



Tips for Preparing for Exams



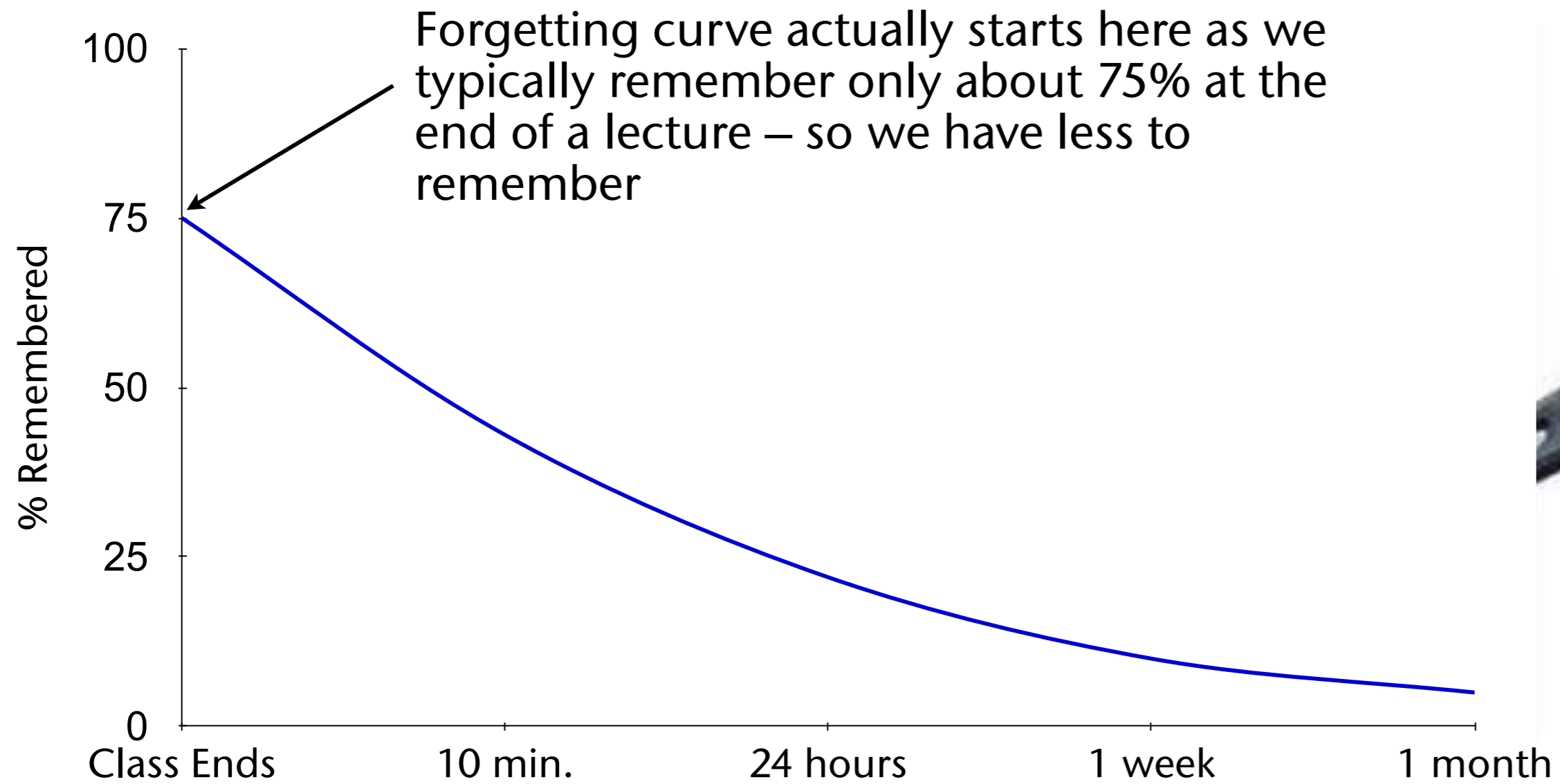
(c) ocusfocus www.fotosearch.com

- Definitive list of topics is the material presented on the slides and in class!
- Learn the **technical terms!**
 - It helps your brain subsume and summarize concepts
 - I don't care whether you learn the English or the German ones
 - I recommend to learn the English technical terms

Read Text Books (Lehrbücher) !

