

Technology in the Math Classroom

With Luke and Pete

File Repository: <http://eriesd.schoolwires.net/Page/13208>

Luke Wilmoth

- Worked at SV 4 years
- Taught just about every math course
- Was a student of the Erie SD.

Pete Wojciechowski

- BS – Purdue, MEd – Gannon.
- 11 years in district. Taught most of the math.
- Teaches Precalc and Calculus at Collegiate.

Welcome!

- TI Nspire (40 min)
- Wabbitemu (20 min)
- Desmos and Geogebra (20 min)
- Socrative (15 min)
- Questions/Sharing (20 min)

If there is interest we can discuss CAS or Latex.

Agenda

TI-Nspire
A different graphing calculator

- Capable of running
 - geometry software
 - excel
 - interactive scatterplots/stats
- Easily save and share documents

Benefits

- It takes some getting used to
- Costs around \$140
 - TI 89 is between \$80 and \$140
- Touchpad can be frustrating

Downsides

- Home button/Scratchpad/Menu
- Play around with your calculator for a few minutes



Get to Know the N'spire

- Functions as you would expect once you get there
- Division defaults to improper fractions
 - CTRL then enter will give a decimal
- Storing variables/matrices
 - Use := (This is located below the delete button)



Scratchpad/Calculator

- Tab adds another line for a function
- Can change graph input
 - Functions, vertical lines, conics, parametric, polar
- Change color of graphs
- Easily and clearly inequalities

Graphing

- Home-> New Document -> Geometry
- Menu is how you do everything
- Constructions
 - You can do a lot before
 - Your students can do a lot
- Coloring/Shading
 - Highlight object, CTRL + click
- Deleting: Click then press delete or hold delete to delete everything

Geometry

- Using the Spreadsheets is just like Excel
- Add Stats to your current document
- Dot plots and single variable stats
- 2 Variable stats, regression, and residuals

Spreadsheets/Stats

- Make something using what you learned today
- Connect Calculators (A sends to B)
- Home -> My Documents -> CTRL -> Menu -> Send

Exporting Documents



- FREE.
 - Matches TI-84 *exactly*.
 - Allows for demonstration of calculator strategies.
 - Easily add programs.
 - Record .gif and keypress history.
 - Available on many devices.
- Benefits**

- Keyboard is AWFUL.
 - ROM can be difficult to acquire.
 - Not available on iOS (sorry fanboys/girls).
 - The most recent OS for TI 84+CSE isn't available online. **SAVE YOUR ROM!**
 - It turns off and you must turn it back on (and there's no keyboard shortcut).
- Downsides**

- Open Wabbitemu program (I have it pinned to my taskbar).
- The first time you run the program, you will have to create a ROM. Select to option to create a ROM image using open source software.
- Select the calculator you want to emulate (go for the best one) and save the ROM/get rocking.
- I have uploaded the rom to my website: <http://eriesd.schoolwires.net/page/13208>

Getting Started

- = x-button
- **Left-Shift** 2nd
- **Right-Shift** Clear
- **Ctrl** Alpha
- **F1-F5** Y= - Graph
- Note: Use your number pad +/- to get addition or subtraction. The - next to 0 is the negative key.

Unintuitive Keyboard Shortcuts

- Wabbitemu will take a screen shot for you, but it saves as .png, which is not recognized in ActiveInspire.
- I prefer to open a detached LCD screen and take a screenshot using the Snip tool.
- Make your detached LCD super big so the screenshot looks the best it can look.
- Want a .gif? Hit Backspace! (to start and stop)

Taking a Screenshot

- Have a program you want to demonstrate?
- Save the file to your computer.
- File -> Open (F10).
- Select the file. It is now loaded on your calculator.
- Delete the file the same way you do on a calculator (MEM).

Load a Program

Geogebra/Desmos

www.geogebra.org
www.desmos.com

- Implicit grapher (can't solve for y ? NP.)
- Whoa. Lots of geometry tools! (Geogebra)
- Write functions in pseudo-Latex. (Geogebra)
- Cross platform! (Yes, even iOS!)
- FREE resources.
- 3d graphing.
- Remember GSP? Geogebra is like that, but FREE.

Benefits

- Student: "Can I use this on a test?"
Teacher: "No."
- I can't really think of anything else.

Downsides

- Go to www.geogebra.org
- Want to look for an illustration for in class? Click "Resources." Search away.
- I found some great illustrations for Calculus.
- Take a minute and find something you could use in class (trust me, there is something).
- Share out fun stuff.

Geogebra - Resources

- Go back to www.geogebra.org and click "Start Geogebra."
- Click "Algebra." (Minor difference in Geometry).
- Menu.
- Right click menu.
- Zooming.
- Add functions.
- Add constructions.
- Play. Make something.

Geogebra - Algebra/Geometry

- OK, this is strictly nerdy.
- Construct a line AB. Add point C so that AC achieves unity.
- Find the midpoint D of BC. Construct circle with center D and radius BD.
- Construct line AE perpendicular to BC such that E is on circle M.
- $AB = AE^2$.

Cartesian Square Root

- You must sign in to save.
- You can the following accounts:
 - Google (gmail)
 - Office 365 (@eriesd.org)
 - Microsoft, Facebook, Twitter (only use these to show off to friends)
- Select whether to make it public (available to others) or private (not available to others).

Saving

- Really just has the Algebra side of Geogebra.
- Decent implicit/explicit grapher.
- This may be a deal breaker: it can graph polar functions, but only implicitly (I mean, are they for real?)
- This is my go-to mobile phone grapher (app is friendlier than Geogebra app).

Desmos

Socrative
Live formative assessment

- Gives students immediate feedback
- Easy to scramble questions and answers for multiple choice
- Provides an immediate formative assessment for teachers

Cons

- It takes a while to prepare
- No equation editor

Socrative

- Download the Socrative app for students
- Or go to the Socrative website
- Join the Classroom: WILMOTH
- Take the Quiz

Take a quiz

- Go to Socrative for teachers
- Try making a quiz and share it with the people around you

Make a quiz

QUESTIONS??

- Very Pretty
- Fast once you learn shortcuts

Cons

- Large File size
- Takes a while to learn
- Looks intimidating

Latex/shortcuts

- Educreations Interactive Whiteboard
 - Record work and voice
 - Upload lessons to YouTube

Classroom Flipping
