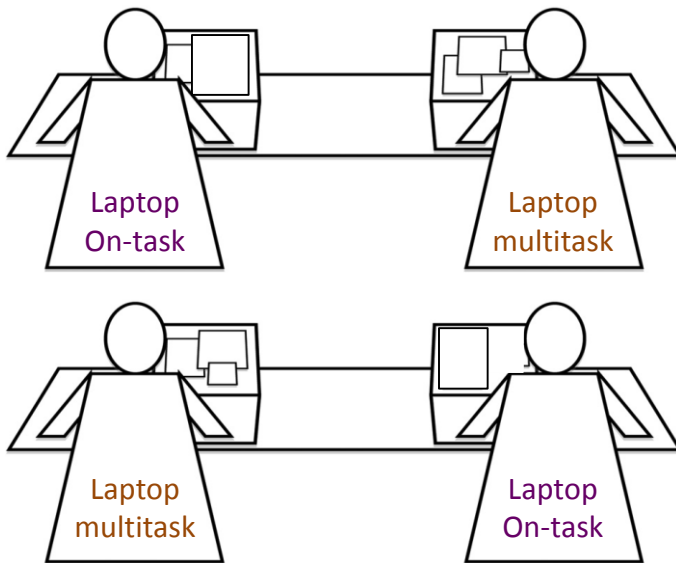
Supplemental slides

Some of the major studies ...

Laptop multitasking effects: Sana et al. experiments

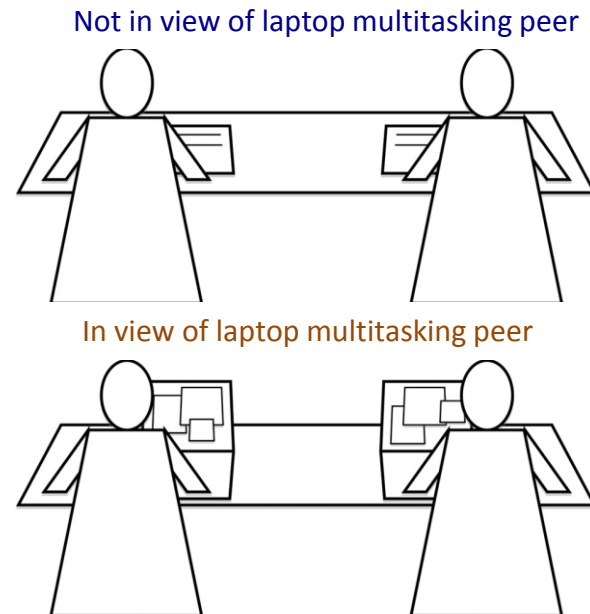
Experiment 1

- Does **laptop multitasking** hinder learning?



Experiment 2

- Does being in view of a **laptop multitasker** influence learning?

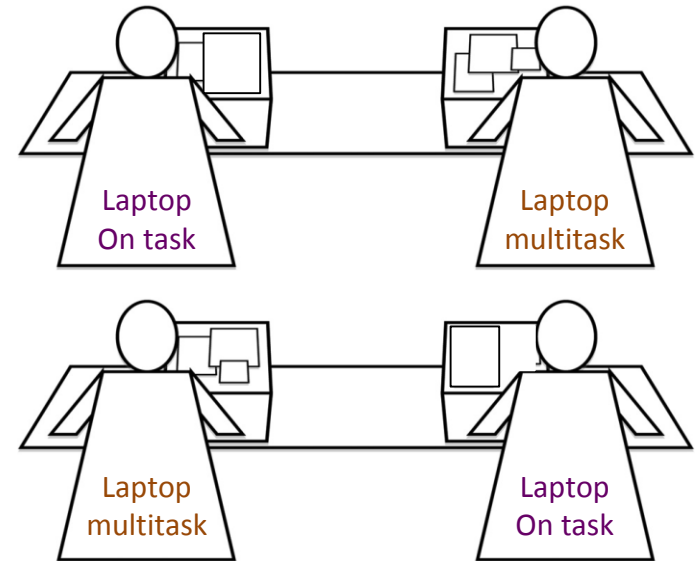


Adapted from Sana et al. 2013

Laptop multitasking effects: Sana et al. experiments

Experiment 1

- Does **laptop multitasking** hinder learning?
- All participants used laptops.
- Multitasking participants given extra online tasks to complete during lecture at their convenience.