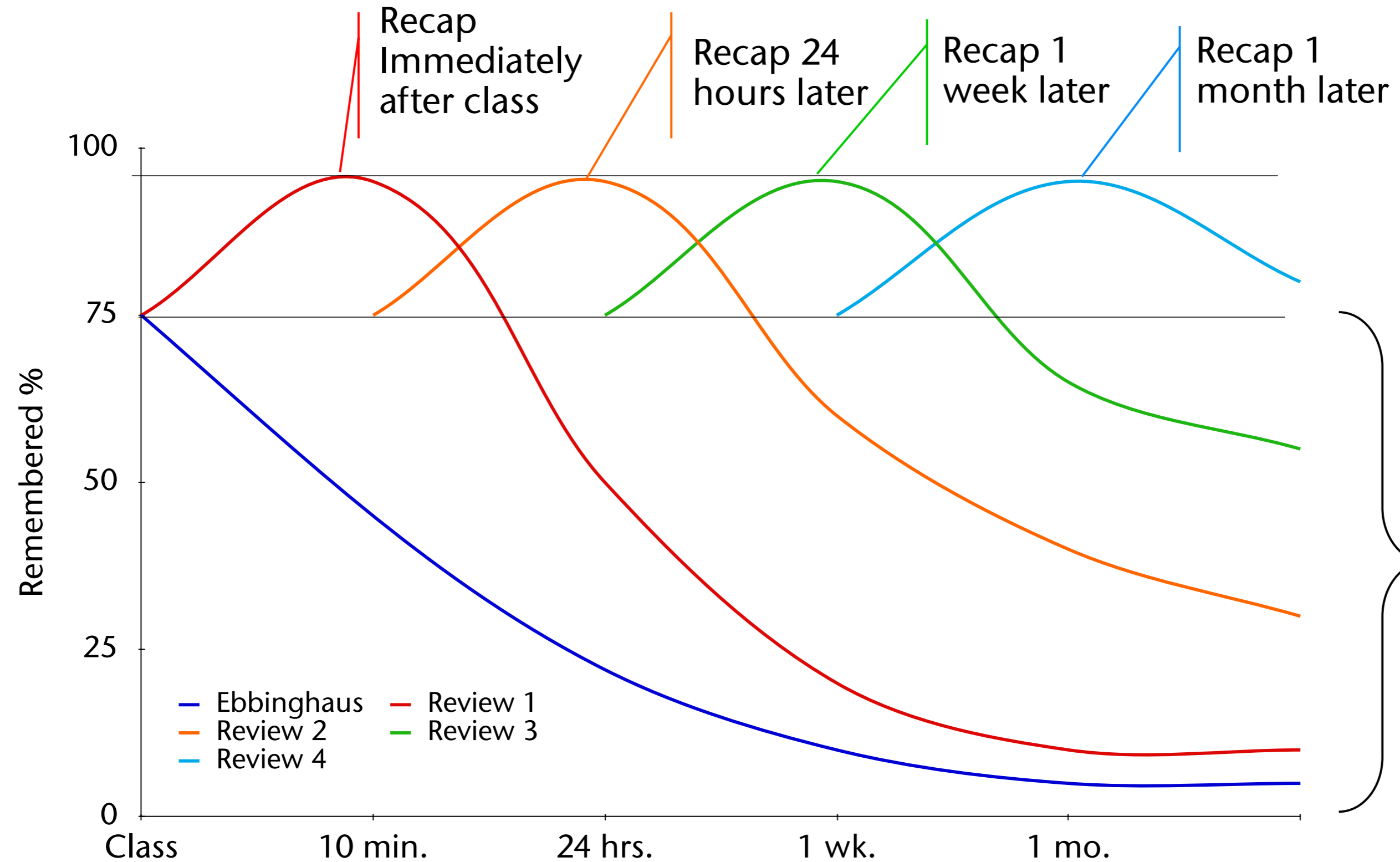


The Ebbinghaus Curve (aka. Forgetting Curve)



[Pillis, Johnson: *First, Do No Harm: Effective, Ineffective and Counterproductive Teaching Methods*. Journal of Higher Education Theory and Practice, Vol. 15(1), 2015.]

Use the “Spacing Effect” (Beat the Ebbinghaus Curve)



Notice how less is forgotten after each review!

Reading on Paper or on Screen?

- Important: use screen (tablet) that matches display quality of paper (luminance, contrast, resolution)

[Hermena et al.2017]

- Otherwise, tablets are much worse than paper (w.r.t. retention rate)! [Delgado et al. 2018]

- For longer texts, e.g., books: hardcopy is better for comprehension than e-book

[Mangen et al, 2019]



