

TECHNOLOGY IN THE MATHEMATICS CLASSROOM

Helmut Knaust

*The University of Texas at El Paso
Department of Mathematical Sciences
El Paso TX 79968-0514*

hknaust@utep.edu

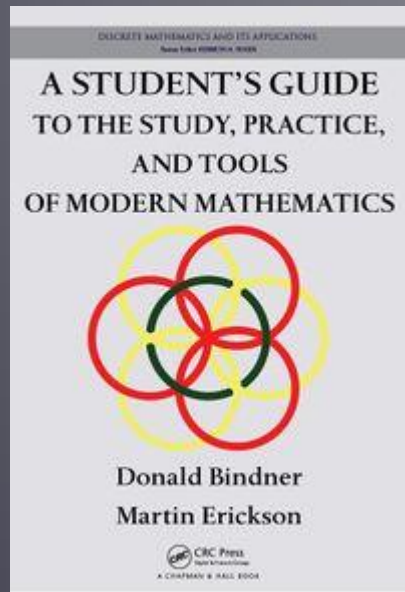


MATH 5365:
TECHNOLOGY IN
THE MATHEMATICS
CLASSROOM

- Is a required three-hour graduate course in our *Master of Arts in Teaching Mathematics* program.
- Aimed at current Mathematics teachers and recent Secondary Education graduates.
- Catalog description:

An introduction to technology used in mathematics education such as graphing calculators, computer algebra systems, course specific software and the use of the internet, and an exploration of its appropriate and effective use in the mathematics classroom.

MATH 5365: THE CLASS AND ITS STUDENTS



- Taught in Spring 2013
- Class met one evening per week
- 24 students:
 - 13 HS teachers
 - 2 MS teachers
 - 3 ES teachers
 - 6 students with no or minimal teaching experience
- Textbook:
Bindner/Erickson, *A Student's Guide to the Study, Practice and Tools of Modern Mathematics*, CRC Press, 2011

MATH 5365:
COURSE
STRUCTURE

- 40% Lecture (a lot of Mathematica, some LaTeX, Geogebra, R)
- 35% Student presentations
- 25% In-class activities

Course website:

http://helmut.knaust.info/mediawiki/index.php/CRN_26960

Student comment:

“The course left ample room for self-instruction.”

MATH 5365:
STUDENT
DELIVERABLES

- Software review (2 students each, 20 minutes)
- Video lesson (2 students each, 3 minutes)
- Technology lesson (2 students each, 30 minutes)
- *Wolfram Demonstration Project* (individual)
- *Geogebra* demonstration (individual)
- Homework (individual)
- No tests

MATH 5365:
WOLFRAM
DEMONSTRATION
PROJECT

Roman Numeral Calculator

The screenshot shows a web-based calculator interface titled "Roman Numeral Calculator". It features two horizontal sliders for input. The first slider is labeled "first number" and is set to 125, which is displayed as "CXXV" in Roman numerals. The second slider is labeled "second number" and is set to 297, displayed as "CCXCVII". Below the sliders are four buttons: "add", "subtract", "multiply", and "divide". The "add" button is highlighted. The main display area shows the calculation in both base 10 and Roman numerals. The base 10 calculation is "125 + 297 = 422", with "base 10" in blue, "125" in red, "+" in black, "297" in red, "=" in black, and "422" in green. The Roman numeral calculation is "CXXV + CCXCVII = CDXXII", with "Roman" in blue, "CXXV" in red, "+" in black, "CCXCVII" in red, "=" in black, and "CDXXII" in green. A small "D" icon is in the top right corner of the interface.

base 10 125 + 297 = 422

Roman CXXV + CCXCVII = CDXXII

This Demonstration is a basic four-function calculator for Roman numerals. Since Roman numerals do not have decimals, division drops the fractional part, so that $7 \div 3$ gives 2 and II instead of 2.333....