Criteria	Laptop unitaskers	Laptop multitaskers
Note quality (/5)	4.1 ± 1.0	2.7 ± 1.2*
Comprehension test score (/100)	66 ± 12	55 ± 11**

*p=0.001; **p=0.003

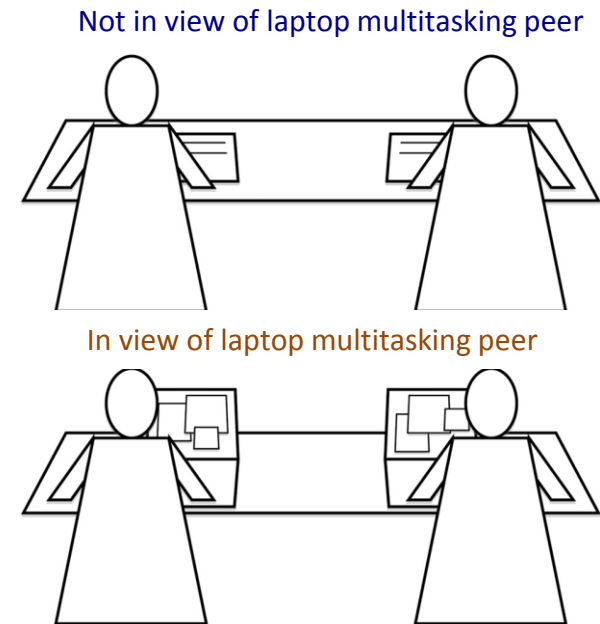
Significant effect of condition: $F(1,38) = 10.2$, $\omega^2=0.20$

Adapted from Sana et al. 2013

Laptop multitasking effects: Sana et al. experiments

Experiment 2

- Does being in view of a **laptop multitasker** influence learning?
- Only multitaskers used laptops.



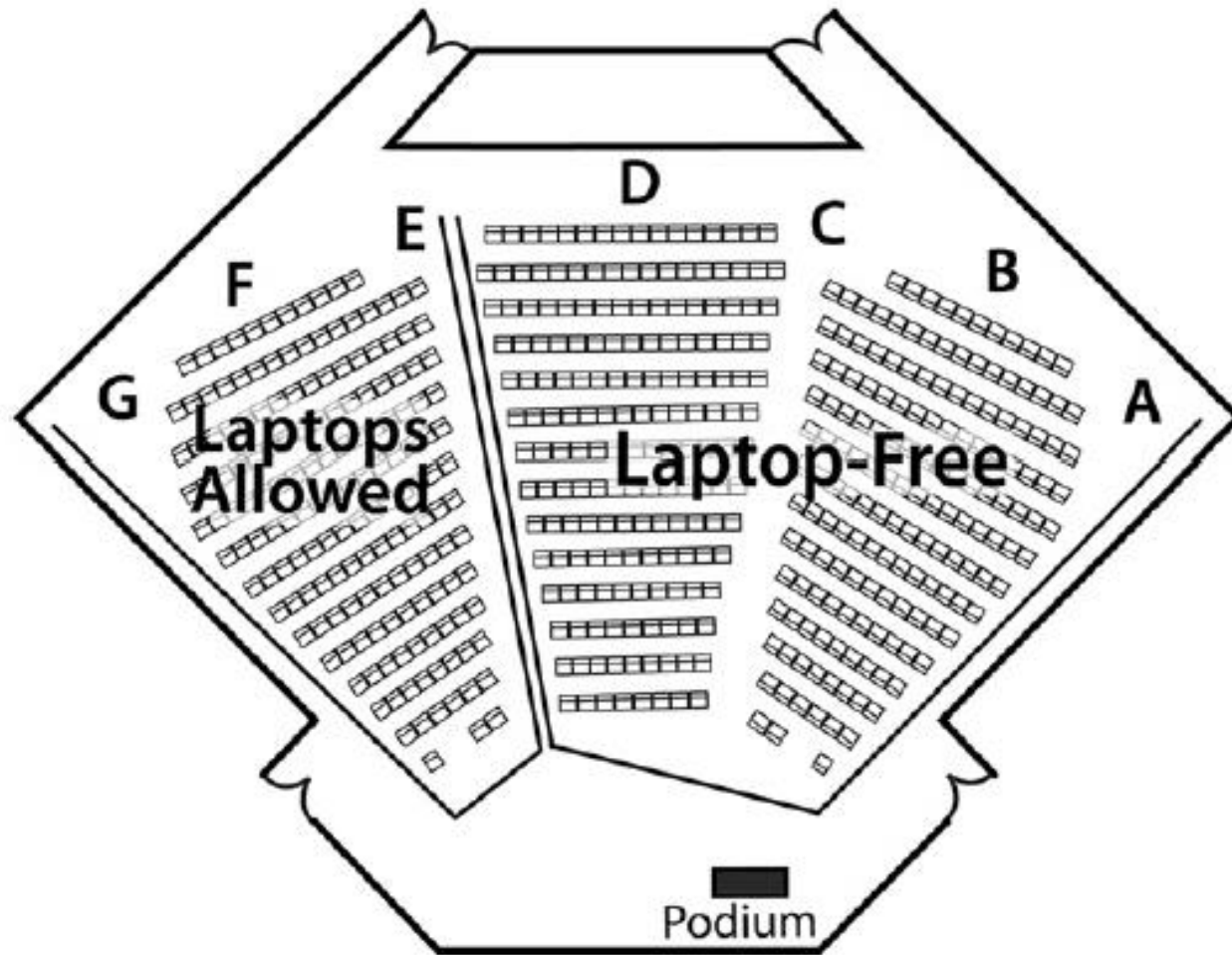
Criteria	Not in view of multitasking peer	In view of multitasking peer
Note quality (/5)	3.6 ± 1.3	3.7 ± 1.2
Comprehension test score (/100)	73 ± 12	56 ± 12*