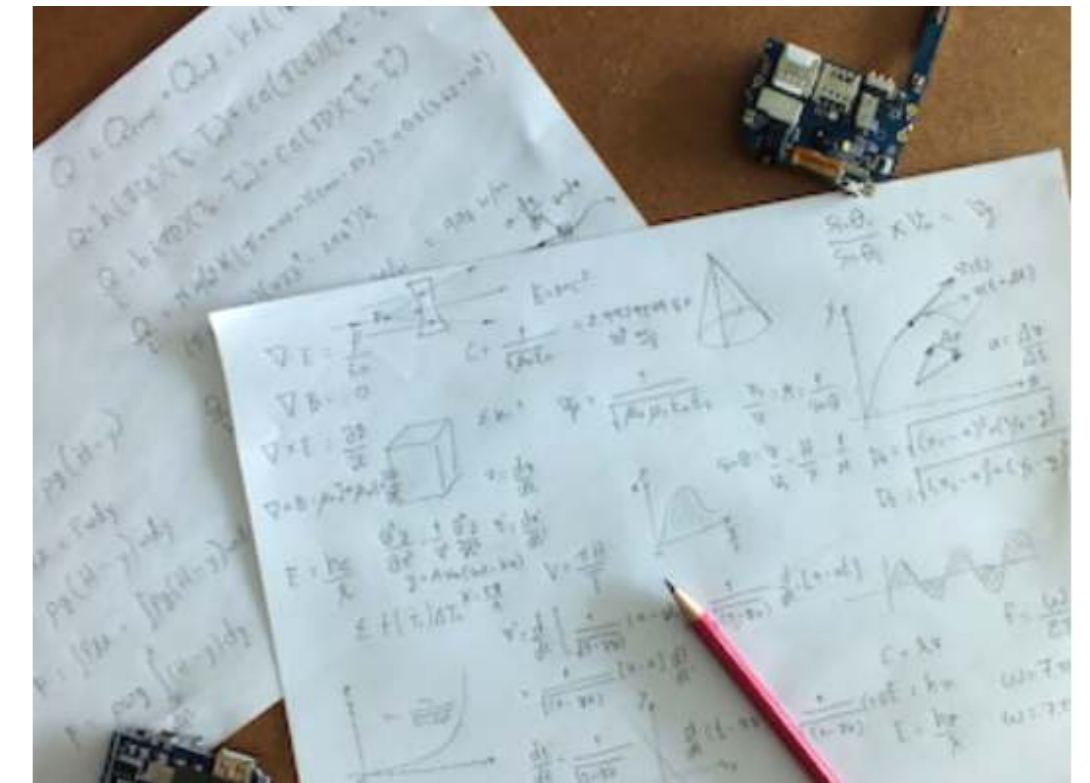
Note-Taking: Use the Right Tool for the Right Task!