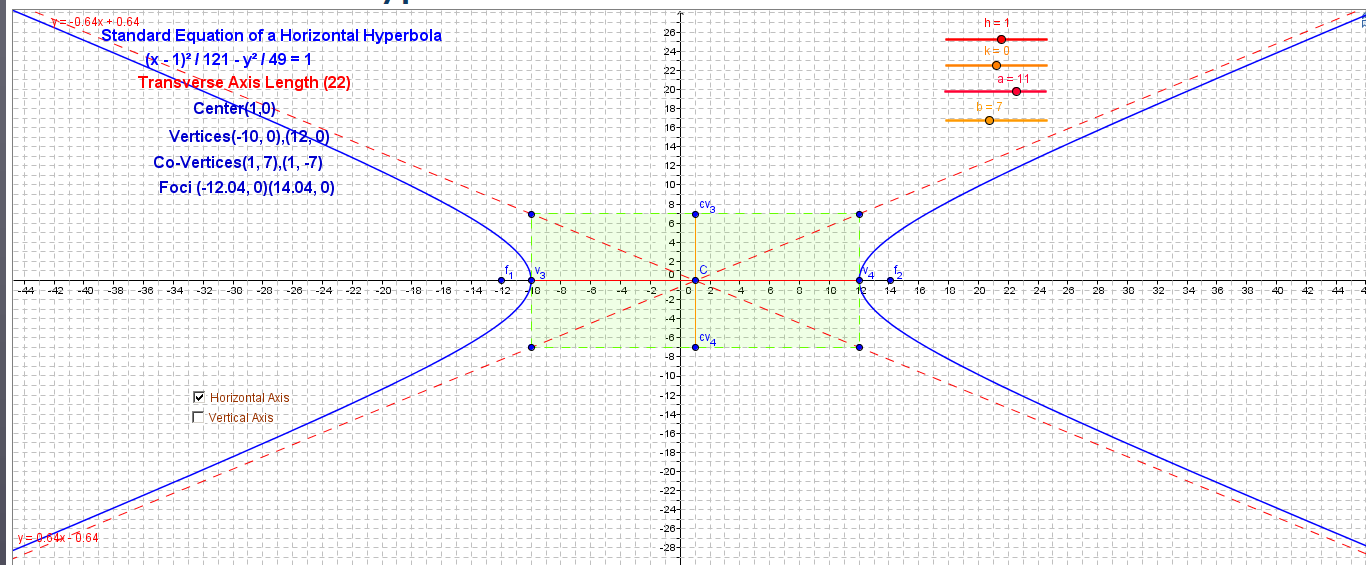
Mathematica has a steep learning curve.

One student project accepted...