*p<0.001

Significant effect of condition: $F(1,36) = 21.5$, $\omega^2=0.36$

Adapted from Sana et al. 2013

Zoned classes: Aguilar-Roca et al. study



Tested Control (no restrictions on where laptop users can sit) vs. Zoned seating.

Use of laptop-free/laptops allowed zones did not affect overall student performance ... BUT laptop users typically performed more poorly than non-laptop users under both zoned and not-zoned conditions.

Students largely supported zoning approach (and strongly oppose laptop banning).

Fig. 1 from Aguilar-Roca et al. 2014. "Illustration of the lecture hall used for teaching all four sections. In the Zoned classes, two-thirds of the lecture hall were designated as laptop-free and the remainder was designated as laptops allowed. Letters A–G correspond to the seven locations observer stood while monitoring computer use."

Zoned classes: Aguilar-Roca et al. study

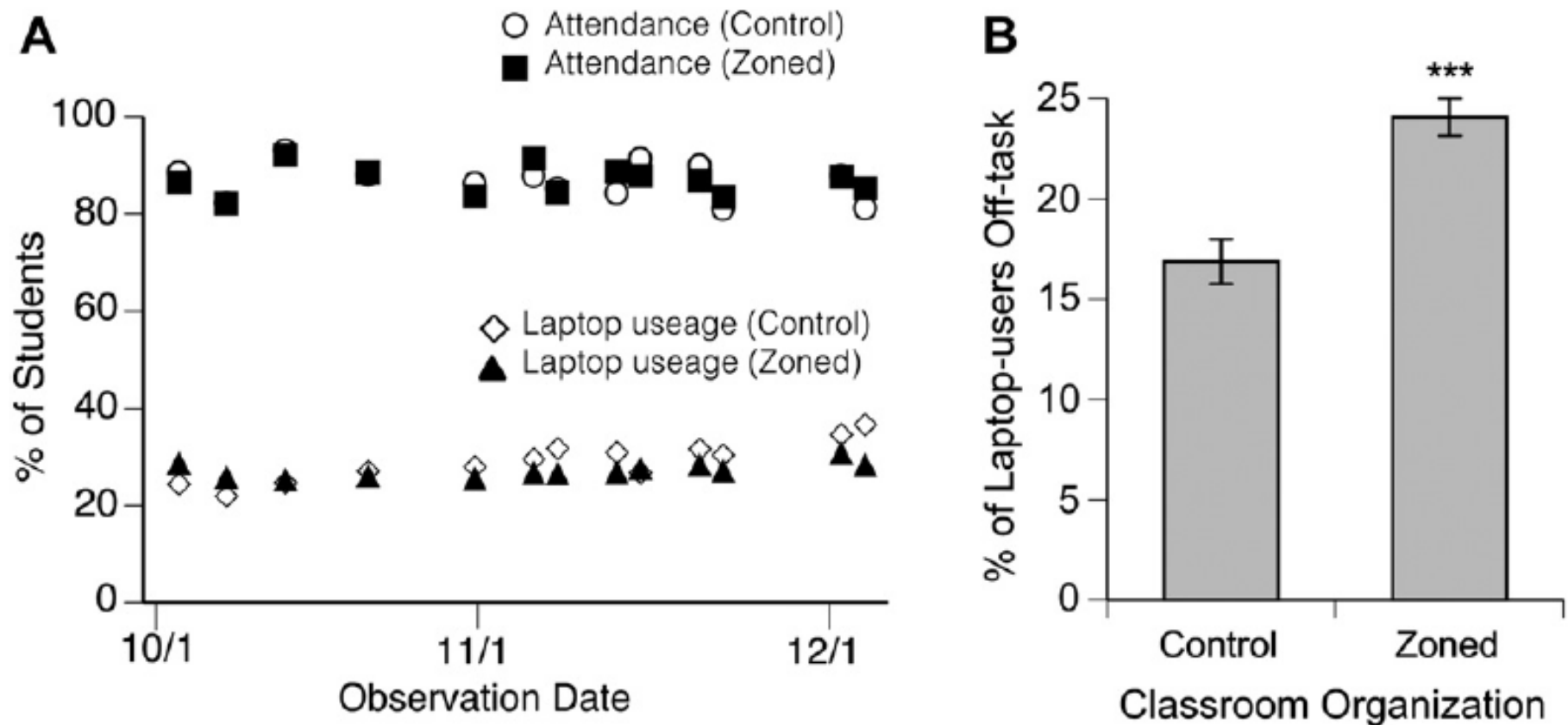


Fig. 2 from Aguilar-Roca et al. 2014. A) The percentage of students who attended lecture and the percentage of the attending students who elected to use laptops on 13 observation dates throughout the 10 week quarter were similar in the Control and Zoned sections. B) Average percentage of laptop users off-task at any one time was significantly higher in the Zoned versus Control sections (***) = $p < 0.0001$).

Segregation of laptops/devices as accommodation?



Peter Newbury

@polarisdotca



Following

This new no-laptops study has me thinking, painfully, about how I may have advised instructors about their classes. 1/9