Pen tablet



Digital paper

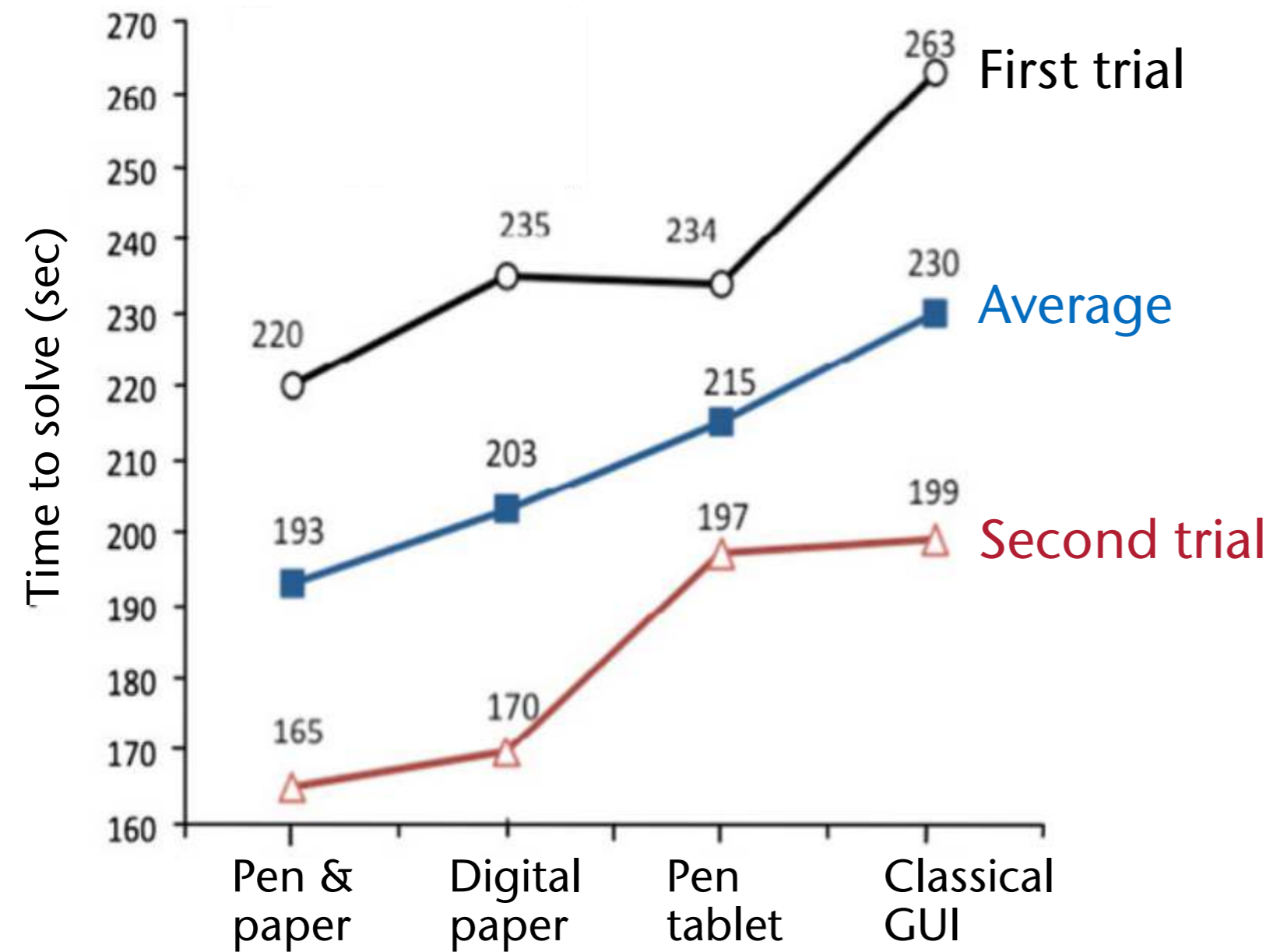


Pen & paper

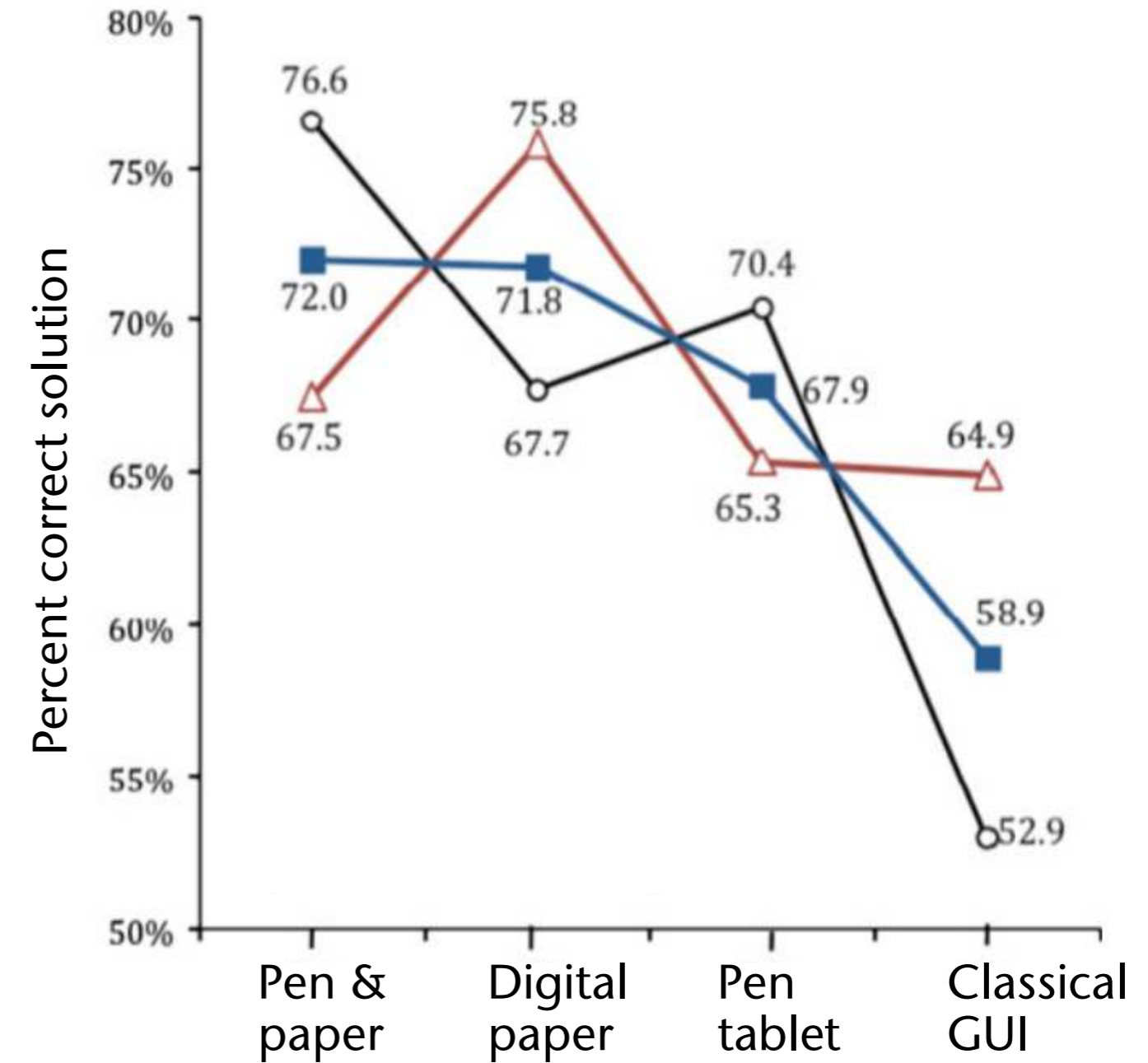
[Oviatt, Cohen: *Toward High-Performance Communications Interfaces for Science Problem Solving.*] Sci Educ Technol (2010) 19:515–531]

Note-Taking: Use the Right Tool for the Right Task!