MATH 5365: GEOGEBRA TUBE

Everybody loves *GeoGebra*

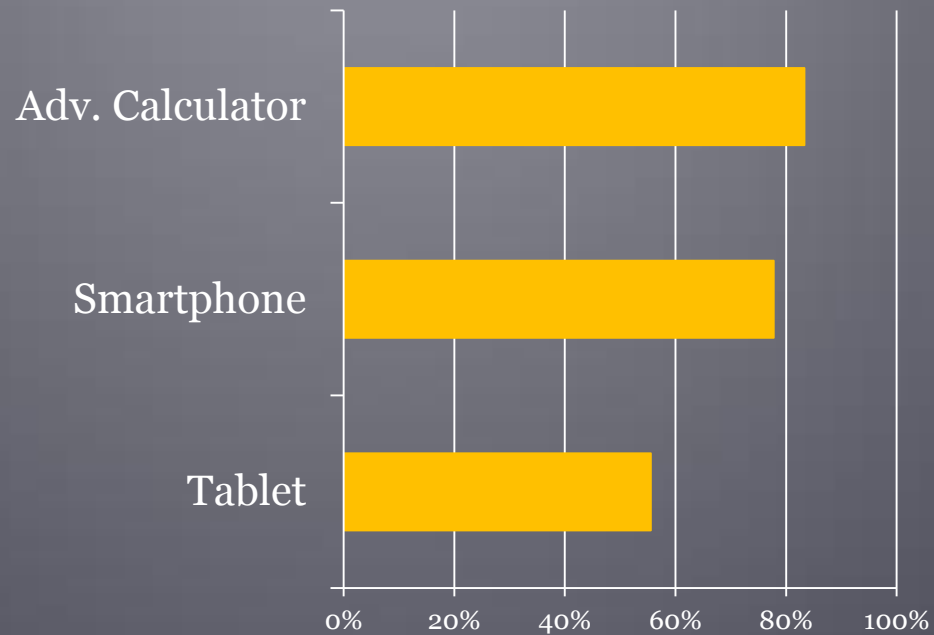
Standard Form of a Hyperbola



*Results presented only for the 18 teachers
among the students*