RETWEETS

5

LIKES

2



6:47 PM - 13 May 2016

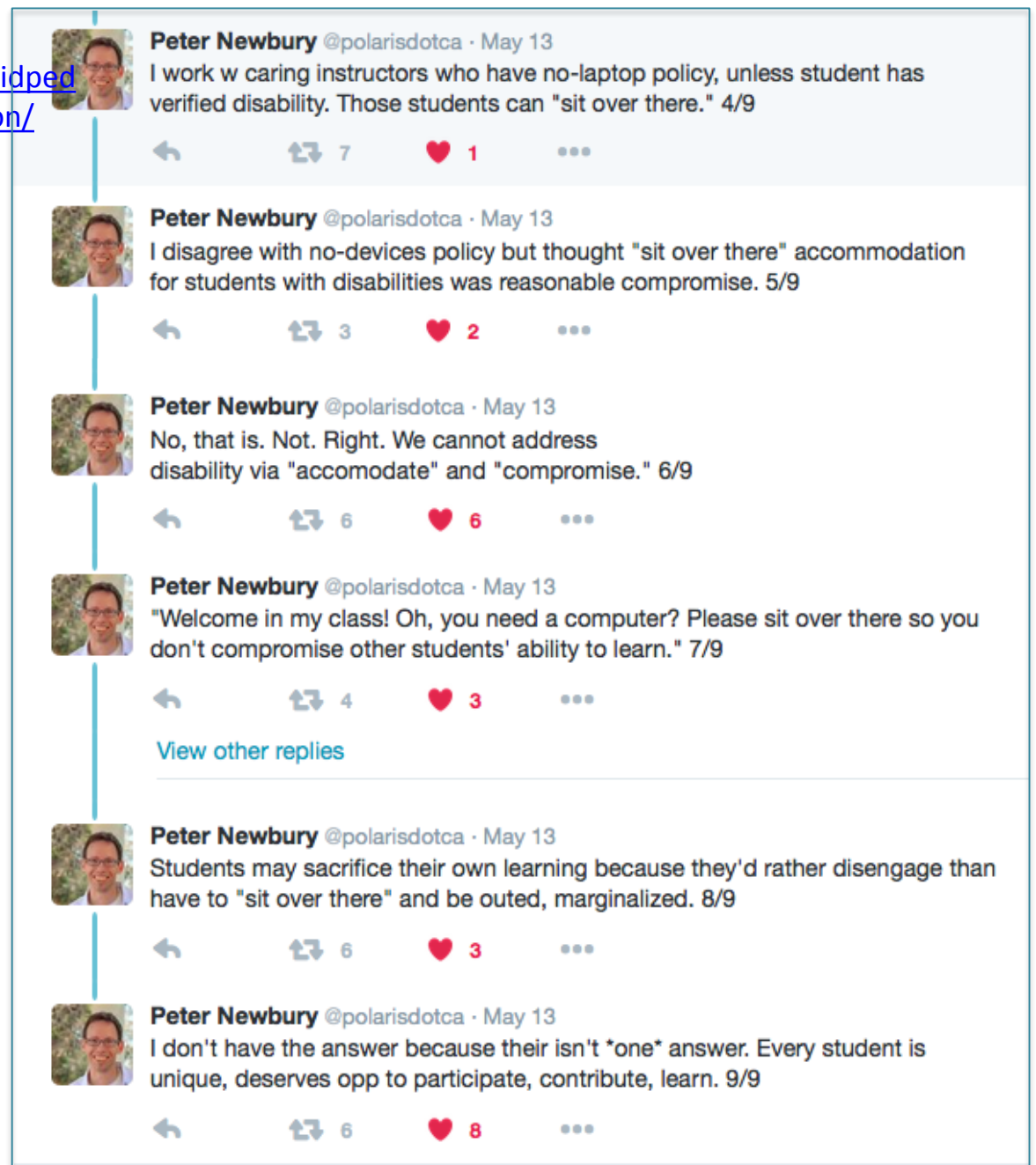


<https://twitter.com/polarisdotca/status/731269557336186881>

Peter read:

<http://www.digitalpedagogylab.com/hybridped/making-disability-part-of-the-conversation/>

which led him to say ...



Peter Newbury @polarisdotca · May 13
I work w caring instructors who have no-laptop policy, unless student has verified disability. Those students can "sit over there." 4/9

Peter Newbury @polarisdotca · May 13
I disagree with no-devices policy but thought "sit over there" accommodation for students with disabilities was reasonable compromise. 5/9

Peter Newbury @polarisdotca · May 13
No, that is. Not. Right. We cannot address disability via "accomodate" and "compromise." 6/9

Peter Newbury @polarisdotca · May 13
"Welcome in my class! Oh, you need a computer? Please sit over there so you don't compromise other students' ability to learn." 7/9

[View other replies](#)

Peter Newbury @polarisdotca · May 13
Students may sacrifice their own learning because they'd rather disengage than have to "sit over there" and be outed, marginalized. 8/9

Peter Newbury @polarisdotca · May 13
I don't have the answer because their isn't *one* answer. Every student is unique, deserves opp to participate, contribute, learn. 9/9

<https://twitter.com/polarisdotca/status/731269557336186881>

The good old days ...?

“...the students in her large class were behaving abominably. They wandered in late, left early, read the newspaper, chatted with friends during the lecture, and napped; not surprisingly, a large number of them were failing the course. It was her first semester teaching a large class. She never wanted to do it again.”

- Carbone, 1999 *“Students behaving badly in large classes”*

The good old days ...?

“... faculty generally have found that large classes have poorer attendance, louder packing up of books a few minutes before the end of class, more cheating on exams, and more off-task behavior during discussions and group activities. They also report a startling array of innovative disruptive behaviors during class, including talking on cell phones, **watching portable televisions**, sitting through the lecture with headphones on, **having pizza delivered during the middle of class**, fraternity pledges’ pretending to have a nervous breakdown during an exam, and **passionate making out** in the back of the classroom..”

- Carbone, 1999 *“Students behaving badly in large classes”*