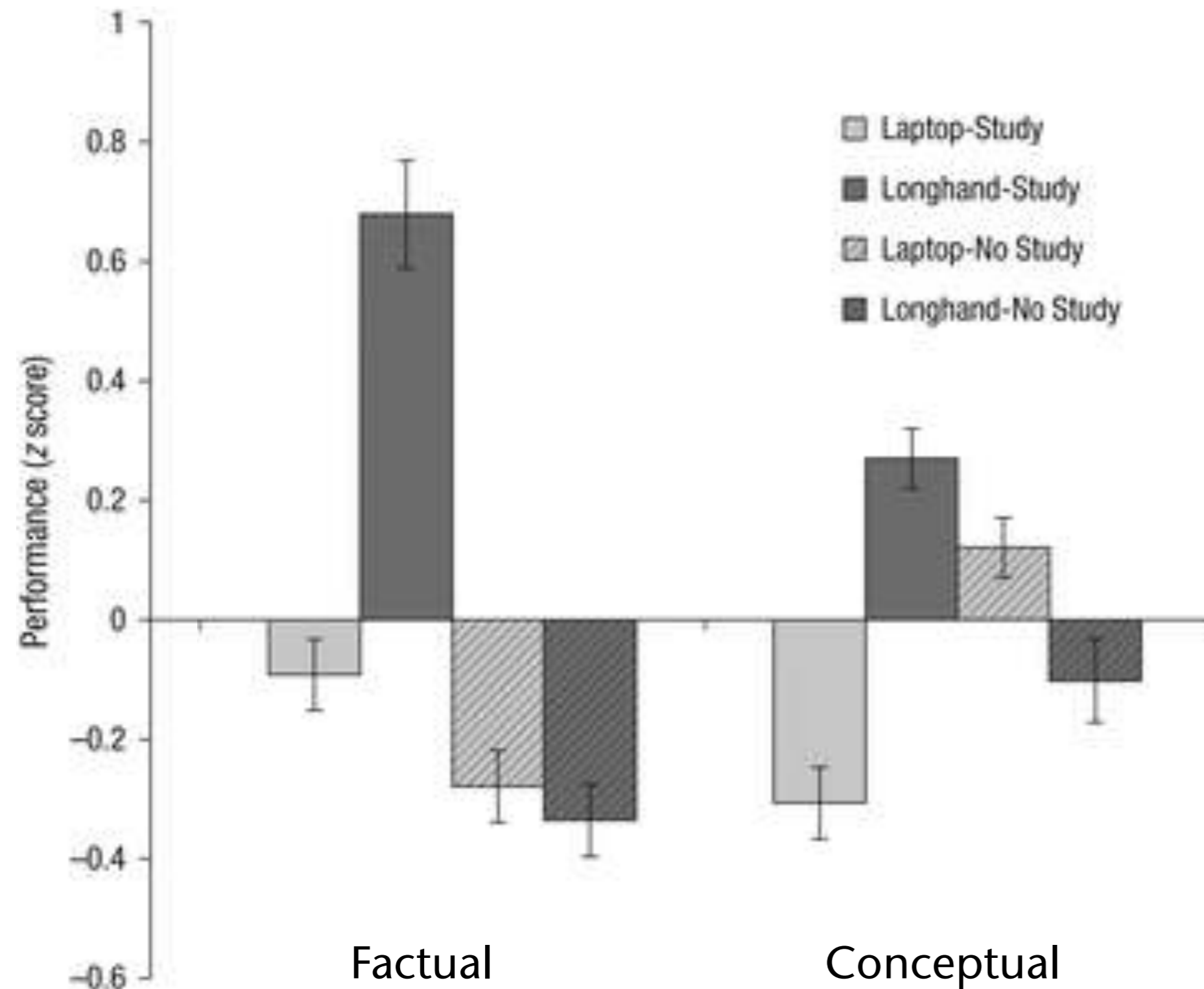
Performance wrt. speed



Performance wrt. errors



Handwriting is Brain-Writing



Procedure:

1. All students attended the same lecture and were asked to take notes
2. After a week, students took a test on the material