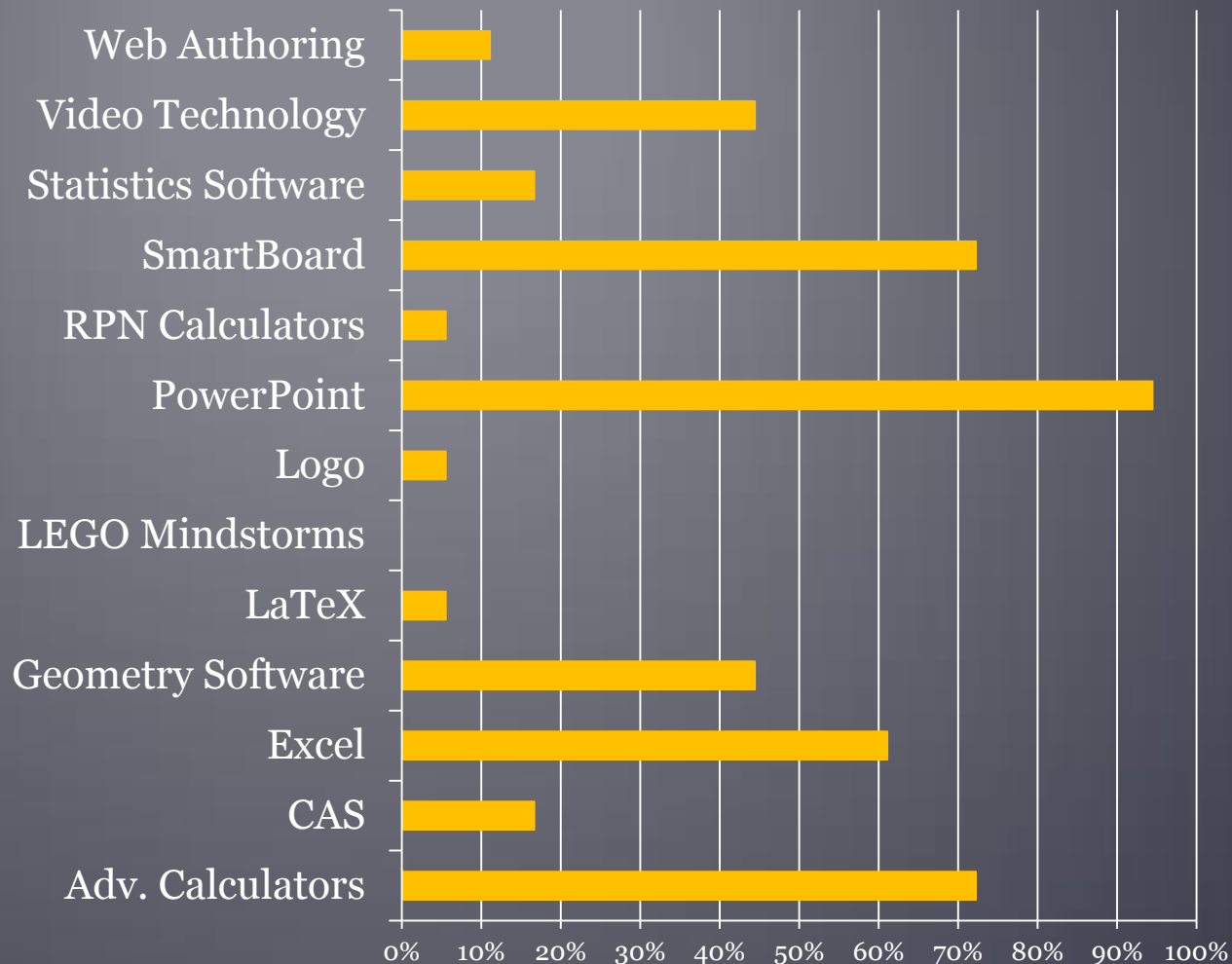
MATH 5365:
STUDENT
TECHNOLOGY
SURVEY I

- Devices owned



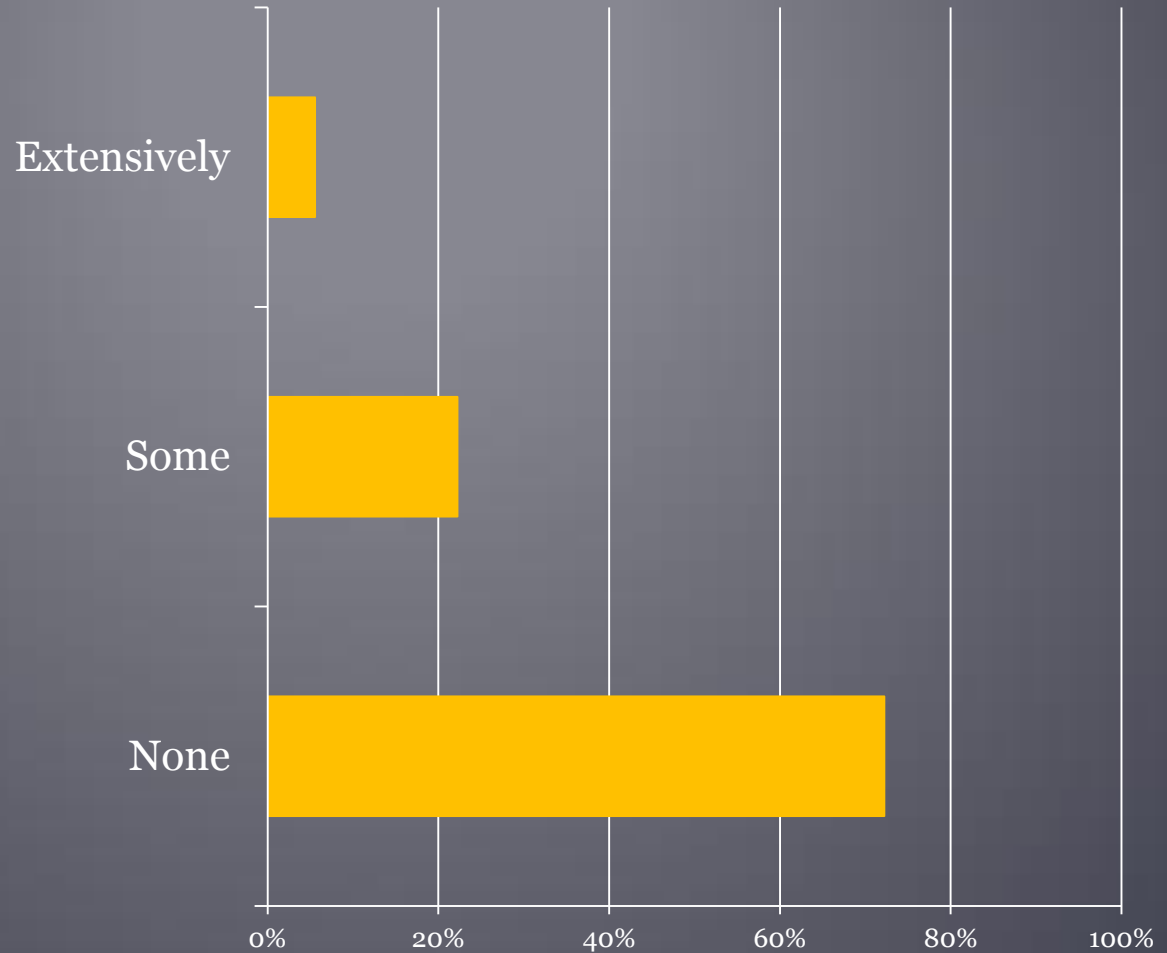
- Familiarity with Software
(average to excellent rating)