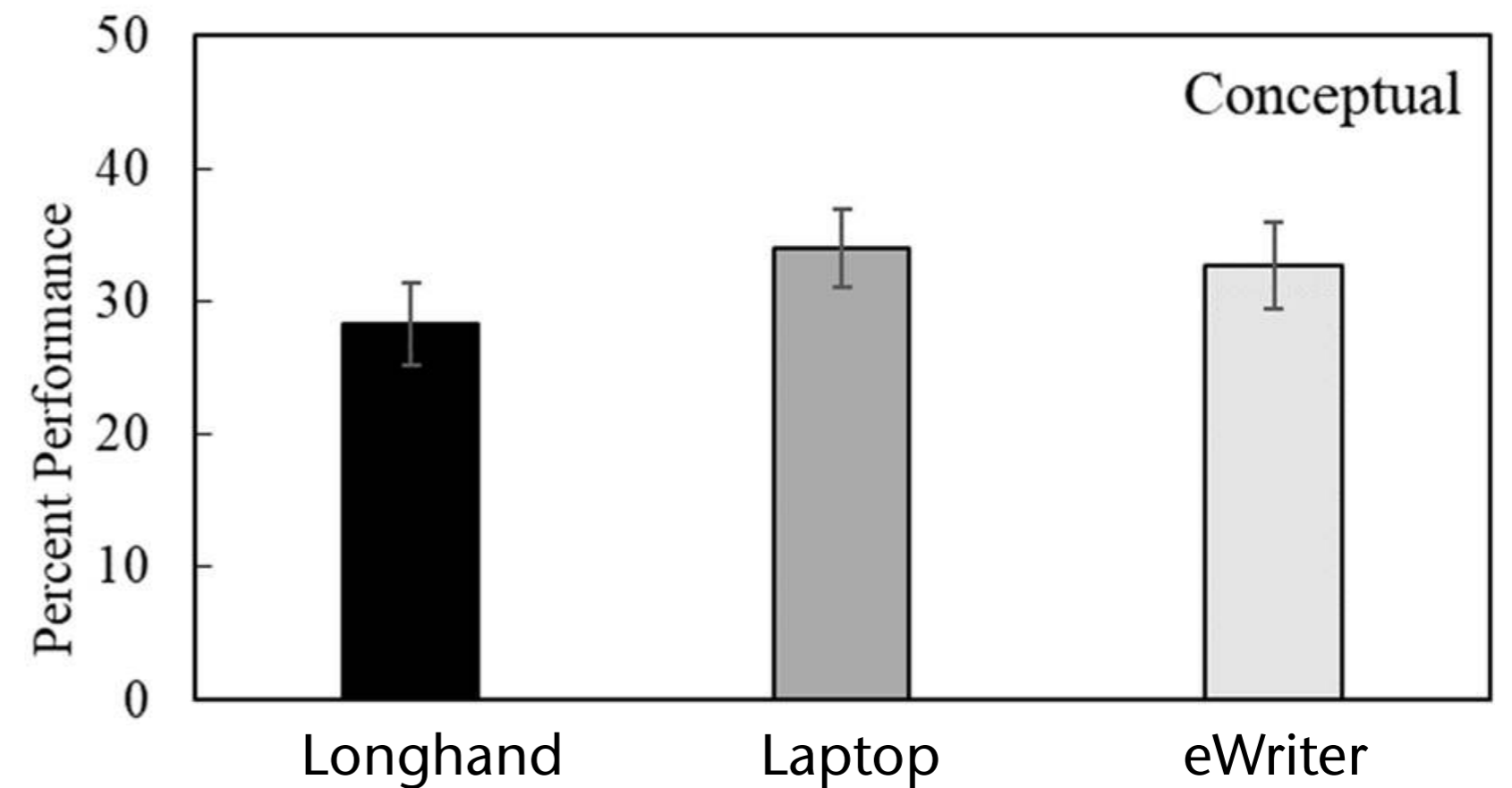
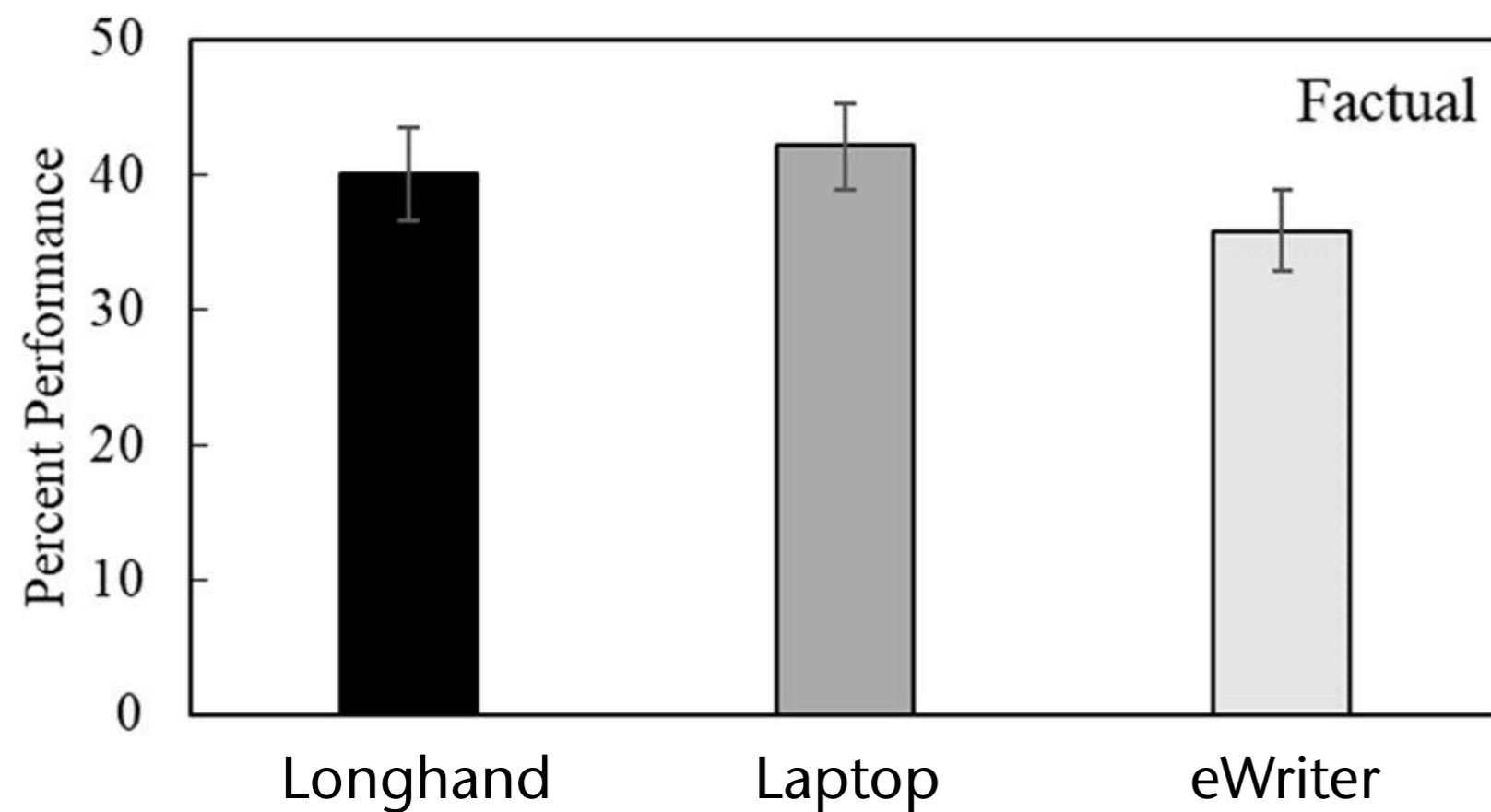
The test asked about factual knowledge as well as conceptual understanding.

- "Laptop" = typed note-taking on laptop
- "Longhand" = handwritten note-taking on paper
- "Study" = students could study their notes before the test
- "No-study" = no opportunity to study their notes

[Pam A. Mueller, Daniel M. Oppenheimer: *The Pen Is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking*. *Psychological Science*, 25, 1159–1168, 2014]

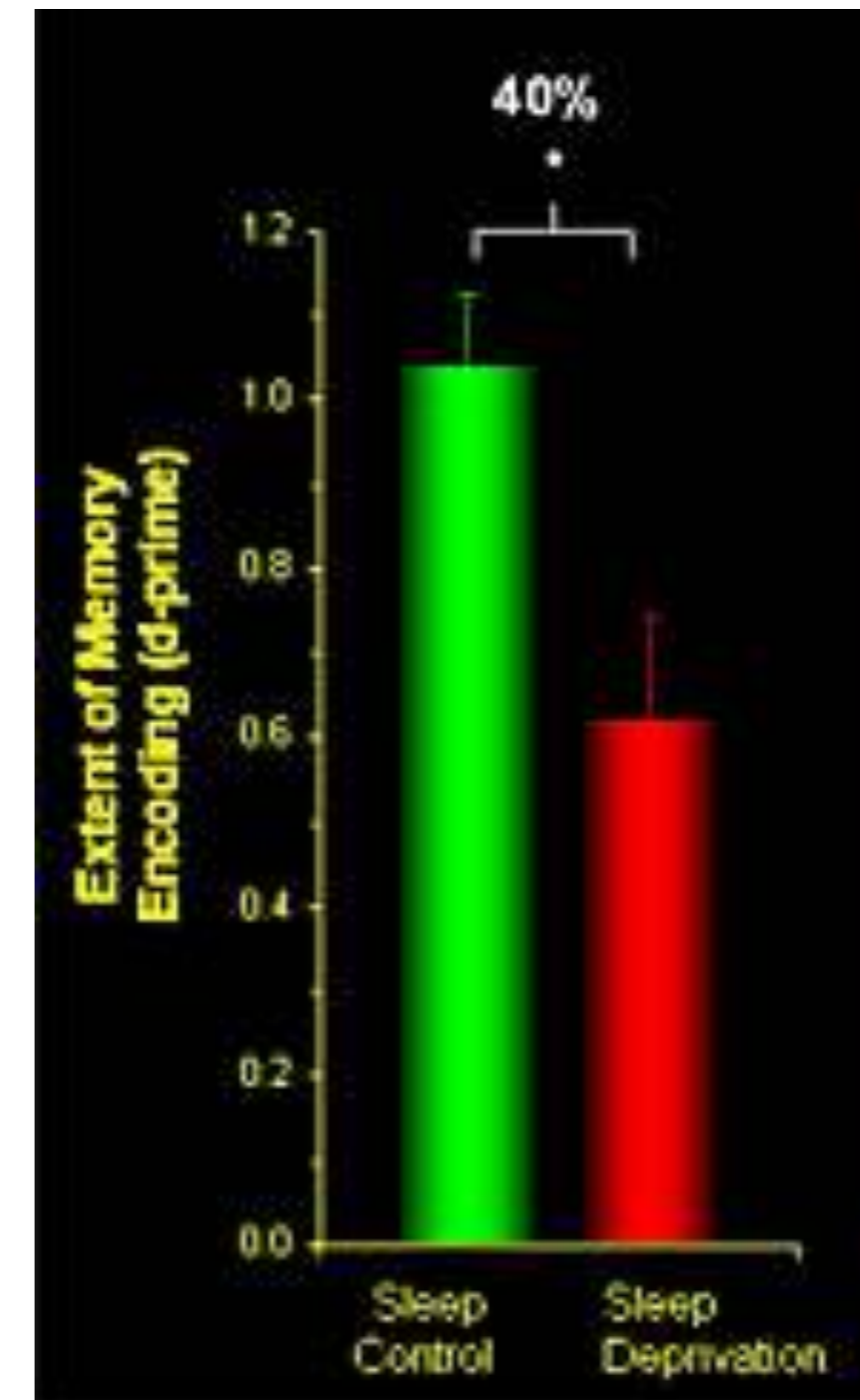
Replication Study

Similar design: lecture, immediate test afterwards, and finally a test after 2 days. Results show the performance in the final test → no significant "winner"