MATH 5365:
STUDENT
TECHNOLOGY
SURVEY II



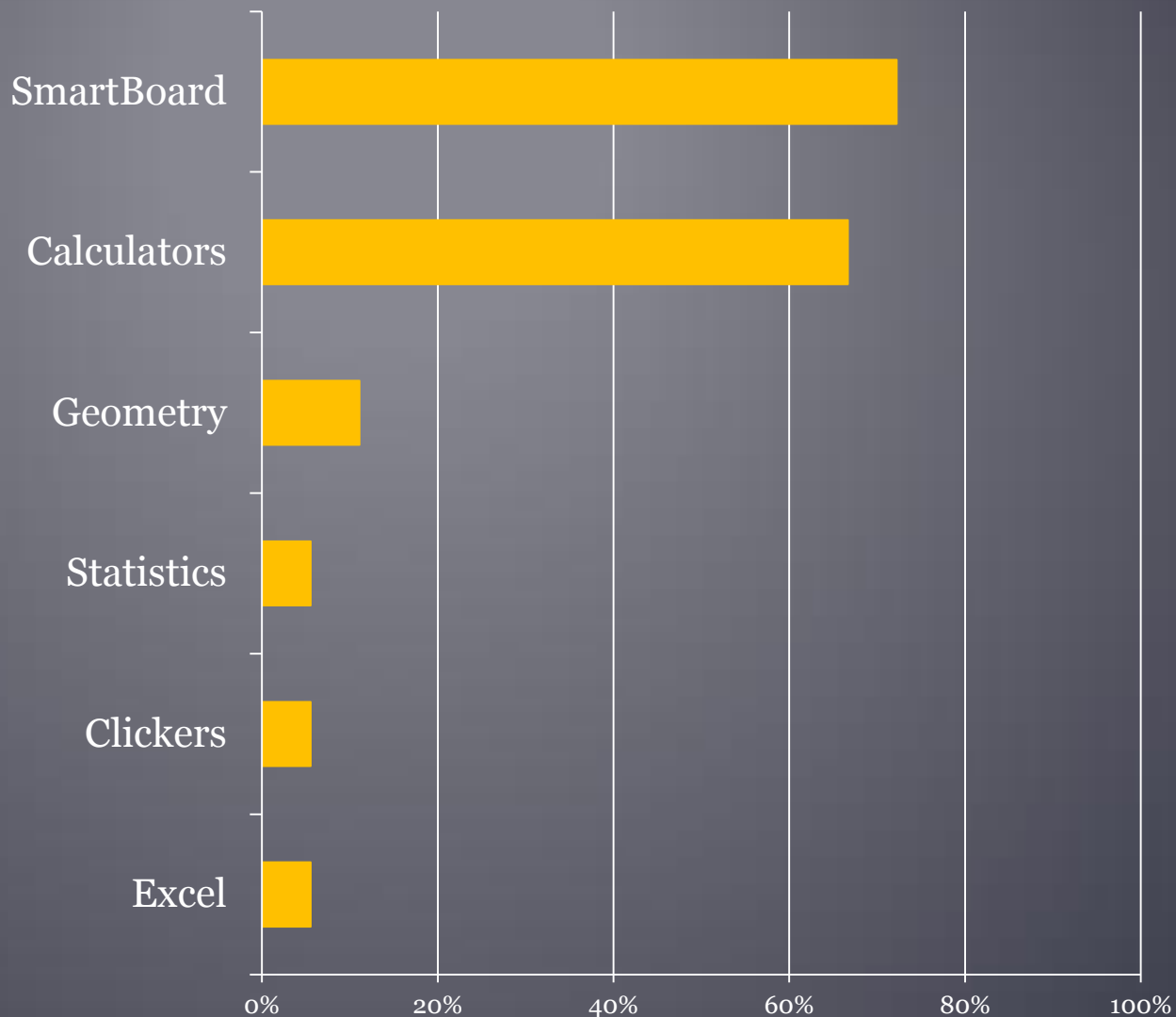
- Software/technology “learned on their own”

MATH 5365:
STUDENT
TECHNOLOGY
SURVEY III



- Software/technology used in the classroom

MATH 5365:
STUDENT
TECHNOLOGY
SURVEY IV



Helmut Knaust

hknaust@utep.edu

PPT presentation

<http://helmut.knaust.info/ts.html>

Class website

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