[Morehead, Dunlosky, Rawson: *How Much Mightier Is the Pen than the Keyboard for Note-Taking? A Replication and Extension of Mueller and Oppenheimer*. Educational Psychology Review, September 2019, Volume 31, Issue 3, pp 753–780]

Get Enough Sleep (≥ 8 h on a Regular Basis)



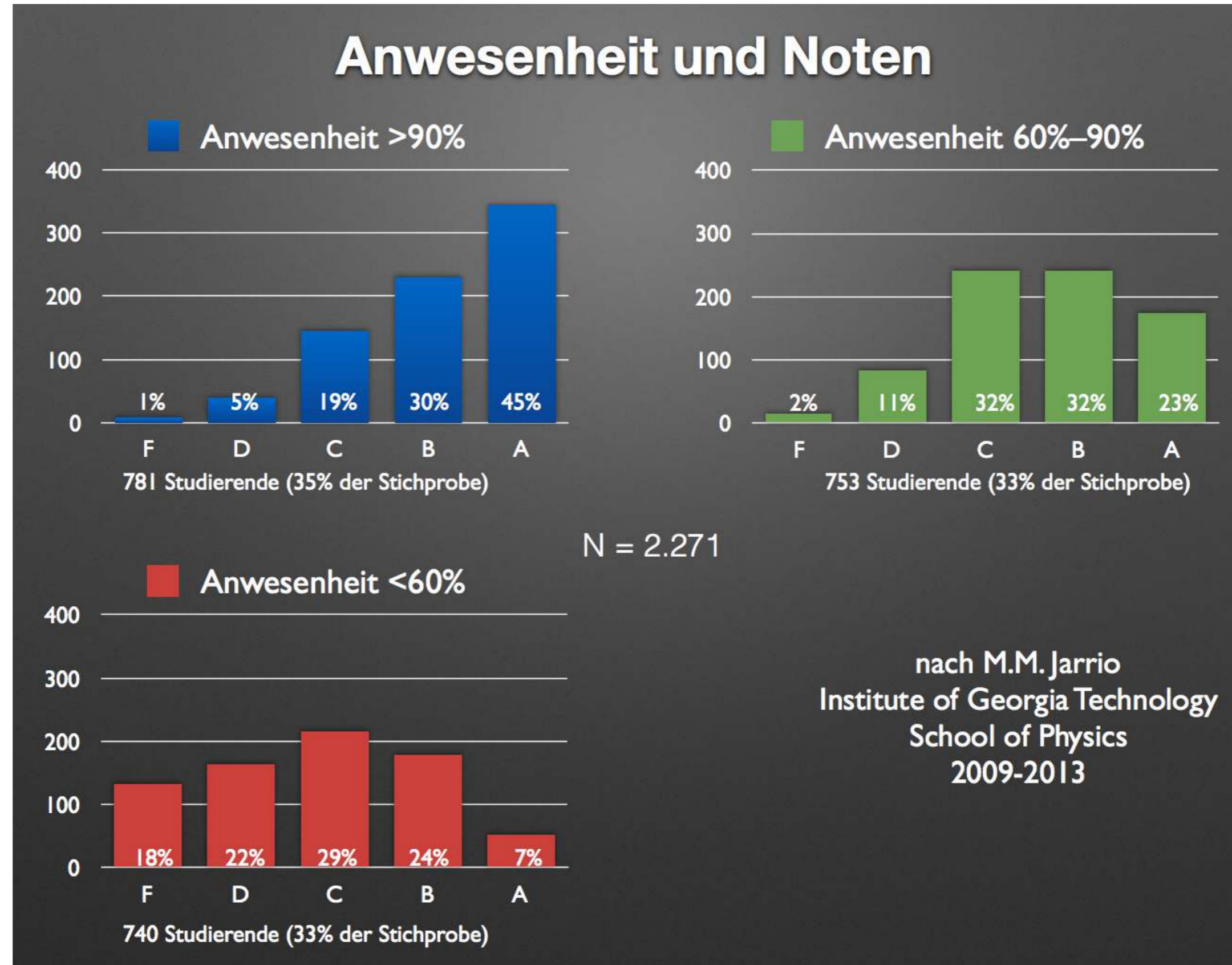
[Matt Walker: *Why We Sleep - Unlocking the Power of Sleep and Dreams*. Scribner, 2018]

Practical Tips for Learning for Exams

- Make a plan / schedule (rank 20 out of 250 factors)
- Reward yourself after completing a unit of learning (rank 30 out of 250)
- Self-assessment of your progress (rank 42 out of 250)

Ranks are according to the "Hattie study"
[John Hattie: The Applicability of Visible Learning to Higher Education , 2015]

Importance of Class Attendance



[Schulmeister 2015, S. 18)]

Dreams Come to Prepared Minds



Neil Hallinan